

Senate Office of Policy and Legislative Analysis

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FINAL REPORT OF THE SENATE STUDY COMMITTEE ON ARTIFICIAL INTELLIGENCE (SR 476)

Committee Members

Senator John Albers, Chairman District 56

> Senator Max Burns District 23

Senator Jason Esteves District 6

Senator Sheikh Rahman District 5

> Senator Ed Setzler District 37

Senator Shawn Still District 48

Dr. Pascal Van Hentenryck Georgia Institute of Technology

Ms. Robyn Crittenden Deloitte

Mr. Frederic Miskawi CGI

Prepared by the Senate Office of Policy and Legislative Analysis, 2024

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STUDY COMMITTEE CREATION, FOCUS, AND DUTIES

The Senate Study Committee on Artificial Intelligence was created by Senate Resolution 476 during the 2024 Legislative Session of the Georgia General Assembly.¹ The Study Committee was tasked with examining current and future uses of AI technologies in this state for the purpose of:

- Determining appropriate policies and procedures to implement in this state concerning the development, procurement, utilization, and ongoing assessment of systems that employ AI and are used by state agencies;
- Reviewing the potential impacts of AI technology on the workforce across major industries;
- Examining the potential misuse and unintended consequences of AI, particularly in the absence of ethical standards that seek to preserve the dignity and autonomy of individuals; and
- Exploring the best paths forward to promote responsible innovation, competition, and collaboration across public and private sectors in Georgia, ensuring that AI technology advances in a way that enforces existing consumer protection laws and principles for citizens of the state and enacting necessary additional safeguards against fraud, unintended bias, discrimination, infringements on privacy, and other potential harms.

Senator John Albers of the 56th served as Chair of the Study Committee. Other Senate members included Senators Max Burns of the 23rd; Jason Esteves of the 6th; Sheikh Rahman of the 5th; Ed Setzler of the 37th; and Shawn Still of the 48th. Additional members appointed to the Study Committee included Dr. Pascal Van Hentenryck, Director, Tech-AI, Georgia Institute of Technology and Director, NSF Artificial Intelligence Institute for Advances in Optimization; Ms. Robyn Crittenden, Managing Director, Deloitte; and Mr. Fred Miskawi, Vice President, AI Innovation Expert Services, CGI Global AI Enablement.

The following legislative staff members were assigned to the Study Committee: Emily Leonard, Senate Press Office; Hayley Williams, Senate Office of Policy and Legislative Analysis; William Spencer, Office of Senator John Albers; and Ben Huntington, Office of Legislative Counsel.

¹S.R. 476, 157th Gen. Assemb., Reg. Sess. (Ga. 2024), <u>https://www.legis.ga.gov/legislation/66281</u>

BACKGROUND

Recognizing the significance and complexity of the task at hand, the Senate Study Committee on Artificial Intelligence created and utilized the following framework to ensure a comprehensive and objective approach to examining issues related to AI.

SR 476 – AI Study Committee Framework



Artificial Intelligence system' means an engineered or machine based system that emulates the capability of a person to receive audio, visual, text, or any other form of information and use the information received to emulate a human cognitive process, including, but not limited to, learning, generalizing, reasoning, planning, predicting, acting, or communicating; provided, however, that artificial intelligence systems may vary in the forms of information they can receive and in the human cognitive processes they can emulate.

Regulation and Ethics: Should Georgia establish regulations governing the development, deployment, and use of AI technologies to ensure ethical behavior, accountability, transparency, and fairness. This includes guidelines for AI bias, privacy protection, data security, deep fakes, elections, and algorithmic transparency. Define Artificial Intelligence.

Privacy and Data Protection: Georgia may need to enact policies to safeguard individual privacy and data protection in the age of AI. This includes regulations such completed in numerous states, countries, and the EU, which govern the collection, processing, and sharing of personal data.

Social Welfare and Equity: Should Georgia address the societal implications of AI, including its impact on inequality, social inclusion, and access to AI-driven services. This may involve policies to mitigate bias in AI algorithms, ensure equitable access to AI technologies, and address the digital divide.

Labor & Workforce	Research & Development	Public Safety	Healthcare	Transportation Infrastructure	Education	Economic Impact Innovation
Are needed to address the impact of Al on employment, workforce training, and education. This may involve programs for retraining displaced workers, promoting lifelong learning, and fostering the development of Al- related skills.	Should Georgia invest in AI research and development to drive innovation and maintain competitiveness. Funding may be allocated for basic research, applied research, and collaboration between academia, industry, and state and local agencies. Leverage#1 place for business and AI.	Al has implications for public safety (law enforcement, firefighting, Emergency Medical Services, 911 Dispatchers). Should Georgia develop policies related to Al- enabled military technologies, cybersecurity, gang activity, counterterrorism, and the ethical use of autonomous public safety systems.	Policies addressing the use of AI in healthcare including Medicaid, access to healthcare and medical diagnosis, treatment planning, drug discovery, and patient care. This includes AI-powered medical devices, and the ethical implications of AI in healthcare decision-making.	Should Georgia develop policies to regulate AI applications in transportation, including autonomous vehicles, traffic management, and smart infrastructure. This involves safety concerns, liability issues, and regulatory frameworks transportation systems, utility impacts, etc.	Policies in education to enhance educational outcomes, transform curriculum, aim to integrate Al into curricula, promote digital literacy, and prepare students for the Al-driven workforce. Initiatives to teach Al concepts, coding skills, and critical thinking about Al's societal impacts and teacher using Al in the classroom.	Policies to foster innovation and economic growth in AI-related industries. This may involve taxincentives for AI startups, support for technology transfer from research institutions to businesses, and measures to attract AI talent and investment, venture funding, creative arts, etc.

SUMMARY OF TESTIMONY AND DISCUSSION

MEETING ONE

Date: June 26, 2024 Location: Georgia State Capitol – Atlanta, GA Topic: Introductory Meeting

Committee Members Present

Chair: J. Albers Senators: M. Burns, J. Esteves, S. Rahman, E. Setzler, S. Still Others: R. Crittenden, P. Van Hentenryck

Speakers & Presentations

Name/Agency	Topic(s)
Senate OPLA	Overview of Active Regulations, EU AI Act

Summary of Testimony

1. <u>Hayley Williams (Director, Senate Office of Policy and Legislative Analysis)</u>

Hayley Williams, Director of the Georgia Senate Office of Policy and Legislative Analysis, presented to the committee an overview of enacted state and federal AI regulations, along with the recently enacted the EU AI Act.

MEETING TWO

Date: July 17, 2024 **Location**: Georgia Tech University – Atlanta, GA **Topic**: Higher Education, Societal Impact

Committee Members Present

Chair: J. Albers Senators: M. Burns, J. Esteves, S. Rahman, E. Setzler, S. Still Others: R. Crittenden, P. Van Hentenryck, F. Miskawi

Speakers & Presentations

Name/Agency	Topic(s)
Dr. Pascal Van Hentenryck, Georgia	Trustworthy AI for Societal Impact – engineering, science,
Institute of Technology	and education
Jeanette Taylor, University of Georgia	AI at UGA
Nicholas Creel, Georgia College & State	Impact of AI on Higher Education; AI Bias
University	

Summary of Testimony

1. Dr. Pascal Van Hentenryck (Georgia Institute of Technology)

Professor Van Hentenryck provided an overview of Georgia Tech's ongoing AI research and development efforts (See **Appendix A**). Georgia Tech produces the largest concentration of AI talent globally from a single institution and has contributed significantly to its development. Professor Van Hentenryck emphasized Georgia Tech's commitment to applying AI in real-world scenarios to find advanced and efficient solutions using this technology while maintaining its trustworthiness and integrity in practice.

Georgia Tech also offers informational workshops and courses to the community related to various aspects of AI, from the technology itself to its impact on our society.

Senator Setzler questioned the role of AI in primary and secondary education and the likelihood that it will deter children from learning fundamentals such as math. Professor Van Hentenryck suggested that integrating AI into instruction to contextualize the usefulness of math in the real world. Senator Esteves suggested that it may be time to revisit the current K-12 education system to determine whether certain basic aspects of subjects like math are necessary anymore, when it would likely be more productive to teach children to use the technology available to complete the same tasks and spend more time teaching more complex concepts. Professor Van Hentenryck emphasized that Georgia Tech's goal to make its AI coursework available to the entire public and provide direct training for teachers in K-12 schools.

Ms. Crittenden asked if Georgia Tech's work is shared among different institutions or if all institutions are studying independently. Professor Van Hentenryck spoke about collaborating with faculty at Clark Atlanta University to bring individuals to Georgia Tech for training, estimating that 45-50 people have been trained to date. He stated that the next goal is to make these resources available in a demonetized online setting.

2. Jeanette Taylor (University of Georgia)

Ms. Taylor gave an overview of UGA's history in the AI space, having formed its first AI-related research group in 1984 (See **Appendix B**). UGA began offering Bachelor's and Master's degrees in AI in the 1990s. In 2022, UGA began offering a PhD in AI. As of 2024, UGA is developing an AI + X Certificate program.

In 2021, UGA launched the Presidential Hiring Initiative on AI and Data Science to hire 50 faculty across multiple disciplines and have filled nearly all positions created for this effort. The primary goal is to perfect AI's application in agricultural processes, but addresses multiple areas of interest. Ms. Taylor provided examples of additional efforts by UGA including AI symposiums and coursework offered at the Center for Teaching and Learning.

Ms. Taylor went on to elaborate on the concept of active learning and UGA's Active Learning Initiative to integrate developing technology with traditional education methods to make the subject matter more relevant and engaging for students. Ms. Taylor also discussed UGA's current focus on developing recommendations for guidance and policies for AI as it relates to: AI literacy; teaching; research and graduate education; and security.

3. Nicholas Creel (Georgia College & State University)

Mr. Creel gave an overview of GCSU's AI related activity and policies (See **Appendix C**). He described AI as a workforce development issue and explained the many concerns and fears associated with it. Mr. Creel believes that while AI will inherently change the ways in which society functions, it will not replace the human element in the vast majority of scenarios. Rather, AI will contribute to a human's ability to perform tasks as efficiently and accurately as possible. Mr. Creel also explored the issues of bias in AI technology and its potential to result in discrimination.

MEETING THREE

Date: August 14, 2024 **Location**: Trilith Studios – Fayetteville, GA **Topic**: Arts & Entertainment, Transportation

Committee Members Present

Chair: J. Albers Senators: M. Burns, J. Esteves, S. Rahman, E. Setzler, S. Still Others: R. Crittenden, P. Van Hentenryck, F. Miskawi

Speakers & Presentations

Name/Agency	Topic(s)
Frank Patterson, Trilith Studios	AI in Art & Entertainment
Julie Feagin, Filmbook Media and VIP Rights	Intellectual property, NIL rights
Alan Davis, GDOT	Transportation
Brandon Branham, Smart Cities	Transportation

Summary of Testimony

1. Frank Patterson (Trilith Studios)

Mr. Patterson spoke to the committee about his extensive experience with AI as it has developed over time, particularly in the film and entertainment industry. He shared his perspective on numerous common concerns regarding AI development, emphasizing the innovative potential of AI technology and the results it has already delivered. Mr. Patterson also spoke to Trilith's many uses of AI and efforts to constantly improve on the ethical use of AI technology.

2. Julie Feagin (CEO, Filmbook Media & VIP Rights)

Ms. Feagin spoke to the committee about AI and intellectual property issues. (See Appendix D.)

3. <u>Alan Davis (GDOT)</u>

Mr. Davis gave the committee an update on AI's applications in transportation and infrastructure in Georgia. He provided numerous examples of AI-powered technology that assists in traffic monitoring, collision detection and emergency alert capabilities, and similar uses, and shared insight into developments on the horizon. (See **Appendix E**.)

4. Brandon Branham (Smart Cities)

Mr. Branham spoke to the committee about the capabilities of AI in transportation at the local level (See **Appendix F**). The committee learned about smart cities and the AI-powered tools they use to improve efficiency in transportation and infrastructure. For example, "streets of the future" utilize robust systems of sensors and cameras to monitor, predict, and manage traffic patterns; autonomous vehicles provide alternative public transportation options; connected infrastructure enables direct communication between vehicles; and technology such as website chatbots and automated ticketing systems provide service enhancements for the public.

MEETING FOUR

Date: September 12, 2024 **Location**: Georgia Cyber Center – Augusta, GA **Topic**: Cybersecurity, Data Privacy

Committee Members Present

Chair: J. Albers Senators: M. Burns, J. Esteves (Zoom), S. Rahman, E. Setzler (Zoom), S. Still Others: R. Crittenden, P. Van Hentenryck, F. Miskawi

Speakers & Presentations

Name/Agency

Topic(s)

Renzo Soto, TechNet	Data privacy, cybersecurity
Ernesto Cortez, Booz Allen Hamilton	Data privacy
Steven D. Rehn, Ft. Eisenhower	Cybersecurity
Jake Denton, Heritage Foundation	Data privacy

Summary of Testimony

1. Renzo Soto (TechNet)

Mr. Soto addressed the committee on behalf of TechNet (See **Appendix G**). TechNet operates the AI for America initiative to educate the public about AI. The initiative combines coalition building, advocacy, social media, and traditional media to showcase the economic and societal benefits of AI.

This state has already experienced the impact of these rapidly expanding technologies. In 2023, Georgia was ranked among the top 10 states for net technology employment, net technology job gains, and job postings for technology openings. When regulating AI technology that may affect the development and accessibility of these tools, TechNet urges policymakers to ensure that data privacy and cybersecurity proposals are interoperable.

2. Ernesto Cortez (Booz Allen Hamilton)

Mr. Cortez spoke to the committee about various AI-enabled tools to mask and protect private information and ensure safe data processing. There are significant resources available for private and public entities; collaboration and partnerships among stakeholders are vital to ensure safe and ethical AI use in the future.

3. Steven D. Rehn (Director, Technical Warfare Center / Chief Technology Officer)

Mr. Rehn spoke to the committee about the Army's efforts to use AI, describing it as a technology that can take lives in battle as well as ensure success in the defense space. There are common challenges related to AI in the defense space as well as the public and private sectors.

4. Jake Denton (Heritage Foundation)

Mr. Denton addressed the committee on behalf of the Heritage Foundation. (See **Appendix H**). To rectify the current imbalance in data privacy and safeguard the rights of Georgia's citizens while maintaining Georgia's thriving business environment, the Heritage Foundation urges a comprehensive data privacy legislative framework. The cornerstone of this framework should be the mandate for transparent, accessible, and easily understandable disclosures about data practices. A fundamental aspect of data privacy protection is the empowerment of consumers through the right to access, delete, or correct personal data that has been collected or in some cases, inferred. This allows individuals to maintain control over their digital footprint. In addition to individual rights, legislation should also address the broader issue of data collection practices. To bolster compliance and responsiveness, a robust complaint process should be implemented to allow consumers to report violations directly to an oversight body for investigation.

MEETING FIVE

Date: October 2, 2024 Location: Virtual Topic: K-12 Education, International AI Impacts

Committee Members Present

Chair: J. Albers Senators: M. Burns, J. Esteves, S. Rahman, E. Setzler, S. Still

Name/Agency	Topic(s)
Dr. Kristen DiCerbo, Khan Academy	K-12 education
Daniel Hales, Future of Privacy	Impacts of AI in K-12 education
April Aldridge, GaDOE	AI and K-12 education in Georgia
Fred Miskawi, CGI	Global perspective
Bianca-Loana Marcu, Future of Privacy	Global privacy

Speakers & Presentations

Summary of Testimony

1. Dr. Kristen DiCerbo (Chief Learning Officer, Khan Academy)

Dr. DiCerbo testified to the committee about the use of AI in K-12 education. (See **Appendix I**). Students learn more when they are actively engaged, work on material they can complete within their own abilities with a little support, get immediate feedback on their responses to new material, and see the value in what they are learning. AI enabled tools have proven to be effective ways to accomplish each of these. The committee saw several examples of AI-powered education resources offered by Khan Academy which enhance both learning and teaching experiences. Most students want to receive education on technologies using AI and policies for acceptably using it in the classroom, while most teachers feel as if their school systems do not have clear policies regarding AI in education. It is imperative to promote AI literacy, foster AI leadership, provide funding for professional development, support innovation, and provide schools with guidance on the responsible uses of AI.

2. <u>Daniel Hales (Policy Fellow, Youth & Education, Future of Privacy Forum)</u>

Mr. Hales spoke to regional and national trends of AI in K-12 education (See **Appendix J**). Algorithms, analytics, and artificial intelligence ("AI") have been used in a large majority of K-12 instructional systems for over a decade. Examples of pre-existing "predictive" AI tools such as student lunch biometric payment processing systems, adaptive learning assessments, and early warning systems.

Generative artificial intelligence ("Gen AI") is a recent development -focusing on creating new text, code, image, video and audio content. This emerged in 2022-2023 with the rise of generative pretrained transformers ("GPTs"). Initial concerns and hesitations about Gen AI were related to plagiarism and cheating, while they have since shifted to how can these tools be used safely and securely. The committee heard the importance of ethical and legal guiderails for AI use in K-12 education, and how they have been addressed so far. There are 22 states with published guidance on AI use in K-12 schools.

The following key takeaways were offered on current State AI guidance:

- Some states do not have formal AI guidance for K-12 use, but have instead compiled related resources.
- Most states with AI in K-12 guidance acknowledge data privacy as a risk of AI use.
- Few states have concrete, specific guidance and recommendations for addressing and mitigating data privacy risks of AI use; most offer high-level or vague guidance on the importance of data privacy generally.
- Most states urge vetting ai systems for compliance with existing state and federal privacy laws and local regulations.
- Most states recommend updating existing policies with AI language as opposed to creating new policies.
- Most state data privacy guidance is superficial.

3. <u>April Aldridge (Deputy Superintendent, Teaching & Learning, Georgia Department of Education)</u> Ms. Aldridge spoke to GaDOE's perspective on AI in K-12 education in Georgia (See **Appendix K**).

4. Fred Miskawi (Vice President, AI Innovation Expert Services, CGI Global AI Enablement)

Mr. Miskawi testified on AI's impact on a global scale (See **Appendix L**). Responsible use of AI is not only an ethical necessity, but also a business imperative. Enabling responsible AI use requires the use of guardrails, not roadblocks; these include defined principles, governance, and operationalization to ensure trusted outcomes. Mr. Miskawi also shared with the committee about the EU AI Pact, an innovative framework and network for frontrunners to directly engage with the EU & AI Office, set up by the EU to share best practices and shape AI Act Implementation. He presented numerous AI solutions seen in practice currently.

5. <u>Bianca-Loana Marcu (Deputy Director, Global Privacy, Future of Privacy Forum)</u>

Ms. Marcu testified to the committee about AI and global privacy matters (See **Appendix M**). The committee heard an update on the EU AI Act and a new overview of its risk-based approach to regulating AI, along with recent and emerging actions to regulate AI in Asia Pacific, Latin America, and Africa.

MEETING SIX

Date: October 23, 2024 **Location**: UGA Iron Horse Plant Sciences Farm – Watkinsville, GA **Topic**: Agriculture, Workforce

Committee Members Present

Chair: J. Albers Senators: M. Burns, J. Esteves, S. Rahman, E. Setzler, S. Still Others: R. Crittenden, P. Van Hentenryck, F. Miskawi

Speakers & Presentations

Name/Agency	Topic(s)
Commissioner Tyler Harper, Georgia	AI in Agriculture
Department of Agriculture	
Eric Elsner, Iron Horse Farm	Integrative Precision Agriculture
Dr. Leo Bastos, University of Georgia	Impact of AI in Agriculture
Lloyd Avram, Stephanie Scearce and Scott	AI in Manufacturing
Burkey, Georgia Association of	
Manufacturers	
Calvin Lawrence, IBM	AI Workforce Implications

Summary of Testimony

1. <u>Commissioner Tyler Harper (Georgia Department of Agriculture)</u>

Commissioner Harper gave an overview of the broad application of AI in the agriculture industry and shared his concerns regarding the future of the agriculture industry in America and specifically in Georgia. He shared that the agriculture trade deficit is the highest it has ever been. Commissioner Harper asserted that agriculture is vital to the foundation for national security and economic success. He shared statistics regarding the rapidly decreasing population of farmers in Georgia. Chairman Albers inquired about the reasons for that decrease and why more family farms aren't adopting new technology to increase efficiency. Commissioner Harper explained that most often it is a decision based entirely on cost. He suggested exploring financial incentives for family farms to invest in this technology. Rep. Brad Thomas asked about the logistical efficiency of transporting food from farm to table. Commissioner Harper explained the common practices currently in place and explained how they could be improved with the use of AI, from harvesting to transporting.

2. <u>Eric Elsner (Iron Horse Farm)</u>

Mr. Elsner shared with the committee his perspective on AI in Agriculture through his experiences at Iron Horse. He shared specifically about integrative precision agriculture and numerous benefits of AI enabled agricultural processes.

3. Dr. Leo Bastos (University of Georgia)

Dr. Bastos began with an overview of artificial intelligence and the development of its various applications in Georgia's agriculture industry (see **Appendix N**) and provided examples of its practical applications:

- Plants: AI can assist in phenotyping and ensure efficient variety development by using drones to measure plant heights faster than traditional methods and collecting imagery autonomously each time plants are measured in the field.
- Fields: Instead of applying fertilizer equally across an entire property, AI-powered fertilizer distribution systems use satellite imagery to prevent overspending on fertilizer in areas that may need less than other areas. AI can recommend input rates that optimize a farmer's profitably while protecting the environment.
- Regions: Programs can train AI to use data collected from across the state to identify which areas would yield the greatest return for particular crops, when to plant, which varieties to grow, and where production can be improved.
- People: Farmers carry higher than average levels of stress and has a higher rate of suicide than comparable professions in Georgia. AI can be used to predict higher concentrations of stress levels among rural areas and farming communities in Georgia based on various social indicators (excessive drinking, ER visits, etc.), input and crop prices, and weather. This data can be used to help predict the need for different types of assistance in those communities.

4. <u>Lloyd Avram, Stephanie Scearce and Scott Burkey (Georgia Association of Manufacturers)</u> Representatives from GAM spoke to the impact of AI on manufacturing in Georgia. (See **Appendix O**.)

Relative to other industries, AI technology appeared in the manufacturing industry very early on in its development. The top 5 uses of AI in manufacturing include:

- 1. Operational efficiency,
- 2. Worker safety;
- 3. Product development and design;
- 4. Employee training; and
- 5. Supply chain optimization.

The speed of adopting AI technology is often constrained by a manufacturer's digital maturity: the company's ability to integrate digital and physical worlds. Integration is accelerated through the skill and intelligence of humans working in manufacturing – "smart workers."

Manufacturing is the fifth largest sector employer in Georgia and is expected to grow another 10 percent in Georgia between 2023-2028. However, availability of unemployed manufacturing workers has decreased by over 30 percent since January 2018. In 2023, Georgia experienced a 56 percent turnover rate in the state's manufacturing industry. A quarter of Georgia's current manufacturing workforce will become eligible to retire over the next several years.

The committee heard an anecdote about an actual employer in the State of Georgia and how the employer attempted to improve recruitment and retention. The employer increased wages by 22 percent, boosted

other benefits, and created additional financial incentives. The employer was still unable to meet its labor needs from Georgia's workforce and as a result will offshore up to 7 percent of its production.

5. <u>Calvin Lawrence (IBM)</u>

Representatives from IBM spoke to the committee about various capabilities that AI addresses in agriculture today, as well as the practical impacts of AI on the workforce. (See **Appendix P**.)

AI in Agriculture

The committee heard about the functions of AI in agriculture, including a closer look at AI's contributions to precision farming; crop monitoring and disease detection; yield prediction and optimization; livestock management; and labor shortages and efficiency.

Precision Farming: AI and automation help farmers manage crops more efficiently by giving real-time data about soil, weather, and crop health. This improves how farmers use resources like water and fertilizer, which reduces waste and boosts production.

Crop Monitoring & Disease Detection: AI-powered systems use drones, sensors, and satellite images to monitor crops. They detect diseases and nutrient issues early, allowing farmers to act quickly and reduce the need for heavy pesticide use.

Yield Prediction & Optimization: Machine learning uses data from past seasons, like weather and soil conditions, to predict how much crop farmers can expect. This helps farmers plan better and make informed decisions about planting and harvesting.

Livestock Management: AI tools track animals' health using sensors and wearable devices. This can detect diseases early, monitor feeding needs, and even track breeding cycles, which leads to healthier animals and higher productivity.

Labor Shortages & Efficiency: Robots and autonomous vehicles can help address labor shortages by performing tasks like harvesting and spraying. This increases farm efficiency and reduces the need for manual labor.

Examples of actual use cases examined AI's ability to address specific agricultural needs, including precision pesticide use, predictive models for peach ripening based on weather and bloom data, and AI-powered research assistants to sift through trial and lab data and provide insight to diagnosticians.

AI in Workforce Development

The committee also learned about IBM's efforts to address the need to educate, reskill, and upskill workers. It is estimated that 60 percent of workers will require additional training of some sort by 2027. IBM has created platforms like IBM SkillsBuild, which offers free online training courses in areas such as AI, cybersecurity, and cloud computing. IBM has partnered with educational institutions and organizations to help thousands of individuals develop skills needed for AI-driven careers. Another example is IBM's Apprenticeship Program, which provides an opportunity for "new collar" workers to hone in on the unique knowledge they obtain through skilled and other hands-on experience without completing a traditional degree program.

MEETING SEVEN

Date: November 8, 2024 **Location**: Georgia State Capitol – Atlanta, GA **Topic**: Healthcare, Public Safety

Committee Members Present

Chair: J. Albers
Senators: M. Burns, J. Esteves (Zoom), S. Rahman (Zoom), E. Setzler, S. Still
Others: R. Crittenden, P. Van Hentenryck (Zoom), F. Miskawi

Speakers & Presentations

Name/Agency	Topic(s)
Dr. Alistair Erskine, Emory Healthcare	Practical AI in Healthcare
Dr. D. Douglas Miller, Augusta University	AI Enhanced Education for Georgia's Healthcare Workforce
Maria Saab and Brad Dispensa, Amazon	Justice & Public Safety
Web Services	
John Chiaramonte, Mission Critical	Using AI to Enhance Public Safety and Emergency
Partners	Response Outcomes
Gabe Grab, Deloitte	Healthcare Use Cases, Trustworthy AI

Summary of Testimony

1. <u>Dr. Alistair Erskine (Chief Information and Digital Officer, Emory Healthcare and Vice President for Digital Health, Emory University)</u>

Dr. Erskine spoke to the committee about practical AI uses within the Emory Healthcare System (See **Appendix Q**). AI technology has helped drive improvements in the patient experience and increase efficiency for care teams. Emory is developing a new app, myEmory, which works alongside Epic MyChart to add features like wayfinding, virtual urgent care, self-triage, provider locations, and conversational AI services. For example, Hyro Conversational AI is a platform that offers patients a plain language interface to complete tasks such as scheduling appointments and providing general healthcare guidance 24/7.

The committee also learned of AI technology supporting care teams. For example, Emory has deployed a software called Abridge within Epic Haiku which provides for ambient listening for all outpatient providers. This can significantly expedite the charting and conversion timeline for providers. Another example includes the VirtuSense AI Camera, which can monitor patient movements inside a room and alert the care team if a patient is at risk of falling out of bed based on their position. These technologies do not collect personally identifiable information, but patients have the option to opt out of those services entirely upon admission.

Dr. Erskine also gave an overview of Emory's approach to AI governance and shared information about nearly 100 generative AI use cases gathered, with more in development. These AI-powered services have been shown to improve nursing standards, provide quick references to policies and procedures, improve turnaround for infection preventionists, predict significant healthcare events, and more.

2. Dr. D. Douglas Miller (Professor, Augusta University Medical College of Georgia)

Dr. Miller testified to the committee about his experience with adapting to the emergence of AI-powered technology in the medical field, particularly for educators in the healthcare field (See **Appendix R**). This technology is extremely prevalent in the field for many uses; most patient care systems utilize AI automation of some sort, and surveys show that around 20 percent of providers use ChatGPT in their professional lives and nearly a third use it in their personal lives. However, it is important to educate providers on the ethical use of AI technology because the quality and accuracy of AI's outputs are determined by the accuracy and objectiveness of a provider's input. Providers have ethical responsibilities to: lend knowledge domain expertise to guide computer scientists' model design; have sufficient AI literacy to explain "black box" predictive models to patients; be aware of data provenance and the idea that quality impacts model scalability and reproducibility; and get involved in data inputting and quality assurance.

3. Maria Saab and Brad Dispensa (Amazon Web Services)

Representatives testified on behalf of Amazon Web Services, beginning with an overview of AI generally and its uses across all sectors and industries (See **Appendix S**). Mr. Dispensa, AWS Security Specialist, went into detail regarding the implications of AI on public safety. The committee heard about developments such as non-emergency call diversion chatbots, which have helped to address staffing shortages in 911 centers by automating non-emergency calls; AI platforms to alert citizens of public emergencies, improve case management, improve safety and compliance, and improve cybersecurity. Amazon supports the idea that AI regulation should be risk-based and assigned to the appropriate actor(s) based on their role(s) in the development and use of the AI.

4. John Chiaramonte (President, Consulting Services, Mission Critical Partners)

John Chiaramonte presented on his expertise in the use of AI in emergency response systems (See Appendix T).

The committee heard about today's top trending AI use cases in public safety, including:

- 911 & Emergency Communications Centers: Non-emergency call diversion, transcription, translation, and quality assurance.
- Predictive Response: Using historical data to identify potential hotspots to stage EMS + paramedics.
- Video Monitoring and Anomaly Detection: AI-enabled cameras can detect events such as crashes and wildfires to alert responders.
- Report Writing: AI-assisted report generation reduces the administrative burden on responders to document incidents.

Within the next 3-5 years, experts expect the prevalence of AI tools in public safety to expand even further:

- Autonomous Emergency Response: Drones, robots, and autonomous vehicles could lead in responding to emergencies.
- AI-enhanced Cybersecurity: AI systems will provide autonomous detection and neutralization of cyber threats to critical networks.
- Enhanced Training Scenarios: AI offers immersive and dynamic simulations that adapt to different learning needs.
- Augmented Reality (AR) for Navigation and Assessment: AI could help firefighters navigate buildings or disaster sites with overlays indicated structural weak points or live temperature maps.

Ethical and transparent AI use is vital for maintaining public trust. It is important to remember that AI systems will support, but not replace, human decision-making; there must be safeguards again bias and unchecked automation.

5. Gabe Grab (Principal, AI & Data Leader, Deloitte Consulting)

Mr. Grab testified to the committee on behalf of Deloitte Consulting (See **Appendix U**). The committee heard about various AI use cases in health care, including functions in document generation, case and provider management systems, knowledge management, back-office functions, and customer/patient services. Fewer than 50 percent of organizations surveyed indicated that they were highly prepared for AI. For many organizations, the most significant obstacles in implementing AI tools are the gaps in risk/governance (absence of regulatory guidance) and talent (workforce skill gaps). Deloitte practices an integrated approach to AI. Deloitte's AI Readiness and Management Framework is applied across three core functions: Setting the AI Direction; Building Bore Capabilities to Deliver AI Value; and Managing AI Holistically. Deloitte's Trustworthy AI Framework provides clients with a user-friendly resource to identify, mitigate, and manage AI risk.

The committee also received a recap of AI-related legislation passed in 2024:

2024 comprehensive state AI policy landscape

Colorado was the first state to pass comprehensive AI legislation, imposing obligations on developers and deployers of AI. Utah passed legislation that imposes disclosure requirements on certain occupations when using GenAI. California also passed numerous pieces of legislation that impose obligations around the use of AI.

Utah	Colorado	California
 SB 149: Establishes liability for use of GenAI that violates consumer protection laws if not properly disclosed Regulated occupations shall prominently disclose when a consumer is interacting with GenAI Others subject to Utah Consumer Protection laws must disclose interactions with GenAI, if asked or promoted by the user Creates the Office of AI Policy SB 84: Creates the Innovation in AI Grant Pilot Program 	 SB 205: Sets guardrails around developers and deployers of high-risk AI systems, defined as systems making a consequential decision Disclosure requirements and impact assessments for both developers and deployers Expect changes to the law before it takes effect in February 2026 HB 1468: Establishes an AI task force 	 SB 942: Requires providers to make available a free AI detection tool and offer users the option to watermark AI-generated content AB 2013: Requires developers to disclose the data used to train systems of service SB 896: Requires state agencies to include disclaimers when using GenAI to directly communicate with public regarding services and benefits
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MEETING EIGHT

Date: December 3, 2024 **Location**: Georgia State Capitol – Atlanta, GA **Topic**: Final Meeting to Review Report and Recommendations

Committee Members Present

Chair: J. Albers Senators: M. Burns (Zoom), J. Esteves, S. Rahman, E. Setzler (Zoom), S. Still Others: R. Crittenden (Zoom), F. Miskawi

Summary of Testimony

The committee met to discuss its findings and recommendations and adopt this report.

FINDINGS AND RECOMMENDATIONS

Based on the testimony and research presented, the Senate Study Committee on Artificial Intelligence offers the following recommendations to address various aspects of artificial intelligence in Georgia.

State & Local Government, Generally

- 1. Every state agency, department, team, School System, County, and City must develop a comprehensive AI plan and policy. Creating a comprehensive AI policy and plan involves addressing key areas to ensure responsible, ethical, and efficient use of AI within an organization or institution. Here are the main items to consider:
 - A. <u>Purpose and Objectives</u>
 - Clearly outline the purpose of the AI policy, such as ensuring safe, ethical, and effective AI practices.
 - Define the specific goals and objectives for AI deployment, including the benefits the organization aims to achieve.
 - B. <u>Ethics and Responsible AI</u>
 - Establish ethical principles for AI, such as fairness, transparency, accountability, and respect for privacy.
 - Outline mechanisms to avoid biases in AI algorithms and ensure fairness across diverse user groups.
 - Address data privacy concerns, specifying how data will be collected, stored, and used in AI applications.
 - C. <u>Governance and Accountability</u>
 - Define roles and responsibilities for AI governance within the organization, including naming an AI Ethics Board or Committee.
 - Include guidelines on accountability, identifying individuals or teams responsible for AI oversight, risk management, and compliance.
 - Ensure clear guidelines on data ownership and decision-making authority.
 - **D.** <u>Risk Management and Compliance</u>
 - Identify potential risks, including those related to data breaches, biases, and unintended consequences of AI decisions.
 - Detail compliance with relevant laws, standards, and regulations (e.g., GDPR, CCPA, ADA).
 - Include a process for continuous monitoring and auditing of AI systems to mitigate risks.
 - E. <u>Transparency and Explainability</u>
 - Define requirements for transparency in AI models, including documenting methodologies, data sources, and algorithms used.
 - Provide guidelines on explainability, ensuring that AI decisions can be understood by stakeholders and affected parties.
 - F. Data Management and Security
 - Address data governance, including the quality, accuracy, and integrity of data used in AI models.
 - Establish protocols for data security, ensuring sensitive information is protected and accessible only to authorized individuals.
 - G. Human Oversight and Intervention

- Define the role of human oversight in AI processes, including when and how humans should intervene in AI decision-making.
- Include guidelines for continuous monitoring of AI output and mechanisms to override AI decisions if needed.
- H. <u>Training and Awareness</u>
 - Outline training programs for employees on responsible AI practices, ethics, and potential risks.
 - Include a plan for ongoing education to keep staff informed about advances in AI technologies and evolving best practices.
- I. Continuous Improvement and Innovation
 - Describe processes for continuous evaluation and improvement of AI models and policies.
 - Emphasize an adaptive approach, allowing for updates to the AI policy in response to technological advancements and regulatory changes.
- J. Incident Response and Reporting
 - Establish a protocol for incident response in case of AI malfunctions, biases, or breaches.
 - Define reporting procedures for AI-related incidents to affected authorities and parties.
- 2. Adopt state legislation needed to support AI regulation without stifling innovation.
 - a. Adopt a comprehensive Data Privacy law similar to other states.
 - b. Adopt an updated Deep Fake law to include election interference, transparency and labeling.
 - c. Embed requirements for full transparency and disclosure when utilizing AI to maintain public trust.
- 3. Adopt a statewide definition of AI: 'Artificial intelligence system' means an engineered or machine based system that emulates the capability of a person to receive audio, visual, text, or any other form of information and use the information received to emulate a human cognitive process, including, but not limited to, learning, generalizing, reasoning, planning, predicting, acting, or communicating; provided, however, that artificial intelligence systems may vary in the forms of information they can receive and in the human cognitive processes they can emulate.
- 4. Continue statewide efforts to monitor and update state law and regulations as AI technology develops.
 - a. Create a state board for Artificial Intelligence.
 - b. Continue the work of the Senate Study Committee on Artificial Intelligence to 2025.
 - c. Continue to work with other states at how to craft future AI legislation and potential state compacts.
- 5. Emphasize data provenance with a functionality driven approach, recommending certain AI enabled tools for use by public entities and agencies.
- 6. Require reporting on AI tools in use and ROI data.

Education & Workforce Development

AI can enhance educational experiences through personalized learning and assistive technologies. The testimonies highlighted concerns about AI's role in primary and secondary education, specifically regarding children relying too heavily on technology. Integrating AI into education should focus on developing critical thinking skills and responsible tool use. Schools and institutions that forbid the use of Artificial Intelligence outright are not preparing their students to meet the AI skills companies will need when they graduate.

- 7. Encourage public and private partnerships to develop AI pathways in Georgia K-12 schools.
- 8. Support state-sponsored upskilling and reskilling programs in conjunction with educational institutions to provide training to the workforce.
- 9. Develop AI Plans for K-12 education in Georgia.
- 10. Work to create AI Plans for USG & TCSG.

Public Safety

AI-enabled emergency response systems and data-driven predictive models benefit public safety.

11. Work with local and state law enforcement agencies to identify and support appropriate uses of AI to increase the efficiency of emergency response and management.

<u>Healthcare</u>

AI offers significant benefits in patient care, predictive analytics, and administrative efficiency for the healthcare industry. Testimonies stressed the importance of governance to ensure patient safety, data privacy, and public trust. Responsible Use of AI governing bodies within the institutions themselves are helping provide a framework for self-governance.

- 12. Work with appropriate state agencies to identify and support the accessibility of AI enabled tools to increase efficiency in healthcare and improve healthcare outcomes, particularly in communities with fewer resources.
- 13. Keep in mind mental healthcare services and examine the ways in which AI could impact mental health generally.

Transparency, Human Oversight, & Accountability

There must be a statewide commitment to maintain public trust and require safe and ethical uses of AI.

- 14. Enforce transparency as a key principle for any AI system operating in Georgia. Companies should disclose how AI is used in products and services, especially where it impacts personal freedoms, financial stability, or individual health (physical and emotional).
- 15. Provide voluntary certification programs for companies that demonstrate commitment to transparency.
- 16. Any interaction between an AI interface and a human must include a full disclosure.
- 17. Deep fake interactions used to confuse or spread disinformation should be criminalized with severe penalties. Advertising, influencing, intimidating, or coercing individuals/entities through deep fake AI has no legitimate purpose and should be identified and banned with developers held accountable.
- 18. Any AI product should be held to the same legal liability standards as a physical product. If the AI product causes harm, the injured party should have the same protections as they would have had if injured by a physical product.

19. Encourage the adoption of Human-in-the-Loop and Human-on-the-Loop frameworks for AI systems, particularly in sensitive sectors like healthcare, public safety, and finance. These frameworks will help maintain accountability and ensure ethical decision-making.

Industry-Specific Findings

Entertainment Industry: The entertainment sector, a significant contributor to Georgia's economy, sees great potential in AI for content production, visual effects, and intellectual property management. However, the industry faces growing competition from international markets, and productions are increasingly moving overseas. AI development could be a means to retain production in Georgia if strategic incentives are provided to support AI research and production capabilities within the state.

20. Expand incentives for Georgia-based entertainment projects that incorporate AI innovation. This will help retain productions within the state and foster a culture of AI research and development in media and content creation.

Agriculture: AI is promising to improve agricultural efficiency in Georgia, from predictive insights for crop yields to real-time monitoring of soil and environmental conditions. The technology has significant potential to assist farmers in making data-driven decisions, enhancing productivity, and reducing resource wastage. However, smaller farms often face financial barriers to accessing AI-powered technologies, highlighting the need for targeted support and funding mechanisms.

21. Foster targeted private financial aid programs or provide AI-based technology grants to smaller agricultural operations. This support can ensure equitable access to AI-powered solutions for precision agriculture, helping small-scale farmers enhance productivity and efficiency.

Manufacturing: AI is already a key player in optimizing operations, ensuring worker safety, and enhancing product development in Georgia's manufacturing sector. However, concerns were raised about digital maturity and the readiness of the existing workforce to adopt AI technologies effectively. Accelerating the trend of manufacturing operations are moving back to US shores, with smaller, leaner and more automated operations by providing AI and robotics-based incentives would help bring more manufacturing operations to the State of Georgia.

22. Foster collaborations between the public sector, private industries, and academia to drive AI research, responsible AI usage, and workforce development. These partnerships can help bridge the talent gap and ensure workers have the skills to succeed in an AI-driven economy.

Respectfully Submitted,

FINAL REPORT OF THE SENATE STUDY COMMITTEE ON **ARTIFICIAL INTELLIGENCE (SR 476)**

Senator John Albers – Committee Chairman District 56

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· at a fire

APPENDICES

APPENDIX A





Pascal Van Hentenryck, Director

Director, NSF AI Institute for Advances in Optimization A. Russell Chandler III Chair and Professor Georgia Institute of Technology



A Theme and a Vision

Trustworthy AI for Societal Impact





Trustworthy AI for Societal Impact for engineering, science, and education

Tech Al







Tec



Best Artificial Intelligent Ranked in 2024, part of Best Science Schools Artificial intelligence is an evolving field that requires broad traini science, cognitive psychology and engineering. These are the be	ng, so courses typically involve principles of computer st artificial intelligence programs. Read the methodology	
Carnegie Mellon University Pittsburgh, PA #1 in Artificial Intelligence Save Massachusetts Institute of Technology	Stanford Universi ty Stanford, CA #4 in Artificial Intelligence " Save	
Cambridge, MA #2 in Artificial Intelligence Q Save University of CaliforniaBerkeley Berkeley, CA #3 in Artificial Intelligence Q Save	Georgia Institut,e of Technology Atlanta, GA #5 in Artific ial Intelligence	Tech

Tech Al

Georgia Tech has produced **3.2%** of all current Al talent. The Atlantabased university beat out the University of California at Berkeley, Carnegie Mellon University, Stanford University and University of Southern California. Mar 25, 2024

The Business Journals https://www.bizjournals.com > atlanta > news > 2024/03/25

Georgia Tech graduates make for most AI talent in US, per JLL ...

Tech



NSF AI Institutes at Tech AI



Adult Learning and Online Education

focusing on personalized and self-directed learning at scale



Supports older adults, caregivers & providers

focusing on mild cognitive impairment and home care Al Institute for Advances

Trustworthy AI for engineering

focusing on energy, supply chains, manufacturing, agriculture, health care.

Tech

IRIs













Tec

Jill Watson and AI-ALOE

- Virtual Teaching Assistant
 - Created in 2015 to help online computer science courses
 - · Answered routine questions on the forum
 - 90% accuracy
 - · Since then, helped 50 human GAs and about 1500 students







Use Case in the Semi-Conductor Industry



On average:

0.30% optimality gap (with LP)

61.95% reduction in runtime

TIME HORIZON

•1 month

- •2,154,563 variables
- 924,407 integers







Tech

Maker Space



Seth Bonder Camps for K-12 Students





AI Hub at Clark Atlanta University







APPENDIX B

Artificial Intelligence at UGA

Jeanette Taylor Vice Provost for Academic Affairs

GEORGIA



AI at UGA

- 40 years of organized AI research and teaching at UGA
- Presidential Hiring Initiatives on AI and Data Science
- Teaching and learning
- Research initiatives and support
- Faculty and student awards
- Leadership Council on AI



40 Years of AI at UGA

- **1984** Artificial Intelligence Research Group formed
- **1995** Artificial Intelligence Center created
- **2008** Institute for Artificial Intelligence (IAI)
- **2024** IAI elevated to the Office of the Provost

- **198**7 Master's degree in AI approved
- **1999** Bachelor's degree in Cognitive Science approved
- 2022 PhD in AI approved
- **2024** AI + X certificate being developed

🛱 UNIVERSITY OF GEORGIA



Presidential Hiring Initiative on AI and Data Science (2021)

- Hire 50 faculty across multiple disciplines
 - AI, Data Science, and the Dynamics of Infectious Diseases
 - Environmental AI
 - Ethics, Data, and AI
 - Precision One Health
 - Secure AI Systems for Biomedical Applications
 - Integrative Precision Agriculture Center of Excellence
 - Machine Learning Applications in Cyber Physical System
 Security
 - Resilient Infrastructure

🛄 UNIVERSITY OF GEORGIA



Presidential Hiring Initiative on AI and Data Science Extension (2022)

- Expand initiative by 20 faculty
 - AI in Social Sciences
 - AI in Teaching and Learning



Colleges Participating in AI and Data Science Hiring Initiative

- College of Engineering
- Odum School of Ecology
- College of Public Health
- Franklin College of Arts and Sciences
- Terry College of Business
- College of Family and Consumer Sciences

- College of Vet Med
- College of Pharmacy
- College of Ag & Env Sci
- College of Education
- School of Public and International Affairs
- School of Social Work



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AI in Teaching and Learning

- 2023 Academic Affairs Symposium on AI
 - Faculty recommendations for AI in teaching and learning
- Center for Teaching and Learning
 - Host site for faculty resources
 - Generative AI & Teaching two-day intensive workshop
 - 100+ faculty registered
 - Support for Faculty Learning Communities
 - Innovating with AI: In and Beyond the Classroom (2023-24)
 - Faculty for Immersive Technologies (2024-25)





Research Initiatives and Support

- AI Team Acceleration Event (February 2023)
- AI Affinity Groups
- Presidential Interdisciplinary Seed Grants
 - Precision agriculture for pest challenges to fruit crops
 - Socio-technical solutions for countering AI-generated deep fakes

🕅 UNIVERSITY OF GEORGIA

• Developing applied institutional ethics for the age of AI: interdisciplinary approaches





Leadership Council on AI

- Guide UGA efforts on
 - Making UGA a leader on interdisciplinary AI research and applications
 - Teaching and learning and policies related to use of AI
 - Investment in tenure-track faculty hires and the tools and support they need
 - · Harnessing AI as a tool for administrative efficiency





Leadership Council on AI

- Currently developing recommendations for guidance and policies on
 - AI literacy
 - Teaching
 - Research and graduate education
 - Security

UNIVERSITY OF GEORGIA
The Impact of AI on Higher Education & AI Bias

Nicholas Barry Creel, M.A., J.D. LL.M., Ph.D. Associate Professor of Business Law Director of the Center for Innovation and Entrepreneurship Georgia College & State University

AI & Higher Education

- This is a workforce development issue!
 - If American education shuns AI, American workers will be at a competitive disadvantage
- We must incentivize universities to change FAST
 - Launch centers on AI
 - Educate the educators

AI & Higher Education

• Is AI an existential threat to higher education?



- Fear of a new technology potentially ruining education is far from new
 - Socrates was notoriously not a fan of....writing things down
 - Calculators & computers also didn't destroy learning either

AI & Higher Education

• A rhetorical question for you all...why didn't the internet lead to the end of real-life romantic relationships?

 The MOOC (Massive Online Open Course) movement's failure to disrupt higher ed is instructive when looking at what to expect from AI here

AI & Higher Education

- Not all schools will be affected equally by AI
 - The human element in education will become more important than ever
 - Failure to learn this lesson will harm higher ed, not AI

The Lesson of the Liberal Arts

- This is about the deployment of technology in teaching, not its development
- Don't push universities to double down on STEM
 - Liberal arts institutions are built on producing generalists, which employers in AI want
 - We also need people who can answer questions AI can't



The Lesson of the Liberal Arts

- Soft Skills will become more important as AI develops
 - Teamwork, public speaking, problem solving, critical thinking, adaptability....
 - Smaller class sizes & more F2F interaction is the key
 - AI can help deliver this!

AI & Higher Education

- Plagiarism standards are increasingly outdated
 - We also need to rethink *why* we look to prevent and punish plagiarism as we grapple with this
 - We don't want them to bypass learning the fundamentals
 - Detection of AI written work is also, functionally, not reliable at the moment
 - Solution?
 - Watermark?
 - Teachers need to get crafty in the meantime
- This is not just a student issue.....



AI & Higher Education

- Efficiency gains will come to teachers, administrators and staff alike
 - Displacement is very possible
 - We must look at how this affects tenure/promotion standards
 - The triad of review needs revisiting for all universities if we are to maximize student success

AI & Higher Education

- Al can help us expand international student population
 - Translation abilities can allow us to expand the applicant pool without putting them at a disadvantage
- Bias in automated admission is possible...which brings me to the next topic of discussion

Al Bias

What Do We Mean by Al Bias?



What Do We Mean by Al Bias?

- Al isn't human...so how can it be biased?
 - Discriminatory data & algorithms can get baked into AI models by humans & that influences its results
 - This can be and often is entirely unintentional

Examples of Bias in Al

- Review data sampling for over and underrepresented groups within the Al's training data
 - <u>Google's online advertising system</u> displayed high-paying positions to males more often than to women
 - <u>Al chatbot ChatGPT has been known to carry an overtly liberal political bias</u>
 - + $\underline{I}t$ would write poems admiring Biden on command while refusing to do so for Trump

Al Bias Can Be Overcome

- Step One: Admit you have a problem
 - This is so much harder than it seems
 - It takes active work
- Step Two: Correct the bias, or at least make users aware of it

Early Movers Addressing Bias in Al

- Colorado passed <u>a law which</u> requiring AI developers to conduct "algorithmic impact assessments" on racial, political, religious and other biases within their models.
- There is a rebuttable presumption that a developer used reasonable care if the developer complied with specified provisions in the act including the assessment and a wide degree of disclosures
 - Transparency is highly embraced here

Gen-Al Impact On NIL Rights

Presented by Julie Feagin CEO of FilmBook Media & VIP Rights



What Are NIL Rights?

- Your right to control your digital image, likeness, and voice
- Your rights of publicity

What We Will Cover

- Importance of NIL rights
- Knowledge to protect yourself, your family, constituents, and clients
- Retaining the thriving, \$4 Billion film and entertainment industry in the Peach State

Legal Issues

- Fair Use
- Publicly Available Content
- Copyright
- Rights to AI-Generated Content

IT HAS BEEN ARGUED THAT

Al-Generated Content is **NOT** REAL

BUT IT HAS **VERY** REAL CONSEQUENCES.

IT CAN CAUSE EMOTIONALAND FINANCIAL HARM.



What's The Difference?

- Deepfake
- Synthetic Performer
- Digital Twin

Deepfake:

- Fake content created from real photos, videos, and recordings of a person using Altechnology
- Creator can make you say or do anything they wish
- Can be entertaining or damaging to your reputation



Synthetic Performer:

- A realistic fake human created from images of real people
- Typically AI-generated
- Can have the likeness of a real person



Miquela has more than 3.5 million followers on TikTok

Digital Twin:

- A digital replica of a real person
- Typically created from 3D scans
- Levels of fidelity from background to "hero" asset for gaming, productions, commercials, and virtual experiences





The Actors & Writers Guilds Demanded:

- Credit
- Consent
- Compensation
- Control

Credit

- Writers to receive proper credit
- \cdot They are the authors of the story
- Writers can use AI as another tool

Consent

Compensation

- SAG members control the use of their digital likeness, voice, and digital twin
- Contracts are project based and time boxed
- No "Frankenstein" synthetic performers from SAG members

- Fair compensation for SAG members
- SAG is compensated for use of synthetic performers

Control

- Everyone should control their NIL rights
- Laws focus on copyright protections
- NIL protections for AI-generated content is needed

Current & Proposed Legislation

for NIL rights



W NO FAKES Act



NIL rights policies need to be modernized for the AI era



900% Surge of deepfake videos online DEEPFAKES : REAL THREAT Predicted losses to Al fraud by 2027

100,000+ Al Models Generating Deepfakes

KPMG

600,000+ Images of Ordinary People Processed on an

AI App Within First 15 Days

Dove predicts **90%** of content will be Al-generated by 2025

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Resources

- · Creative Media- Peter Csathy https://creativemedia.biz
- The BrAIn podcast Episode: Media Companies: To Litig-AI-te or License? How to Decide (& the State of GenAI Law)
- The AI Daily Brief (Formerly the AI Breakdown) by Nathaniel Whittemore Episode: Another AI Sorta Acquisition of Character AI as Founders Head (Back) to Google.
- Pivot with Kara swisher and Scott Galloway: Episode 538 (start around minute 35)
- The Journal Podcast Episode: Teens Are Falling Victim to AI Fake Nudes

 Generative AI is expected to magnify the risk of deepfakes and other fraud in banking by Deloitte https://www2.deloitte.com/us/en/insights/industry/financial-services/financial-services-industrypredictions/2024/deepfake-banking-fraud-risk-on-the-rise.html

- Deepfakes: A Real Threat by KPMG https://kpmg.com/kpmg-us/content/dam/kpmg/pdf/2023/deepfakes-real-threat.pdf
- Proposed Amendments to NY Film Production Tax Credit Would Disallow Costs for Artificial
 Intelligence

http://www.gtlaw.com/en/insights/2023/10/proposed-amendments-to-ny-film-production-tax-credit-woulddisallow-costs-for-artificial-intelligence

APPENDIX E



Al in Transportation

Alan Davis, PE, PTOE State Traffic Engineer





Office of Traffic Operations

- Interstates, Incident Management, and ITS
- Arterials and Traffic Signals
- · Safety, Operational Improvement, and Permitting
- Connected and Autonomous Vehicles
- And a little bit of everything else...







GDOT's Transportation Management Center









AI in Transportation

Focus Areas

- Safety
- Traffic Management
- Workforce
- Freight and Logistics
- Risks





Al in Transportation – Traffic Management





Al in Transportation – Traffic Management

What the future holds

- Video analytics beyond automated incident detection
- Congestion and traffic optimization strategies through advanced systems
- Workforce efficiencies
- Instantaneous analytics of data libraries
- Automation and enhanced decision support systems







Al in Transportation – Safety







AI in Transportation – Safety and Data Analytics





Al in Transportation – Data Analytics

Building the Digital Interstates

- Every device and sensor a tool for safety and mobility
 - ITS devices
 - Traffic signals
 - Connected vehicle infrastructure
- AI and ML needed to make sense of data
- Infrastructure build-out for tomorrow's data needs





Al in Transportation – Freight and Logistics

Private Sector Partnerships

- Supply chain optimization:
 - route planning
 - load optimization
 - predictive maintenance
- Logistics companies using AI today
- Improved delivery times, cost savings, and sustainability





2023 Typical Congestion (Trucks Only)





Al in Transportation – Workforce

- The robots aren't replacing the transportation workforce
- Engineering practice and judgement in an Al-aided profession







Risks and Challenges

- A man, a goat, and a boat
- Cybersecurity
- The evolving workforce





What is AI?

Artificial intelligence, or AI, is technology that enables computers and machines to simulate human intelligence and problem-solving capabilities.

On its own or combined with other technologies (e.g., sensors, geolocation, robotics) AI can perform tasks that would otherwise require human intelligence or intervention. Digital assistants, GPS guidance, autonomous vehicles, and generative AI tools (like Open AI's Chat GPT) are just a few examples of AI in the daily news and our daily lives.



AI IN GOVERNMENT

Curiosity Lab



USE CASES

"City Street of the Future"







⊞

Autonomous Vehicles (Public Transportation Options)

City Street of the Future

State-of-the-art smartcity infrastructure



Connected Vehicles Connected Infrastructure / V2X Test Platform



Service Enhancements Website Chatbots, Automatic Ticket Creation, Building Permit Review





AUTONOMOUS/ADVANCED VEHICLES.

Curiosity Lab

Real world integration of docking operations



Teleoperated E-scooter as a service



Autonomous drone delivery technologies



Autonomous Vehicles



ALWAYS PROTECTING/CV2X.

Curiosity Lab

communication technology that allows vehicles to connect with other vehicles, pedestrians, cyclists, and roadside infrastructure





First Fully Integrated CV2X Network in U.S.A

Pedestrian detection using Bosch AI camera and broadcasting BSM for pedestrian awareness over PC5 to oncoming vehicles

Partnered with Audi for testing full CV2X integration within the Audi vehicle for VRU alerts

Installed a rapid flashing beacon cross walk connected to a CV2X Roadside Unit for pedestrian alerts to oncoming vehicles, when a pedestrian is in the crosswalk.

City Services.

<page-header><figure><figure><figure><figure><figure>

Overview o

Filtered Units (4) ± Units in Cluster (3) → Status ÷ Description

A2006302007AA22

A2006302007AA20

A2006302007AA23

at Peachtree Corners

CleanCityNetworks Overview Statistics - Units - Users Support

Fill-level

16% 🔳

0%

15% 🔳

Last Collection Date

Tue, 25/4/23 04:38 PM

Fri, 5/8/22 08:09 PM

Fri, 9/12/22 07:12 PM

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5170 Town Center Blvd, Peachtre

5224 Town Center Blvd. Peachtre-

Town Green, 5140 Town Center Bl-

Address



TechNet Southeast | Telephone 956.266.2588 P.O. Box 82454, Austin, TX 78708 www.technet.org | @TechNetSE

September 12, 2024

Members of the Senate Artificial Intelligence Study Committee 421-C State Capitol Atlanta, GA 30334 Members of the House Technology and Infrastructure Innovation Artificial Intelligence Subcommittee 416-B State Capitol Atlanta, GA 30334

RE: TechNet Testimony to the Senate AI Study Committee and House Technology and Infrastructure Innovation AI Subcommittee

Dear Chairman Albers, Chairman Jones, and members,

Thank you for the opportunity to present the technology industry's perspective on artificial intelligence (AI). Society is on the cusp of an industrial revolution due to these technologies. We appreciate the work of these committees and the genuine interest in learning more about AI ahead of the next legislative session. We believe this intentional approach to first study the issue and hear from stakeholders will ultimately benefit the state's innovation economy and Georgians.

TechNet is the national, bipartisan network of technology CEOs and senior executives that promotes the growth of the innovation economy by advocating a targeted policy agenda at the federal and 50-state level. TechNet's diverse membership includes dynamic American businesses ranging from startups to the most iconic companies on the planet and represents over 4.4 million employees and countless customers in the fields of information technology, artificial intelligence, ecommerce, the sharing and gig economies, advanced energy, transportation, cybersecurity, venture capital, and finance.

TechNet members have been leaders on the responsible development and deployment of advanced generative AI systems that have captured the world's attention. Our companies have also been at the forefront of AI that has long helped us in our daily lives – navigating traffic, searching the internet, securing our mobile devices, homes, and bank accounts, translating languages, and discovering new music and other entertainment. New AI technologies provide even more potential to improve people's lives – and society broadly – on a larger scale.

AI Use Cases

TechNet operates the AI for America initiative to educate the public about how AI is being used to improve lives, grow our economy, and keep us safe. The initiative combines coalition building, advocacy, social media, and traditional media to



demonstrate the immense economic and societal benefits of AI. In the course of this work, we have learned about several ways that AI has already been deployed and improving the lives and livelihoods of Americans.

Georgia in particular stands to benefit from these new technologies. In 2023, Georgia was a Top 10 state in the country for net technology employment, net technology job gains, and job postings for technology openings.¹ As a hub of innovation, virtually every other sector of employment in Georgia can enjoy the positive impacts on increasing workforce productivity and reskilling or upskilling workers with new, competitive skills. I want to first highlight a few sectors where we've seen the responsible use of advanced AI technologies, including a few here in Georgia.

AI and healthcare

AI is becoming an increasingly critical component of the healthcare ecosystem, and its applications have great potential to help alleviate any issues that may be faced by the state's healthcare sector. AI is already helping to increase efficiency across the medical field by removing bottlenecks. NetApp, for instance, has AI-driven solutions aimed at issues facing organizations' edge, core, and cloud to enable more efficient data collection, faster AI workloads, and smoother cloud integration. Their work allows for data silos to be broken down to enable real-time diagnosis and to streamline administration.

Disease identification is another area where AI has been deployed. Deepmind's AlphaMissense AI model has significantly advanced the ability to identify the root cause of diseases through accurate predictions about "missense" mutations or "misspellings" in human DNA code. This empowers researchers and scientists to determine what is likely pathogenic versus what is likely benign.

There is also Healthvana and its HIPAA-secure AI Navigator powered by OpenAI to help end HIV. This navigator has been integrated into healthcare patient portals in 17 states, and it is helping partnered providers focused on providing services to underserved communities and individuals at disproportional risk for HIV. There are also AI technologies that assist with detection of specific diseases, like Alzheimer's disease or pancreatic cancer.

AI and transportation and manufacturing

In the transportation industry, AI is already being used to enhance efficiency, safety, and sustainability. Traffic management and flight route enhancement solutions are making us more mobile and improving our commerce. There are also solutions to make transportation options more accessible and navigable for consumers. For example, Delta Airlines built a new customer service tool on Amazon Bedrock to answer passenger questions in a more conversational style. It

¹ CompTIA, State of the Tech Workforce 2024, https://comptiacdn.azureedge.net/webcontent/docs/default-source/research-reports/comptia-state-of-the-tech-workforce-2024.pdf?sfvrsn=a8aa5246 2.



can respond to a range of questions from something as simple as, "How many bags can I check on a Delta flight?" to much more complex questions like, "Can I carry a pet with me in the cabin to Jamaica?".

Georgia is seeing efficiencies and improvements in the manufacturing industry as well. For example, Georgia-Pacific uses Amazon SageMaker, which is a machinelearning (ML) solution, to build, train, and deploy ML models at scale. As Georgia-Pacific manufactures hundreds of paper and tissue parent rolls every day, it's crucial to prevent frequent tears or breaks that can lead to paper machine and converting-line downtime that could cost millions of dollars per year per line. To manage this, the ML models used by Georgia-Pacific can provide real-time feedback to machine operators on factors like optimum machine speeds and other adjustable variables.

AI and education/workforce development

Education and workforce development will be crucial to address as AI technologies continue to advance. Knowing how to use these technologies will make the workers of today and tomorrow competitive in the job market. It makes sense, then, to leverage AI solutions in this space as well.

For K-12 students, AI is changing the way students learn by allowing them to learn what they want – how and when they want. For example, Chegg has an AI-powered personalized learning assistant that can break down tough concepts into easy-tolearn steps and meets each learner where they are. They also provide 24/7 ondemand support with personalized learning tools and high-quality learning content.

In higher education, students of all ages have access to new courses that will prepare them for jobs involving AI. You have heard previously about how some of Georgia's higher education institutions are already offering programs and courses to master AI and machine learning competencies. Industry is also involved in helping design and provide similar programs and courses as well, either independently online or in partnership with higher education institutions and other providers.

The job market will also benefit. Georgians who are looking for a job will see notable improvements as they navigate available employment opportunities as AI is being used to help match their skills to a broader variety of roles and identify vertical or horizontal career options. In turn, employers will be able to hire more efficiently and effectively as their pool of relevant applicants broadens. AI can address the barriers preventing Georgians who typically face barriers to employment, like veterans or individuals without a postsecondary credential, from being considered for jobs that they are otherwise qualified for through their skills and previous experiences.

Data Privacy and Cybersecurity Policy Considerations



The solutions and technologies presented above involve complex models operating at various levels, but at the end of the day, they all rely on high-quality data. This is a foundational component of these advanced AI technologies, necessitating careful data privacy and cybersecurity practices to be at the core of responsible development and deployment. It is important to note that these are two sides of the same coin – a more secure system or tool is one that is also more respective of privacy. This is why TechNet members endeavor to not only have strong data privacy and cybersecurity policies in place but also to continue innovation in these fields for better protection.

To support these efforts, one of our key recommendations presented to policymakers is to ensure that data privacy and cybersecurity proposals are interoperable. TechNet continues to advocate for a federal data privacy framework as this is what will allow companies to best comply in good faith while minimizing confusion for both companies and consumers alike across jurisdictions. In absence of this framework, there are existing state-level frameworks that are generally interoperable with one another and provide a balance between providing consumer rights and allowing for compliance that is not burdensome.

We raise this point as it is one of our policy principles at TechNet that comprehensive, interoperable data privacy law should precede AI regulations. TechNet members already take great care to maintain the privacy of consumers' data. AI systems are no exception, as existing data privacy requirements in state unfair and deceptive practice statutes and/or comprehensive data privacy laws apply to AI. For instance, established consumer rights over their individual data in states with comprehensive data privacy laws apply to the outputs of AI systems as well.

This is the same case with existing cybersecurity laws that are relevant to the covered data. TechNet members strive to protect their systems and data from cybersecurity threats. This is especially the case with AI systems given not only their sizeable costs but also due to the potential attackers. Cybercriminals and foreign actors from hostile nation states could potentially target these systems, so TechNet members respond accordingly and heighten cybersecurity protocols and practices where needed. It is imperative that we can innovate in this space and respond with appropriate flexibility, so it is crucial for states to avoid cybersecurity proposals that are potentially misaligned with other existing laws and industry standards and best practices.

We also raise the importance of leveraging existing authorities provided by state laws that afford substantive legal protections, which is another one of our policy principles. There are state agencies that have already acted within their existing authorities to respond to the increasing use of AI of their constituents. For example, the Texas Department of Insurance has been notifying regulated insurers that they are responsible for the accuracy of data used for rating, underwriting, and claims handling. They have interpreted this to apply to data in AI systems and tools used



by an insurer. Monitoring and enforcement actions they can take include looking at the results of models, asking questions about the data used, and pushing back on faulty data. By staying consistent with existing authorities that are technologyneutral, we believe that states will avoid duplicative or, worse, conflicting requirements that could introduce confusion and serve as a detriment to state agencies, regulated entities, companies within the AI value chain, and consumers alike.

Private Sector Data Privacy and Cybersecurity Efforts

While coalescence around uniform industry standards is still in progress given the relative nascence of the AI technologies, TechNet members are leading the work to develop and advance standards and best practices. There are several ongoing efforts, such as the work led by the Cloud Security Alliance (CSA) to bring together cybersecurity practitioners across industry to tackle the implications of AI technologies. CSA has allowed for input from throughout the industry to be considered so that, together, industry can build meaningful cybersecurity standards and best practices for compliance. They also work to enhance consumer education targeted at individuals and companies/organizations alike which will, in turn, likely raise additional considerations for practitioners to address.

Of course, industry already has robust data privacy and cybersecurity policies and practices in place. Some of these may be included in practitioners' discussions, but there are also some that are proven to be effective largely because data privacy and cybersecurity have long undergirded various types of technologies. Below are some examples that are being used by companies.

Data hygiene

Since data serves as the foundation of AI systems, it makes sense that companies take great care to manage and maintain the security and quality of their data. This includes pre-cleaning data before it's even put into the AI system so that undesirable outputs are mitigated from the onset. Identifying potential harms that could be caused by the data – assessing whether there may be bias, for example – accompanies this work. Another consideration taken by companies is determining whether there is personal information in their data so that it can be removed or anonymized as appropriate.

Model design

Companies take extensive steps to ensure their AI systems are not generating irresponsible outputs. For example, there are efforts to integrate consumer privacy into the design of systems, like rigorous training, filter development, and output cleaning so that systems reject requests for sensitive or personal information as well as prevent personal information from showing up in outputs. Companies also directly work on their systems so that it respects privacy such as through feedback processes where machine learning is reinforced by humans.



Internal and external policies

TechNet members value transparency in the development and deployment of AI systems. Companies release comprehensive data privacy policies, for example, so that everyone can see how their data may be handled. Companies also have internal cybersecurity policies that thoroughly detail the appropriate handling of their data and their systems so that current, planned, and exigent development and maintenance always adhere to their policies. This could also include explicitly outlining who actually has access to the data or model weights, as well as the steps they must take to achieve that access, since it is often determined that these should not be accessible by every employee.

Externally, companies also ensure they have accessible policies for their customers. TechNet members take seriously their duties as vendors and provide the necessary support so that customers are safely and responsibly using their AI solutions. Companies have terms of service agreements that detail what constitutes misuse of their systems and intellectual property. They also have dedicated trust and safety teams whose job is to prevent such misuse, whether intentional or not. These teams can help monitor usage, provide technical expertise to customers, create classifiers for customer use cases making it easier to detect violations, and deploy appropriate responses where needed.

Existing standards

As stated earlier, while some AI systems may be new, industry's work on data privacy and cybersecurity for their technology solutions is not. There are some existing standards that TechNet members have adopted or adapted, like the National Institute of Standards and Technology's (NIST) Cybersecurity Framework. NIST has also created an AI Risk Manage Framework (RMF) and a more recent AI RMF for Generative AI, along with other resources. As these new resources continue to be deployed by companies, we will see more and more how they work in practice, which will enhance policymaking efforts in turn.

AI solutions

It should be no surprise that there are AI systems and tools for cybersecurity purposes. There are many different examples. For instance, Mastercard has created a new generative AI model, Decision Intelligence Pro, that help financial institution improve their fraud detection rates by as much as 300%. Trained on data from the roughly 125 billion transactions that pass through their network annually, the system uses historical data to analyze merchant relationships and predict fraudulent transactions.

Another platform is IBM's Watson, which will soon be used to provide cybersecurity analysts with a major edge in fighting cyberattacks by enhancing the human capability to parse vast amounts of security-related information quickly. Watson is uniquely positioned to handle both the volume of information and discern the crucial context that determines what sort of threats exist. Analysts will also be able to use Watson to help scour unstructured data and seek out anomalies and


indicators that might correlate suspicious activity to other factors in the cyber domain.

Research and collaboration

As industry collaborates with one another, companies are also making sure to democratize their knowledge through research publication. In both data privacy and cybersecurity, TechNet members have made significant contributions to the general knowledge base by sharing their findings with academia and government actors.

TechNet AI Policy Principles

As I hope you've seen, AI has the potential to solve the greatest challenges of our time. We also recognize that addressing the genuine risks associated with these new technologies is crucial for their responsible development and deployment. TechNet members are proactively tackling these concerns with the following strategies:

- Rigorously testing AI systems based on risk levels before release to ensure safety and reliability
- Collaborating with industry, government, and academic experts to share knowledge and identify potential risks
- Allowing for independent review to uncover vulnerabilities
- Prioritizing research on potential risks, such as bias and job displacement

With efforts like this hearing, we believe Georgia policymakers are taking the right steps to better understand the work that is being done now to allow for innovation while protecting consumers. We should not rush to regulations which can stifle creativity, deter investment, and slow down progress, ultimately hindering the potential benefits that these technologies can offer and risk ceding technological leadership to foreign adversaries. The key is finding a delicate balance between safeguarding against potential harms and encouraging innovation and technological breakthroughs.

To this end, TechNet is advocating for a federal framework that provides uniformity for all Americans, drives innovation, and ensures that consumers are protected. Absent such a framework, we strongly recommend interoperability across states. TechNet and our members have developed policy principles on AI through a robust and comprehensive process. We believe these principles can help develop an interoperable framework. Note that TechNet is currently undertaking our annual update of our policy principles, including these principles on AI. We are accounting for the significant activity in AI policy from state legislatures this year, so there may be additional information to share upon the completion of this process.

- Comprehensive, interoperable data privacy laws should precede AI regulations.
- Avoid blanket prohibitions on artificial intelligence, machine learning, or other forms of automated decision-making. Reserve any restrictions only for



specific, identified use-cases that present a clearly demonstrated risk of unacceptable harm, and narrowly tailor those requirements to the harms identified.

- Do not force developers or deployers of AI/machine learning (ML) to share publicly information that is proprietary or protected, and do not require an AI registry. Ensure safety and security of information by ensuring data retention requirements are appropriately scoped to need and clearly defined by law.
- Leverage existing authorities under state law that already provide substantive legal protections, and limit new authorities specific to the operation of artificial intelligence, machine learning, and similar technologies where existing authorities are demonstrably inadequate.
- Ensure any requirements on automated decision tools focus on high-risk uses, defined as those uses reasonably likely to result in the loss of life or liberty or have legal effects, and those decisions based solely on automated decisions.
- Regulation should encourage clear disclosure of AI systems e.g., use of simulated personas like chatbots should be clearly identified.
- Avoid overly broad designations that lead to uncertainty of who and what is affected — for example, statutory language that reads "including but not limited to ...".
- Limit enforcement to the relevant state agencies and avoid private rights of action. Ensure any enforcement actions limit damage awards to clearly cognizable forms of actual demonstrated harms directly resulting from violations of the law.
- Provide safe harbors for companies that test and mitigate any bias or issues found in AI systems, as well as a reasonable right to cure period upon notice.
- Ensure sensitive data with appropriate cybersecurity protections can be used to conduct internal testing and foundation model training to ensure algorithms work inclusively and as intended by developers.
- Ensure any requirements are clearly allocated to specific roles in the artificial intelligence value chain.
- Recognize the different roles and responsibilities of "developers" and "deployers" of AI, including their technical limitations, and regulate them distinctly as appropriate.
- Avoid a one-size-fits-all policy approach and support a risk-based framework that ensures that comparable AI use cases are subject to consistent oversight and regulation across sectors. However, some sector-specific requirements may be appropriate for specialized uses.
- Rely on self-certification mechanisms wherever possible, and avoid mandating external or third-party audits of impact assessments or risk assessments. Rather, identify the audit or assessment requirements and goals, allowing companies to determine if they are capable of conducting the audit or must seek third-party support.
- Rely on established national and international standards and frameworks, including the NIST AI Risk Management Framework and ISO standards, to



ensure interoperability and avoid a patchwork of inconsistent regulations.

However, a number of these principles can be best achieved through further study. New AI technologies are still being jointly studied by national entities and industry. The NIST AI RMF has already been mentioned as an example. We remain closely engaged in NIST's ongoing work regarding Executive Order 14110. Just last month, multiple deliverables pursuant to the order were released that included the AI RMF for Generative AI along with a Secure Software Development Framework and a Plan for Global Engagement on AI Standards. There is also an initial draft out for public comment on managing misuse risks on dual-use foundation models. As companies continue to voluntarily adopt and adapt standards like these, policymakers and companies alike will better navigate and secure a strong regulatory framework that would provide necessary protections while continuing innovation. We suggest that any relevant regulations that would benefit from uniform standards and technologies should rely on what comes out of stakeholder-driven efforts involving multiple entities like those being undertaken by NIST.

Thank you again for the opportunity to testify on behalf of the technology industry regarding new AI technologies that will undoubtedly be a watershed. We look forward to staying involved and working with you on relevant policies. Please do not hesitate to use TechNet as a resource.

Respectfully submitted,

Renzo Soto Executive Director, Texas and the Southeast TechNet

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Georgia Data Privacy Testimony 9/12/2024 Jake Denton- Research Associate, The Heritage Foundation's Tech Policy Center

Introduction:

Good afternoon, my name is Jake Denton, and I am a research associate in the Tech Policy Center at The Heritage Foundation. I want to start by first thanking you all for affording me the privilege of sharing my perspective on data privacy today.

Background:

While emerging technologies captivate our attention with promises of a transformed future, enduring challenges like data privacy continue to pose significant risks to the American people. The digital era has ushered in an industry built around data collection, one that expands in scope and sophistication with alarming rapidity and touches every corner of this state from Atlanta's tech hubs to your rural communities.

Smartphones, smartwatches, and connected gadgets have become a conduit for the relentless harvesting of our most intimate information.¹ Our movements, preferences, and behaviors are meticulously tracked, cataloged, and analyzed,² often without our explicit consent or even awareness.³ Concurrently, public spaces have evolved into vast data extraction zones. Advanced computer vision systems, often augmented with facial recognition capabilities, constantly monitor our cities, making surveillance and data harvesting nearly inescapable for the average Georgian.⁴

The scale and scope of this data collection apparatus are nothing short of staggering. Companies like Google, Facebook, and Amazon have constructed intricate user profiles that encompass not only online behaviors but also real-world activities.⁵ These profiles often include predictive or inferred data points of user preferences, financial status, and even health conditions, potentially influencing everything from job opportunities to insurance rates for Georgians. The integration of collected data with both inferred data and information purchased from third-party data brokers further expands the depth and breadth of these digital dossiers. Every click made by a Georgian,

¹ Aliza Vigderman and Gabe Turner, "The Data Big Tech Companies Have On You," Security.org, June 7, 2024, https://www.security.org/resources/data-tech-companies-have/ (accessed September 10, 2024).

² Tom Calver and Joe Miller, "What tech giants really do with your data," BBC News, July 5, 2018, https://www.bbc.com/news/business-44702483 (accessed September 10, 2024).

 ³ "Americans Get an F on Digital Privacy Knowledge," Security.org, April 14, 2021,

https://www.security.org/digital-security/american-digital-privacy-knowledge/ (accessed September 10, 2024).

⁴Dahlia Peterson and Samantha Hoffman, "Geopolitical implications of AI and digital surveillance adoption," Brookings Institute, June 2022, https://www.brookings.edu/wp-

content/uploads/2022/06/FP_20220621_surveillance_exports_peterson_hoffman_v2.pdf (accessed September 10, 2024).

⁵ Jada Jones, "Big tech is actually doing all this with your personal data. True or false?" ZDNET, June 22, 2023, https://www.zdnet.com/article/big-tech-is-actually-doing-all-this-with-your-personal-data-true-or-false/ (accessed September 10, 2024).

every credit card purchase in a local store, and social media post can be used as fodder for complex algorithms that Big Tech has designed to predict and influence our behavior.⁶

One might assume that in the face of such unprecedented intrusion into personal privacy, comprehensive federal legislation would exist to protect the rights and data of American citizens, including Georgians. Shockingly, this assumption would be incorrect. The federal government has failed in its duty to safeguard the digital rights of Americans, leaving our data vulnerable to exploitation.

As companies increasingly integrate AI into their operations, from customer service chatbots to predictive analytics, the potential for data misuse and privacy violations exponentially increases. The absence of federal guardrails means that Georgians face an ever-expanding landscape of data collection and processing, with AI systems potentially making consequential decisions based on this data without adequate oversight or transparency. In this context, it now falls to states like Georgia to take up the mantle of protecting their citizens from this digital onslaught, ensuring that the benefits of technological advancement do not come at the cost of fundamental privacy rights.

Data Collection:

To fully appreciate the urgency of this situation for Georgia's citizens, it is crucial to understand the pervasive and sophisticated nature of modern data collection practices. In today's digital ecosystem, data collection operates through a complex, multilayered architecture of hardware, software, and network technologies that permeates every aspect of our increasingly digital lives.⁷

At the device level, a myriad of sensors such as accelerometers, gyroscopes, and ambient light detectors continuously gather physical data. Operating systems and applications interface with these sensors, while also collecting user inputs, timestamps, and application usage metrics. Network-level collection occurs through packet inspection, DNS queries, and IP logging. Web browsers employ cookies, local storage, and session storage to persist user data, while serverside logging captures request headers, user agents, and interaction patterns. Advanced tracking utilizes techniques like browser fingerprinting, which creates unique identifiers based on device configurations, installed fonts, and plugin versions. Cross-device tracking leverages probabilistic matching algorithms to link user identities across platforms, often utilizing shared IP addresses or behavioral consistencies as correlation points.

The scope of collected data is staggeringly comprehensive. It encompasses not just our explicit inputs, but also our implicit behavioral patterns: our browsing histories, search queries, purchase records, social interactions, content consumption habits, and even the rhythms of our keystrokes. Increasingly, biometric data - our facial features, voice patterns, and even the way we walk - are

⁶ Abby McCourt, "Social Media Mining: The Effects of Big Data In the Age of Social Media," Media Freedom & Information Access Clinic, April 3, 2018, https://law.yale.edu/mfia/case-disclosed/social-media-mining-effects-big-data-age-social-media (accessed September 10, 2024).

⁷Erin Witte, "Factsheet: Surveillance Advertising: How Does the Tracking Work?" Consumer Federation of America, August 26, 2021, https://consumerfed.org/consumer_info/factsheet-surveillance-advertising-how-tracking-works/ (accessed September 10, 2024).

being incorporated into this vast data pool. Through sophisticated aggregation and analysis, often executed by artificial intelligence, these disparate data points coalesce into highly nuanced psychographic profiles, enabling predictive modeling of our behaviors and preferences with unprecedented accuracy.⁸

Now, if you found yourself confused by that barrage of technical jargon, rest assured – you're not alone. Yet, here's the crux of our predicament: despite this complexity, you have almost certainly provided affirmative consent to these very processes on at least one, if not all, of your devices. This is precisely what makes the issue of data privacy unique. You, distinguished members of this legislature, along with your constituents and indeed, all of us in this room, are unwitting victims of this system.

From a policy perspective, addressing this pervasive data collection presents significant challenges without robust legislative frameworks. The current model of notice and consent, typically manifested in lengthy terms of service agreements, is fundamentally inadequate. Users, overwhelmed by the volume and complexity of these agreements, often consent without full comprehension of the implications. Moreover, the interconnected nature of data ecosystems means that even if a user opts out of data collection from one service, their information may still be captured through third-party data brokers or partner networks.

The incentive structure for companies to expand data collection is deeply entrenched in current business models. Data has become a primary driver of value in the digital economy, fueling targeted advertising, product development, and strategic decision-making. The network effects and economies of scale in data accumulation create a self-reinforcing cycle, where more data leads to better services, attracting more users and generating even more data. Without legislative intervention to alter these incentives, companies will continue to push the boundaries of data collection, potentially eroding privacy to the point of practical non-existence.

Protecting Data Privacy:

To rectify the current imbalance in data privacy and safeguard the rights of Georgia's citizens while fostering a robust business environment, a comprehensive data privacy legislative framework is imperative. As Georgia stands at the intersection of technological innovation and personal privacy, it has the opportunity to pioneer a landscape that respects individual rights and promotes responsible business practices, potentially serving as a model for other states.

The cornerstone of this framework should be the mandate for transparent, accessible, and easily understandable disclosures about data practices. From Atlanta's burgeoning tech sector to the small businesses along the coastline, Georgians deserve clarity on data collection and usage practices. The current landscape of complex, jargon-filled privacy policies creates significant information asymmetry between companies and consumers. By requiring clear and concise disclosures, data privacy legislation has the potential to enable individuals to make truly

⁸ "Predictive Modeling and Machine Learning for Advertising," AXInsights, October 27, 2023, https://audiencex.com/insights/predictive-modeling-and-machine-learning/ (accessed September 10, 2024).

informed decisions about their data sharing, while providing businesses with unambiguous compliance guidelines.

A fundamental aspect of data privacy protection is the empowerment of consumers through the right to access, delete, or correct personal data that has been collected or in some cases, inferred. This allows individuals to maintain control over their digital footprint and ensures data accuracy, addressing the growing concern of "data determinism" where outdated or incorrect information can significantly impact individuals' lives. For sensitive categories such as health information, financial data, or biometrics, a stringent opt-in consent requirement should be implemented. This approach shifts the paradigm from implicit acquiescence to explicit authorization.

To complement these individual rights, legislation should also address the broader issue of data collection practices. Restrictions should be placed on the collection and use of user data, limiting it to only what is demonstrably necessary to provide the advertised service. This approach not only curbs excessive data collection but also promotes responsible business practices, encouraging companies to be more judicious and transparent in their data utilization.

To further bolster compliance and responsiveness to consumer concerns, a robust consumer complaint process should be established. This mechanism would allow Georgia residents to report suspected violations directly to an oversight body for investigation, creating a direct line of communication between citizens and regulatory authorities. Additionally, companies operating in Georgia should be required to submit annual transparency reports detailing their data practices, the number of consumer requests received and fulfilled, complaints lodged, known breaches or violations, and other pertinent information. This regular reporting fosters a culture of ongoing compliance and provides valuable data for policymakers and the public.

The Way Forward:

The implementation of effective data privacy legislation in Georgia becomes increasingly challenging with each passing day. The rapid advancements in artificial intelligence and machine learning technologies are poised to exponentially amplify data collection and analysis capabilities across critical sectors including healthcare, finance, transportation, and education. As these technologies become more deeply integrated into our daily lives and business operations, the complexity of regulating them grows, and the potential for privacy infringements expands.

As AI systems become more deeply integrated into these domains, they will capture, process, and analyze increasingly detailed information about individuals' behaviors, preferences, and characteristics. In healthcare, AI could process genetic data and lifestyle information to predict health outcomes. In finance, machine learning algorithms may analyze spending patterns and financial history with unprecedented precision. Transportation systems could track movement patterns and preferences of travelers, while educational AI could monitor learning behaviors and cognitive processes. This massive influx of detailed personal data necessitates an expeditious and proactive legislative approach that not only addresses current privacy concerns but also anticipates the complex challenges emerging from these data-intensive technologies.

Further delaying action not only makes the task of crafting comprehensive legislation more difficult but also increases the risk of entrenching problematic data practices. The longer we wait, the more our data becomes intertwined with complex systems and data sets, making it harder to implement meaningful changes without significant disruption.

As Georgia considers data privacy legislation, several existing models offer valuable reference points. The Texas Data Privacy and Security Act (TDPSA) presents a cogent framework for Georgia's policymakers to examine. Its comprehensive scope, irrespective of corporate revenue thresholds, coupled with a robust emphasis on consumer rights and consent mechanisms, provides a substantive foundation upon which Georgia can construct its own legislative framework.⁹

The implementation of comprehensive data privacy legislation not only safeguards the rights of Georgia's citizens but also has the potential to significantly enhance the state's business environment, particularly in the technology sector. Clear and well-defined privacy laws establish a stable regulatory landscape, reducing legal uncertainties and compliance risks for companies operating within Georgia. This regulatory clarity is especially appealing to technology firms and startups, who often grapple with complex and inconsistent privacy regulations across different jurisdictions. By establishing transparent guidelines and robust enforcement mechanisms, Georgia can position itself as a predictable and trustworthy business environment. This approach will attract privacy-conscious enterprises, fostering innovation and economic growth while simultaneously ensuring that the privacy rights of Georgians are protected. As data becomes increasingly central to the digital economy, Georgia has the opportunity to lead by example, demonstrating that strong privacy protections and a thriving business ecosystem are not mutually exclusive, but rather mutually reinforcing pillars of a forward-thinking approach to governance in the digital age.

Thank you all again for your time and for granting me the opportunity to share my perspective on this emerging policy challenge. I'm now ready to answer any questions you may have.

^{9 &}quot;Texas Data Privacy And Security Act," The Attorney General of Texas,

https://www.texasattorneygeneral.gov/consumer-protection/file-consumer-complaint/consumer-privacy-rights/texasdata-privacy-and-security-act (accessed September 10, 2024).

APPENDIX I

AI and Education

Kristen DiCerbo, Ph.D., Chief Learning Officer Khan Academy

THE PROBLEM

- In 2022, only 26% of 8th grade and 36% of 4th grade students are proficient in math.
- Many high schools do not offer // rigorous math courses that are critical for college and career preparedness.
- This gap widens further through high school. By grade 12, only 25% of students are proficient for grade level math based on NAEP scores.

Only 7% of African American and 11% of Hispanic/Latino 12th graders were proficient in math

2 in 3 high schools in the United States do not offer any AP math courses.

<



Improving Learning Outcomes with AI

We know students learn more when they are:

- Actively engaged with the material to be learned
- Work on material that is just at the edge of what they can do when provided with a little support
- Get immediate feedback on their responses to new material being learned
- See value in what they are learning

Courses -	Search	Q	Signal Khan Academy	AI Activities	Donate	Sal Khan
Flags	Check a11y					
						Assign
		Equ	uations with parenthe	eses 🗷		
		CCSS	.Math: 8.EE.C.7, 8.EE.C.7b Goog	gle Classroom		
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		3-2(9+2m)	= m			
		<i>m</i> =,				l
		Stuck? Review related	l articles/videos or use a hint.	Report a problem		



PROVIDE SUPPORT

- How many students sit in a class with their hand up waiting for the teacher to finish helping another student?
- How many students are at home stuck on a problem?
- If you don't know what to do first, what the next step is, or just want to check if you are thinking the right way, you can interact with the AI to help.



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w Khan Academy		This conversation is recorded. You can view in your chat histo
		Why should I care about learning this?
Equations with vari	iables on both sides	Leave feedback Rate this response 👍 🌳
CCSS.Math: 8.EE.C.7, 8.EE.C	C.7b Google Classroom	So if I combine -3r+6r+1 I get -3r+1.
Solve for r.		Hmm, not quite! 😜 When you combine the
16 - 2r = -3r + 6r + 1		terms -3r and 6r, you should add them together. What do you get when you add -3r and 6r?
r =		> Related links
		Leave feedback Rate this response 👍 👎
Stuck? Review related articles/videos or use a h	nint. Report a	Type message (do NOT share any personal data)
		Q Clear chat
		Khanmigo makes mistakes sometimes. Here's why.

Provide immediate feedback on math steps





SUPPORTING USE OF DATA

			: 🔤 Khanmigo 💷 🖈 🕐 🔺 🥐 🗡
Town Time:	Teacher Dashboard	This chat is logged. You can view in your chat history.	
Multiple courses ~	Student roster		help teachers, so please give me feedback.
TOOLS Activity overview	See which students are aready in your class, and add new students who Your students (4)	On this page, you can ask me about this class's data and their work on Khan Academy. You can also ask about the latest conversation your students had with me.	
Course Mastery	STUDENT NAME ~	USERNAME / EMAIL	 If you want to ask about a specific student, you can use "@" to select which one!
Placement	Alex Lee	alextee	 If you want to see how Khanmigo behaves for students, in the top har of this chat
Progress	Elliot May	elliotmay	window, set the toggle to Student Mode.
Assignments	Madison Rose	madisonrose	Here are few ideas of things you can ask me below:
LearnStorm 7	Ryan Baker	ryanbaker	Give me my class snapshot.
ADMIN			Who needs a check in about skills progress?
Students			Group my class based on recent progress.
Settings			Leave feedback Rate this response 👍 👎
			Type message do NOT share any personal data)
			4 @ 2 Clear chat
			Khaomigo makes mistakes sometimes. Here's why C.

LESSON PLANNING



AI Policy Needs

Student Perspectives



Students are concerned about the security and privacy of their data. (CDT, September 2023)



Students want guidance on how to responsibly use Generative AI for schoolwork and within school rules would be helpful. (CDT, September 2023)

Teach Al

• Teacher Perspectives



Teachers worldwide say AI literacy will be a key skill for future jobs. (Capgemini, May 2023)



Teachers say that their school system does not have clear policies on AI in education. (EdWeek, December 2023)

Parent Perspectives



Parents believe that the potential benefits of AI in education outweigh or are equal to the potential drawbacks. (National Parents Union, October 2023)



Parents feel that schools are preparing students to succeed in an Al future. (National Parents Union, October 2023)

Teach Al

• Are Teachers Prepared?



Only **1 in 5 teachers** feel equipped to use Gen AI tools in the classroom (<u>HMH</u>, <u>June 2023</u>) and only **29%** of teachers have received any professional development on AI (<u>EdWeek</u>, <u>March 2024</u>).

Teachers who are in urban or lower-income education systems and those who teach primary grades are less likely to say they have received any Al training.

Foundational Policy Ideas for AI in Education



Foster Leadership Establish an Al task force/team.



Promote Al Literacy Integrate Al skills and concepts.



Build Capacity Provide funding for professional development.



Support Innovation Promote research and development.



Provide Guidance Equip schools with guidance on the responsible use of AI.



APPENDIX J

Al in U.S. K-12 Education:

A presentation for the Senate Study Committee on Al for Georgia





Daniel Hales Policy Fellow, Youth & Education

Agenda

- I. Background on Uses of AI in K-12 Education*
 - A. Brief Context for AI in K-12 Education
 - B. How is AI used in the K-12 space by students, teachers, and schools?
- II. AI-specific challenges in K-12 Education
- III. How are these challenges being addressed so far?
- IV. Policy Considerations
- V. Additional Resources & Questions

*Note: the content in this presentation focuses solely on AI in K-12 Education in the United States. Other countries may take different approaches to AI use in education contexts.



AI in K-12 Education

- Algorithms, analytics, and artificial intelligence ("AI") have been used in a large majority of K-12 instructional systems for over a decade
 - Examples of pre-existing "predictive" AI tools: student lunch biometric payment processing systems, adaptive learning assessments, early warning systems etc.
 - Al is not a monolith different kinds of Al systems and tools
- Generative artificial intelligence ("Gen AI") is a recent development -focusing

on creating new text, code, image, video and audio content

- Circa 2022-2023 with the rise and proliferation of generative pretrained transformers ("GPTs")
- Examples of newer gen AI models: GPT-4 and DALL-E (Open-AI), LaMDA(Google)
- Initial concerns and hesitations about Gen AI: plagiarism and cheating
- From 2023 present, concerns have shifted to how can these tools be used safely and securely

• Primary focus of interest and inquiry for AI in K-12 education today

- What are the use cases for AI in schools?
- How do we ensure safety and security, and what is new and novel about these tools in instructional systems?



How is AI used in the K-12 space?

- The considerations around the safety, privacy, security, and ethical implications of using a particular tool in K-12 education is use case specific
- Institution-focused uses & opportunities:
 - Administrative Support
 - Admissions
 - Student support services

FUTURE OF PRIVACY FORUM

How is AI used in the K-12 space?

- The considerations around the safety, privacy, security, and ethical implications of using a particular tool in K-12 education is **use case specific**
- Teacher-focused uses & opportunities:
 - Automated tasks
 - Lesson planning
 - Data-driven instruction
 - Professional development
 - o Enhanced effectiveness of technology-supported teaching



How is AI used in the K-12 space?

- The considerations around the safety, privacy, security, and ethical implications of using a particular tool in K-12 education is use case specific
- Student-focused uses & opportunities:
 - Personalized Learning
 - 24/7 Tutoring
 - Mental Health & Wellbeing
 - Creativity
 - Workforce readiness
 - Help support learner differentiation (e.g. text-to-speech, predictive text)



K-12 AI-Specific Challenges and Considerations

- Ethical considerations
 - Bias in algorithms
 - Data privacy
 - Equity in access
- Legal compliance
 - Use case dependent
 - o Data collection and processing including potentially proprietary or copyrighted information
 - o Transparency, explainability, and accountability issues
 - Limits/Use of student data for product improvement
 - Unauthorized disclosure of student PII
 - High-risk decision making (i.e. education enrollment or admissions decisions and decisions regarding educational opportunities)
 - Hallucinations



How have these challenges been addressed so far?

- Existing laws or legislative approaches:
 - Family Educational Rights and Privacy Act ("FERPA")
 - Source of protection in this context
 - Also important challenges to note
 - Protection of Pupil Rights and Privacy Act ("PPRA")
 - State Student Privacy Laws
- Emerging laws or legislative approaches:
 - State Comprehensive Consumer Privacy Laws
 - Governance of AI in Consequential Decisions laws that place requirements on developers of "high-risk artificial intelligence systems"
 - Often cover systems that may produce "consequential decisions" under sectors protected by US civil rights laws, including education enrollment or education opportunities. See Colorado <u>SB24-205 (enacted in 2024)</u>
 - New state laws or executive actions which direct the creation and adoption of AI policies and/or guidelines for use in schools



How have these challenges been addressed so far?

Existing State Guidance:

- 22 States have put out guidance on AI use in K-12 Schools →See supplementary resource provided with presentation entitled "State Guidance on AI Use in K-12 Schools: Data Privacy Considerations"
- Key takeaways on the current condition of State AI Guidance:
 - Some states do not have formal AI guidance for K-12 use, but have instead compiled related resources
 - Most states with AI in K-12 guidance acknowledge data privacy as a risk of AI use
 - Few states have concrete, specific guidance and recommendations for addressing and mitigating data privacy risks of AI use; most offer high-level or vague guidance on the importance of data privacy generally
 - Most states urge vetting ai systems for compliance with existing state and federal privacy laws and local regulations
 - Most states recommend updating existing policies with AI language as opposed to creating new policies
 - Most state's data privacy guidance is superficial



How have these challenges been addressed so far?

Adopting vetting processes or considerations specific to Gen AI tools

- Determine local requirements for vetting all edtech there are many existing local data protection requirements that will still apply in AI technology use cases when relevant, such as:
 - Keeping student data safe from commercial purposes
 - Requiring data breach notification
 - Requirements for data minimization, de-identification, and aggregation
 - Specific requirements for vendor contracts
- Identify and describe the proposed use case(s)
- Prepare to address transparency and explainability requirements in the context of AI challenges
- Determine if student PII from the tool will train the large language model (LLM)



FORUM

Policy Considerations

- There aren't many clear answers yet and more information is needed before model regulatory proposals can be adopted →
 - Continue to hold study committees or interim studies on AI use in education to sort through all the different layers, factors, and considerations involved in consultation with key stakeholders such as school officials, teachers, and edtech industry actors.
- Intermediate guidance to help direct schools' ability to vet and adopt AI tools would be beneficial →
 - Even in the absence of a fully-formed regulatory solution, providing guidance that incorporates considerations that schools should undertake when vetting Gen AI apps and unique AI harms or risks in the interim would still be beneficial to school officials and IT administrators.
- Consider adopting provisions which address AI-specific harms and challenges within existing frameworks, where appropriate:
 - Where there is already a robust student data protection framework, consider ways in which student privacy laws can be amended to include protections for the newer harms associated with Gen AI technologies as opposed to immediately adopting a separate, AI specific regulatory framework for the K-12 education context.

Al in K-12 Education

The Georgia Department of Education October 2, 2024

Al Impact on K-12 Education

- Al Literacy: Helping educators and students identify Al in their world and how it is working to extend human capabilities.
- **Teaching and Learning:** Al instructional tools are helping students and teachers to streamline many of the activities that were once the laborious domain of the human.
- Workforce: Develop a workforce capable of developing Al agents that will inevitably change how our society operates at a fundamental level.



How Can Al Maximize an Educator's Time

64	Tackle Current Challenges:	
	 Lighten the extensive workload of K-12 teachers, including lesson planning, grading, and administrative tasks. 	
	 Al in Lesson Planning: Al can assist in creating dynamic lesson plans tailored to curriculum standards and student needs. 	
	 Automated Grading: Al tools can provide immediate grading and feedback, reducing the time spent on manual correction. 	
	 Personalized Learning: Al can customize learning paths for individual students, allowing teachers more to time for impactful teaching. 	
	 Administrative Efficiency: Al can streamline administrative duties like student participation and communication with parents. 	
Saving Teachers time and impro	ving planning (educationhorizons.com)	

 $\it Richard Woods, Georgia's School Superintendent \mid Georgia Department of Education \mid Educating Georgia's Future$

Utilizing AI as an Instructional Tool

Personalized learning

Differentiation in seconds

Increased student's persistence

Accessibility

Language Translation

Gaboe Georgia Department of Education

4

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From -Generative Al:

AI is Impacting Instruction in GA

White County – Music Education



Union County – Social Studies



GA Districts and Individual Schools who have AI Guidelines (selfreported)

- Gainesville City
- Mary Persons High School
- Gwinett County
- Richmond County
- Camden County (in progress)



6

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Canva AI Image Generation for Student Writing Projects



Richard Woods, Georgia's School Superintendent | Georgia Department of Education | Educating Georgia's Future

We have students in Georgia who are using AI Image Generation to create visualizations for their writing projects. English teacher, Terra Ward, reached out to one of our RESA Tech Directors about her class and shared this 1.5 min demo!



GOAL: Prepare and Cultivate an *AI education teacher community of practice* in Georgia.



Richard Woods, Georgia's School Superintendent "Educating Georgia's Future"





Teacher Professional Development





Jobs of the future will require an advanced level of mathematical reasoning and application, as well as data analysis and statistical reasoning and comprehension.



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Preparing students for the AI Workforce



Develop a workforce capable of developing AI agents that will inevitably create change and impact how our society operates.



Develop a workforce with the ability to think critically, to analyze information and data, and to apply knowledge to real-world tasks.



CTAE Pathway Courses

Foundations of Artificial Intelligence Artificial Intelligence Concepts Artificial Intelligence Applications



Artificial Intelligence Pathway

- Foundations of Artificiial Intelligence
- <u>Artficial Intelligence Concepts</u>
- <u>Artificial Intellgenge Application</u>



11

12

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Resources for Using AI in K-12

Georgia Learns Professional Learning Courses



- Living and Working with AI: Autonomous Robots and Vehicles
- · Living and Working with AI: How Computers Understand Language
- · Living and Working with AI: How Computers Make Decisions

Pathways to Possibilities: Unlocking Your Future

- Artificial Intelligence Computer Science Pathway
- Artificial Intelligence Careers

Let's Learn GA!

• 5 Big Ideas of Artificial Intelligence





Teaching and Learning with AI at the State Level

- Demystify the use of AI
- Provide professional learning and support for districts
- Ensure accessibility to instructional AI tools for all educators and students
- Help our students develop skills that will be needed for future careers





Artificial Intelligence in the Enterprise today

A Global Perspective

Fred Miskawi, Vice President Corporate Oct 2nd, 2024



Presenting today...



Fred Miskawi

Vice President Corporate CGI Global AI Center of Enablement AI Innovations Expert Services Lead AI Study Committee member

CGI



Agenda



Risks and Responsible Use of AI Transparency and core principles needed for the safe and secure deployment of AI

EU AI Act & Pact High level expectations on enterprises



2

Enterprise AI solutions deploying today Evolution of enterprise AI solutions



Software development acceleration Fast-moving upcoming impact of AI on our digital economy



3

4

CGI

Transparency coming to you from 31 countries and 5 continents



Addressing the risks associated with AI

TODAY'S RISKS INCLUDE			
Privacy infringement	Exacerbating existing inequalities	Cultural biases	
Abuse of Al to cause harm	Security vulnerabilities & data poisoning	Intellectual property issues, Plagiarism	
Lack of accountability	Loss of trust, reputation & money		
	TODAY'S RISKS INCLUDE Privacy infringement Abuse of AI to cause harm Lack of accountability	TODAY'S RISKS INCLUDE Privacy infringement Abuse of AI to cause harm Lack of Accountability Loss of trust, reputation & money	

5

Responsible use of AI is not only an ethical necessity but also a business imperative

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Under the guardrails of responsible use to deliver trusted outcomes

Risk mitigation Privacy. IP rights. Security. Biases.



Responsible use of Al Robust. Trustworthy. Ethical.

Business imperative Reputation and financial success. Trust and societal - responsibility. Regulatory compliance. "We are at the beginning of a new wave of innovation and the business value of AI will be achieved through the combination of **human expertise** and **ethical use** of technology."

George Schindler CGI Board Member and Retired CGI CEO

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Responsible use of AI is about defining principles, governance and operationalizing them to ensure trusted outcomes



Enable rigorous design, development, testing, and operations processes, supported by privacy and security policies and practices, to ensure reliability and safety of outcomes that are always in compliance with applicable laws and regulations

Responsible use of AI is about establishing guardrails, not roadblocks.

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Visibility and Transparency requires Human involvement

Core to our Responsible Use of AI - we start our thinking on the left



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10
EU AI Act - different risk levels require different measures



EU AI Act – high-risk AI systems are widespread and require action



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Joining the AI Pact: Engaging European Commission on EU AI Act

To share best practices and shape AI Act implementation, the European Commission has set up the AI Pact, an innovative framework & network for frontrunners to directly engage with the Commission & AI Office.

116 signatories of the EU AI Pact and its voluntary pledges (Sept 26th).

Creates a community of early adopters who can help share best practices and build a culture of visibility and accountability.



Kickoff Event, Brussels



<u>Next Steps:</u> Plenary for the development of the first General-Purpose Al

Code of Practice Further invitations / sessions from Al Office

CGI

Torsten Strass, CGI - speaking at event

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13

Enterprise AI Solutions

World-wide perspective on AI systems being deployed



CGI

© 2024

AI technology continuum

- Low	Tional ai	IPLEXITY	HIGH>	
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"Early" Machine Learning	Deep Learning	Generative AI	Human Like Multi-Modal (AGI)	
e.g., Decision trees used in <b>credit</b> scoring to assess the risk of Ioan applications	e.g., Recurrent Neural Networks used to discover patterns in stock market data to automate trading decisions	e.g., Generate synthetic financial transaction data to train more robust fraud detection Neural Networks	e.g., Automatically perform <b>full market</b> analysis, and <b>accurately predict</b> global and local market movements	
SAMPLE USE CASES				
Financial Services Industry: Risks				
Banking, Healthcare and Manufacturing: Document and image processing				
Banking and Healthcare: Letter generations, human-like chatbots, code generation use cases, Al-driven advisors				
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## Current Enterprise AI solutions - Categories



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## What do companies Building and Deploying AI need to thrive?



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Al's biggest impact to the digital economy

Acceleration of the deployment of digital value (software development acceleration)

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## APPENDIX M

# The Global AI Regulatory Landscape





Bianca-Ioana Marcu Deputy Director for Global Privacy

# Agenda

I. Emerging AI Regulatory Models AI Regulation Fever at the Supranational Level

#### II. EU AI Act

- A. Key Principles & Risk-Based Approach
- B. Interplay w/GDPR
- C. Timeline: Key Dates & Next Steps

#### III. U.S. Regulatory Landscape

- A. Recent Developments
- B. Legislative Landscape
- IV. Global Perspectives on AI Regulation
  - A. Asia Pacific
  - B. Latin America
  - C. Africa



# **Emerging AI Regulatory Models**

#### Hard law

- EU AI Act (entered into force 1 August 2024, but will gradually become applicable throughout the next two years)
- Colorado AI Act and other state-level legislation in the US
   AI bills introduced in Brazil,
- Canada, Nigeria, Chile, Mexico, South Korea, among others
- China and Kenya have announced their intention to introduce legislative proposals

## **Executive Action**

- US: President Biden's Executive Order on AI (applicable to federal gov)
- China: Algorithmic Recommendations Regulations (2021), Generative AI Interim Measures (2023)
- Australia: Voluntary Al Safety Guidelines

#### **Governance Frameworks**

- US: NIST AI Governance Framework
- Singapore: Al Verify
- China: AI Safety
   Governance Framework

delines Plus many voluntary AI ethics frameworks

**AI Regulation Fever!** 

## Supranational level

- Council of Europe's Framework Convention on AI, opened for signature on 5 September 2024
- Myriad initiatives from the UN, UNESCO, AI Safety Summit, OECD, ASEAN, African Union and others
- e.g. Last week, UN x OECD announced that they will "link their efforts to help governments improve the quality and timeliness of their policy response to Al's opportunities and its risks."



# **European Union**

## EU AI Act - Regulation COM/2021/206

Goals:

1. To provide a single framework for AI products and services that are placed on the EU market, even where providers are not based in the Union;

2. To ensure that AI systems are safe, secure, trustworthy and respect fundamental rights and values.

- **Definition of an AI system**: aligned with the OECD; "machine-based system designed to operate with autonomy ... infers, from input received, how to generate output..."
- **Scope**: applicability for providers, deployers, importers, distributors and manufacturers of Al systems across all EU Member States, with extraterritorial effect similar to the GDPR
- **Regulatory approach**: modeled on EU product safety legislation, with a risk-based approach
  - Obligations *C* level of risk



## The tiered, risk-based approach:





FUTURE OF PRIVACY

# EU AI Act

## Prohibited AI systems & High Risk AI Systems

- Clear threat to the health, safety and rights of people will be prohibited.
  - Examples: Al systems deploying subliminal, deceptive techniques with the objective or effect of impairing a person's ability to make an informed decision; biometric categorization systems; social scoring by governments; real-time biometric identification in public spaces.
- **High risk** AI systems considered to <u>pose a high risk</u> to the health, safety, and rights of people will be subject to strict obligations.
  - Examples: AI-powered critical infrastructure; the use of AI in the safety components of products, or the provision of essential public and private services; employment; education; administration of justice. Full list in Annex III.
    - Note: citizens will have the right to file complaints w/designated authorities



# **EU AI Act**

## **Obligations for High Risk AI Systems**

#### • Conformity Assessment

- Risk identification and mitigation exercise; transparency and accountability; human oversight; data quality.
- Fundamental Rights Impact Assessment
  - For deployers of high-risk AI that are bodies governed by public law or private operators providing public services.
  - Intended purpose of the AI system; duration and frequency of deployment; individuals or groups likely to be affected; specific risks of harm; measures to be taken to mitigate such harms (including governance and complaint mechanisms).

Note: Symbiosis between the different actors identified within the AI Act.

onetrust

Conformity Assessments Under the proposed EU AI Act: A Step-By-Step Guide



# EU AI Act

## A Note on General Purpose AI Models/Systemic Risk

- GPAI models fall under Article 52 of the AI Act;
- <u>All providers</u> of GPAI are subject to certain conditions including:
  - Technical documentation; compliance with EU copyright law;
  - · Providing information to AI system providers who intend to use the GPAI model;
- Additional obligations for providers of GPAI models that pose systemic risk:
  - Model evaluation; Risk assessment and incident reporting; cybersecurity protections;
  - Labeling obligations
  - Models may be designated as presenting systemic risk *ex officio* by the Commission, if they meet a computation training threshold, or if the model in question has "high impact capabilities."

FUTURE OF PRIVACY

# **Note:** Obligations above do not apply to any AI systems or GPAI models where they are specifically developed for scientific research and development (Article 2(5a)).



# EU AI Act & Interplay with GDPR

### The GDPR continues to apply to personal data processing:

- The Al Act:
  - Should not be understood to indicate compliance with other EU law, including the GDPR (Rec. 27).
  - Does not guarantee compliance with Article 9 "special category" rules established under the GDPR (Rec. 24).
  - Relies on definitions of "biometric data" established in the GDPR (Rec. 7).
  - Commission launches "Code of Practice" for general purpose Al technologies (July 2024).

European **Data Protection Authorities** (DPAs) have remained active in the AI space:

- Ongoing Italian DPA case against OpenAl's ChatGPT;
- Netherlands fines Clearview for FR data collection
- DSK publishes "Hambach Declaration on Al" collective guidance document for Germany





# **US: Developments in AI Regulation + Bills**

Adopted Regulations/Laws				
<u>Colorado Al Act</u>	Regulates high-risk AI systems	Disclosure requirements		
Utah Al Policy Act	Creates disclosure requirements for entities providing consumer-facing generative AI systems and a regulatory sandbox regime	Disclosure requirements		
<u>California SB 942</u>	Requires GenAI providers to release free, public tools to detect whether content was generated or altered by their products	<ul> <li>Disclosure requirements</li> <li>Consumer access and transparency rights</li> </ul>		
Proposed Bills				
California Draft CCPA Regulations	Would generate new obligations around cybersecurity audits, ADMT/AI, privacy risk assessments, and more	<ul> <li>Consumer access and transparency rights</li> <li>Consumer opt-out rights</li> <li>Risk assessments</li> </ul>		
<u>California SB 1047</u>	Would create a new regulatory framework for frontier AI systems	<ul> <li>Disclosure requirements</li> <li>Risk assessments</li> </ul>		
California AB 1008	Would specify that "personal information" can exist in abstract digital formats, including AI systems that are "capable of outputting personal information"	<ul> <li>Consumer access and transparency rights?</li> </ul>		

# Legislative Landscape

## States

- Most are focused on government AI use and deepfakes in political communications
- Private sector "high-risk" AI regulations gaining more steam
  - o ADMT-style regulations
  - High-Risk & Generative Al
- Other
  - Frontier safety (CA SB 1047): reporting positive safety determinations
  - Expanding the definition of PI and whether it can exist in abstract digital formats (CA AB 1008)
  - o Generative AI: disclosures for AI-generated content
  - · Employment decisions: bias audit/assessment and right to notice



## **FPF's U.S. State AI Legislation Report**



- State lawmakers are primarily focused on regulating AI used in consequential decisions that significantly impact individuals' livelihood and life opportunities.
- A key goal for many lawmakers is to mitigate the risk of algorithmic discrimination, either through prohibitions on AI systems with identified discriminatory risks or by establishing a duty of reasonable care to protect individuals from such discrimination.
- Most AI legislative frameworks create role-specific obligations, including separate requirements for developers and deployers related to transparency, risk assessments, and AI governance programs.
- Common consumer rights around Al include rights of notice and explanation, correction, and to appeal or opt-out of automated decisions.
- Alternatively, some lawmakers utilize a technology-specific approach to address novel risks, such as those posed by generative AI or frontier or foundation models.





#### Asia Pacific:

- Al a central focus of regional regulators, with a drive towards innovation;
- Interoperable frameworks with global partners;
- Mix between soft-law initiatives and more recent prescriptive proposals.

#### Latin America:

- Cooperation between LatAm and EU in particular; risk-based proposals follow AIA
- Brazil, Chile and Peru leading the AI regulatory drive in LatAm.
- Africa:
  - African Union Continental Strategy on AI →adopted August 2024 (FPF analysis forthcoming!)
  - Kenya, Nigeria & South Africa developing AI laws.



# **Relevant FPF Resources**

- Sept 2024: Policy Brief <u>AI Governance Initiatives by International Organizations</u>
- Sept 2024: Report <u>A Look at How U.S. State Policymakers Are Approaching Artificial Intelligence Regulation</u>
- Sept 2024: Letter to Governor Newsom on AB 1008
- Sept 2024: One-Pager on California AI Transparency Act (SB 942)
- July 2024: Infographic The EU AI Act: A Comprehensive Implementation & Compliance Timeline
- July 2024: Blog <u>A First for AI: A Close Look at The Colorado AI Act</u>
- July 2024: Policy Brief The Colorado Artificial Intelligence Act
- July 2024: Policy Brief Making Sense of the CNIL's Recommendations on the GDPR and AI
- May 2024: Navigating Governance Frameworks for Generative Al Systems in the Asia-Pacific
- April 2024: Blog <u>China's Interim Measures for the Management of Generative Al Services: A Comparison</u> Between the Final and Draft Versions of the Text
- March 2024: Policy Brief Comparison of California Draft Risk Assessment Regulations
- Jan 2024: Blog Explaining the Crosswalk Between Singapore's AI Verify Testing Framework and The U.S. NIST AI Risk Management Framework
- Nov 2023: <u>Conformity Assessments under the proposed EU AI Act: A Step-by-Step Guide & Infographic</u> (to be updated soon)
- May 2022: <u>Automated Decision-Making (ADM) Under the GDPR: Practical Cases from Courts and Data Protection</u> <u>Authorities</u>



## APPENDIX N

Al Study Committee October 23rd 2024

## Al Applications in Georgia: From plants, to fields, to regions, for the people

Dr. Leonardo M. Bastos Assistant Professor Integrative Precision Agriculture Institute for Integrative Precision Agriculture UNIVERSITY OF GEORGIA

# Agenda

- 1. What is AI
- 2. AI uses in GA: Plants
- 3. AI uses in GA: Fields
- 4. AI uses in GA: Regions
- 5. AI uses in GA: for the **People**

# What is Artificial Intelligence (AI)?AgorithmDataAgorithmDataArtificial Intelligence (AI) refers to the<br/>simulation of human intelligence in<br/>machines that are designed to perform<br/>tasks that typically require human<br/>cognition.AlSystems use algorithms, data, and<br/>computational power to mimic the<br/>way humans think, learn from<br/>experiences, and adapt to new<br/>information.ComputingChatGPT, 2024)

# What is Artificial Intelligence (AI)?





# Al uses in GA: Plants

- <u>Phenotyping</u>: measuring something directly on plants.
- Ex: plant height.
- How it is normally done: go out to plots, measure it.
- <u>Problem</u>: what if you have too many plots?
- Like, 10,000 plots.







## Al uses in GA: Fields

- <u>Problem</u>: fertilizer, especially nitrogen, is one of the largest variable costs in ag (~25%).
- Different parts of a field may require different amounts of nitrogen.
- What if we could know how much nitrogen the crop requires, and apply just that?









# Al uses in GA: **Regions**

- <u>Problem:</u> growers across the state are faced with many decisions, like
  - what variety to grow?
  - when to plant?
  - should soil be revolved?
  - and many others
- These decisions are affected by their <u>environment</u> (soil, weather)



# Al uses in GA: Regions

• <u>Solution</u>: use data collected across the state to train AI to create recommendations.





# Al uses in GA: for the People

- <u>Problem:</u> farming is a highstress occupation due to main types of uncertainty (weather, prices, labor availability, etc.)
- Due to high-stress, farmers are at higher risk of poor mental health leading to a range of outcomes, including suicide.



Scan me to access this interactive dashboard



extension.

## Whether it is

- 1. Measuring plant height faster for efficient variety development
- 2. Recommending input rates that optimize farmer's profitability while protecting the environment
- 3. Identifying fields where production can be improved
- 4. Identifying high-stress farming communities and providing assistance

Agriculture and AI go hand-in-hand for the benefit of Georgians

# **Presentation to the Senate Study Committee on Artificial Intelligence**

Georgia Association of Manufacturers, October 23, 2024



# Who we are

- The Georgia Association of Manufacturers (GAM) was founded in 1900 by manufacturers for manufacturers
- We serve as the advocacy voice of the industry

# **Georgia manufacturing matters**







GDP contribution 9.6%



All figures are for 2023 (sources: GA Department of Economic Development, Department of Labor, Lightcast)

# Manufacturing is transformation

- Continuous innovation has been the lifeblood of the industry for nearly 300 years.
- We are in the 4th era of manufacturing – "Industry 4.0" – and have been for over a decade.
- Artificial Intelligence is not new to us. We are subject matter experts in understanding its adoption, application and value.





Chart source: Smart Factory Institute

# How Manufacturers define Artificial Intelligence

The manufacturing industry aligns with the definition of AI developed by the National Institute of Standards (NIST):

"A system that can, for a given set of objectives, generate outputs such as predictions, recommendations or decisions influencing real or virtual environments."





# **How Manufacturers use** Artificial Intelligence

#### Ethically ...

- Responsible development and application of AI is a focus for manufacturers and just good business •
- Manufacturers are working to mitigate potential risks from AI
  - Developing internal governance models, ethical frameworks, internal testing, cyber security measures Partnering with governments to meet or exceed regulatory requirements
- Our industry has no interest in AI applications that have the potential to create social or economic harm, risk . national security, or threaten data privacy at any level

#### Practically ...

- Manufacturers concentrate on "real world" applications of AI use cases that generate tangible benefits for . companies and employees
- Major areas of AI use by manufacturers:
- 1) Operational efficiency (50% on predictive maintenance)
  - 2) Worker safety 3) Product development and design
  - 4) Employee training (improving AI literacy; worker confidence and competence)
     5) Supply chain optimization
- Most manufacturers have invested in or plan to invest in machine learning: the use of data analysis to improve decision making and perform tasks
- Industry-wide adoption of AI will contribute to the global competitiveness of Georgia manufacturers



1. Source: National Association of Manufacturers

# Speed of adoption

- While artificial intelligence is "nothing new" for manufacturers, the capability of the technology is far from fully understood and will take longer to implement than today's headlines lead us to believe
- Adoption is constrained by a manufacturer's digital maturity: the company's capability and capacity ٠ to integrate physical and digital worlds
- This integration is accelerated through the skill and intelligence of the people who work in • manufacturing - "smart workers"
- For Georgia manufacturers to speed the adoption of AI and become more globally competitive, we . need more smart workers ... and we need them **now**.





# A growing demand for workforce



Georgia Manufacturing is expected to grow **another 10%** from 2023 through 2028.

# A growing workforce deficit

However, the **availability** of unemployed **manufacturing workers** has **decreased by 34%** since January 2018.



# Georgia Manufacturing's annual workforce turnover





Source: Lightcast™ (Q3 2024 Data Set) Industry Snapshot Report: Manufacturing in Georgia.

# **Georgia Manufacturing's 2023** workforce turnover

56% turnover

# 424,205 employment 238,421 separations



Source: Lightcast™ (2023) Industry Table: Manufacturing in Georgia.

# Georgia Manufacturing's looming workforce attrition

Of the 424,205 employed in manufacturing, **107,000** workers **55 and older** are at risk of **retiring soon**.

Age	Employment
14-18	3,152
19-24	31,870
25-34	84,425
35-44	96,627
45-54	101,118
55-64	85,042
65+	21,971





Source: Lightcast™ (Q3 2024 Data Set) Industry Snapshot Report: Manufacturing in Georgia.

# **Real-world example: A workforce in crisis**

- Who: GA manufacturing company with 1,400 full-time employees
- Problem: Severe labor shortage
  - \$508 million loss in sales over four years
  - 40% rolling twelve-month turnover rate, costing \$1.2 million annually
- Response:
  - Increased wages by 24% (now \$22/hour starting wage)
  - Improved onboarding and work-life balance
  - Added monetary incentive programs
- Still, it wasn't enough...
- Result: 7.2% of production moved overseas



# **Real-world example: AI & automation**

- What: Investing \$100M+ in AI and automation (next 5-7 years)
- Why: Essential for achieving full production capacity and ROI
- Results:
  - $\checkmark$  Achieve production capacity
  - ✓ Achieve ROI
  - ✓ NO layoffs

"*This investment is essential for sustaining our operations in Georgia. The workforce simply is not available."* 

- Company President



# **Recommendations for consideration**

- 1. Support workforce upskilling: Legislators should prioritize initiatives that offer accelerated training programs, empowering the current and future workforce with the skills required to operate, maintain, and support AI-driven automated equipment.
- 2. **Promote AI literacy:** Focus on raising awareness and understanding of AI among lawmakers, businesses, and the public to avoid reactionary policies and foster a proactive approach to AI adoption.
- **3.** Encourage data-driven decision-making: With media "hype" on AI making headlines, it is important that AI-related regulations are grounded in thorough research, data, and expert consultation to ensure informed, balanced decisions.
- **4. Harmonize policies:** To the extent possible, lawmakers are encouraged to harmonize AI regulations with other states/countries to provide industry with uniformity and consistency and avoid a complex, costly "patchwork" of rules. This will support the global competitiveness of Georgia's manufacturers

GAM is ready to serve as a trusted partner with the General Assembly in the advancement of Artificial Intelligence





## IBM's POV on capabilities we see AI addressing in Agriculture

# IBM's POV on capabilities we see AI addressing in Agriculture

## Precision © Farming

Al and automation help farmers manage crops more efficiently by giving real-time data about soil, weather, and crop health. This improves how farmers use resources like water and fertilizer, which reduces waste and boosts production.

## Crop Monitoring & Disease Detection

Al-powered systems use drones, sensors, and satellite images to monitor crops. They detect diseases and nutrient issues early, allowing farmers to act quickly and reduce the need for heavy pesticide use.

#### Yield Prediction & Optimization

Machine learning uses data from past seasons, like weather and soil conditions, to predict how much crop farmers can expect. This helps farmers plan better and make informed decisions about planting and harvesting.

## Livestock (1) Management

Al tools track animals' health using sensors and wearable devices. This can detect diseases early, monitor feeding needs, and even track breeding cycles, which leads to healthier animals and higher productivity.

# Labor 👙

Shortages & Efficiency

Robots and

autonomous vehicles can help address labor shortages by performing tasks like harvesting and spraying. This increases farm efficiency and reduces the need for manual labor.

# University of Georgia CAES IIPA +IBM

## Let's create

 $\rightarrow$  a more precise way to identify & manage weeds in turf grass

Industry: Agriculture Geography: North America

# Clemson University CAFLS Plant Science +IBM

## Let's create

 $\rightarrow$  A predictive model for peach ripening based on weather & bloom data

Industry: Agriculture Geography: North America

## Crop Focus **Turf Grass**

Executive Sponsor Chris Rhodes Director of Industry Partnerships and Project Based Learning



Crop Focus **Peaches** 

Executive Sponsor Dr. Paula Agudela Associate Dean for Research & Director of CU Experiment Station





## College of Agricultural & Environmental Sciences UNIVERSITY OF GEORGIA



#### Problem Challenge:

Weeds in turf grass are often hard to identify / manage using traditional methods, which can result in overuse of herbicides, harming the environment, and wasting resources

#### Benefit Metrics:

- Targeted Weed Control: AI to precisely identify weed locations, reducing the need for widespread herbicide use
- Environmental Protection: By applying herbicides only where necessary, the solution minimizes environmental damage.
- Resource Efficiency: Precise weed management lowers costs and conserves resources, enhancing overall efficiency.







#### Problem Challenge:

There is uncertainty in predicting the best time to harvest peaches, which affects both quality and yield. By using a predictive model that analyzes weather conditions and bloom data, farmers can accurately forecast when peaches will ripen. This helps optimize harvest timing, improve crop quality, and reduce waste, making peach farming more efficient and profitable.

**Benefit Metrics** 

- Increase in accuracy in predicting bloom
- Increase accuracy in predicting harvesting time
- Labor Optimization

Clemson University CAFLS Poultry Science +IBM & AGL

## Let's create

→ an AI model to automate the labeling of chicken behaviors on video footage



# North Carolina State University +IBM

## Let's create

→ a way to predict and identify diseases using visual inspection ^{Animal Focus} Poultry Hen Laying Eggs

Executive Sponsor Dr. Paula Agudela Associate Dean for Research & Director of CU Experiment Station



Crop Focus Soy Beans

^{Executive Sponsor} Dr. Rachel Vann Assistant Professor, Soybean Extension Specialist







#### Problem Challenge:

It's time-consuming and costly process of manually monitoring and analyzing chicken behaviors in farms. By using an AI model to automate the labeling of behaviors from video footage, farmers can quickly and accurately track things like feeding, movement, or signs of illness. This reduces labor costs, improves animal health management, and helps farmers run more efficient poultry operations.

#### **Benefit Metrics**

- Reduced mortality rate in poultry houses Labor Optimization
- % of real time alerts to growers



## College of Agriculture and Life Sciences

#### Problem Challenge:

Identifying plant diseases often relies on manual inspection, which can be slow, labor-intensive, and prone to human error. A way to predict and identify diseases using visual inspection, powered by AI, speeds up the detection process, allowing farmers to take quick action to protect their crops.

**Benefit Metrics** 

- Reduce the spread of diseases
- Lowers crop losses
- Minimizes the need for chemical treatments, ultimately saving time and resources for rural farmers.

Industry: Agriculture Geography: North America

# University of Florida IFAS +IBM

## Let s create

 $\rightarrow$  an AI model to help classify plants, damage, and disease type and put the AI in the hands of the growers



# North Carolina State University +IBM

## Let's create

 $\rightarrow$  a way to monitor calf health using visual inspection and tabular data Crop Focus
Tomatoes / Carrots

Executive Sponsor Dr. Mathews Paret Department Chair & Professor of Plant Pathology



Animal Focus Dairy Cows

Executive Sponsor Stephanie Ward Dairy Science Extension Specialist and Associate Professor







#### Problem Challenge:

Identifying plant species, assessing damage, and diagnosing diseases often require expert knowledge, which is not always accessible to growers. An AI model that can classify plants, detect damage, and diagnose diseases empowers growers to make informed decisions on the spot.

#### **Benefit Metrics**

- Quick Action: AI helps farmers address issues faster, reducing crop damage.
- Better Crop Health: Farmers can manage plant health more effectively with real-time AI insights.
- Higher Yields: AI minimizes external help, boosting efficiency and crop output



## College of Agriculture and Life Sciences



The solution addresses the difficulty in consistently monitoring calf health, which traditionally relies on manual observation and can miss early signs of illness. By using AI to analyze visual and data-based indicators, farmers can detect health issues sooner, improving calf survival rates and reducing veterinary costs. Benefit Metrics

- Early Disease Detection: Al quickly identifies health issues, allowing farmers to address problems before they become serious.
- Reduced Veterinary Costs: By catching illnesses early, farmers can lower treatment costs and avoid more expensive interventions.
- Improved Livestock Health: Consistent monitoring ensures healthier calves, leading to better growth and overall farm productivity

Industry: Agriculture Geography: North America

# Michigan State University +IBM

## Let's create

 $\rightarrow$  a digital research assistant to sift through trial and lab data and find insights for diagnosticians Problem Challenge: On average  $>\!20$  plus hours / week spent searching data

^{Solution Focus} Researcher Assistant – Fungicide & Weed Trials Lab diagnostics

^{Executive Sponsor} Dr. Jan Byrne Plant pathologist



Industry: Agriculture Geography: North America

# Michigan State University +IBM

## Let's create

→ a repository of pesticide and diagnostic data for growers in Michigan to access Data Focus Pesticide & diagnostic

Executive Sponsor Dr. Jan Byrne Plant pathologist & lab diagnostician



# MICHIGAN STATE



#### **Benefit Metrics**

- % reduction in Researcher research time from 20 plus hours to minutes
- % decrease in cycle time between researchers and growers

# MICHIGAN STATE UNIVERSITY



Solution Components

- Watsonx.ai
- Watsonx.data
- Maximo Visual Inspection

Industry: Agriculture Geography: North America

# **Michigan State** University +IBM

## Let's create

 $\rightarrow$  a way to integrate weather data with drought maps for better analytics

Plant Focus Determining Weather Patterns that affect crop growing and harvest

**Executive Sponsor** Dr. Jan Byrne Plant pathologist & lab diagnostician

#### MICHIGAN STATE E S R



#### Solution Components

- Watsonx.ai
- Watsonx.data
- Maximo Environmental Suite

3

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13

Industry: Agriculture Geography: North America

# Some Potential Additional Use Cases

Animal health outcome predictor based on audio, video, sensors, vaccination, etc.

2

Farming/food processing assets management:

monitoring, predictive maintenance of equipment

145 Crop damage identification based on aerial image

> Dairy farms assets management and monitoring

Estimating crop yield based on various sources of data such as weather, satellite image, machinery data from the field

Weeds identification and weeds bloom prediction

> Optimizing use of pesticides, herbicides, and fertilizers

Fishery water health/algae bloom prediction

0 Soil estimation: nutrient content, top-soil content, etc.

Crop allocation: optimally distribute crops to appropriate facilities after harvest

IBM Client Engineering © 2023 IBM Corporation

# Let's create $\frown$ value together

IBM Client Engineering is an investment by IBM to jointly accelerate digital transformation for public sector clients.

We provide deep technical skills, industry knowledge, and a memorable co-creative experience to support our clients in improving everyday citizen experiences.

Your main commitment would be bringing your business and technology context, sponsors, and subject matter experts.*



*Please note that your key business and executive stakeholders participate in the business focused workshops upfront. As technical and user discovery workshops commence, more IT-focused stakeholders may be needed.

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IBM Client Engineering © 2023 IBM Corporation

## Empowering Tomorrow: The Role of AI in Shaping Workforce Development for a Dynamic Economy

October 23, 2024 Georgia State Senate AI Briefing

# IBM

## Enhancing Job Training and Upskilling

IBM has created platforms like IBM SkillsBuild, which offers free online training courses in areas such as AI, cybersecurity, and cloud computing. By partnering with educational institutions and organizations, IBM has helped thousands of individuals gain the skills needed for AI-driven careers.

Al won't replace people—but people who use Al will replace people who don't.

# IBM

## Streamlining Recruitment and Talent Management

IBM Watson Orchestrate is a leader in AI for human resource. This AI-driven platform helps organizations streamline their recruitment processes by automating resume screening, candidate matching, and even conducting preliminary interviews

Al won't just enhance recruitmentit will empower talent leaders to identify and elevate the right people faster than ever, while those who rely on traditional methods risk falling behind.

## The Future of the Job Market Needs Reskilling



4 Key AI Focus Areas in Talent Management: Acquisition, Procurement, Onboarding, and Mobility



#### Problem

In Georgia (same as other states), workforce development faces the challenge of efficiently sourcing, screening, and matching the right candidates for job opportunities.

#### Benefits

- Efficiency Boost: Al automates resume screening and interview scheduling, speeding up the hiring process
- Better Matches: Al accurately pairs candidates with job roles, reducing mismatches and improving retention.
- Focus on Strategy: Al frees up HR teams to focus on long-term, strategic workforce development
# IEM

### Streamlining Recruitment and **Talent Management**

IBM Watson Orchestrate is a leader in AI for human resource. This AI-driven platform helps organizations streamline their recruitment processes by automating resume screening, candidate matching, and even conducting preliminary interviews

## IEM

### Streamlining Recruitment and **Talent Management**

IBM Watson Orchestrate is a leader in AI for human resource. This AI-driven platform helps organizations streamline their recruitment processes by automating resume screening, candidate matching, and even conducting preliminary interviews

#### 4 Key AI Focus Areas in Talent Management: Acquisition, Procurement, Onboarding, and Mobility"



- staffing processes, reducing the time spent on manual procurement tasks
- Improved Efficiency: Freeing up HR teams to focus on strategic initiatives and client needs
- rather than administrative work. Increased Flexibility: AI helps quickly adjust workforce levels to meet changing business demands, ensuring operational agility

#### 4 Key AI Focus Areas in Talent Management: Acquisition, Procurement, Onboarding, and Mobility"



challenge of quickly adapting to

flexible workforce. The process of

sourcing and managing contingent

labor often consumes valuable time

and resources, hindering operational

shifting priorities while maintaining a

#### Onboarding

(TA)

Onboarding requires human attention and care and a lot of paperwork. IBM watsonx Orchestrate automates time-consuming. repetitive business processes and frees you up to introduce new hires to your company seamlessly and with clarity. Orchestrate can set up accounts, standardize the experience for each new employee ensuring that each new hire receives the same level of attention and information, can schedule training sessions and welcome emails saving you time to engage the new team member. By offloading tasks to Orchestrate, HR professionals can deliver more powerful, human-centric impact for employees and the company.

#### Problem

In rural Georgia, businesses often struggle with the manual and time-consuming process of onboarding new employees, which involves repetitive paperwork and ensuring consistent communication. This can lead to delays in integrating new hires into the company effectively



#### **Benefits**

- setup and standardizes the onboarding process,
- team connections.
- Improved Experience: Ensures smooth onboarding, allowing new hires to integrate seamlessly, leading

# IEM

### Streamlining Recruitment and **Talent Management**

IBM Watson Orchestrate is a leader in AI for human resource. This AI-driven platform helps organizations streamline their recruitment processes by automating resume screening, candidate matching, and even conducting preliminary interviews

# IEM

Addressing Workforce Displacement and Inequality

IBM has been proactive in addressing the challenges of workforce displacement caused by AI through its "New Collar" jobs initiative. This program focuses on reskilling workers for emerging fields that do not necessarily require a four-year degree but are critical in the AIdriven workforce

#### 4 Key AI Focus Areas in Talent Management: Acquisition, Procurement, Onboarding, and Mobility"



#### Problem

quarter's promotions process ¹.

helped IBM save 12,000 hours during a

In many organizations, career mobilitymoving employees laterally or into higher positions—is essential for retaining top talent and reducing turnover. However, identifying which employees are the best fit for advancement and managing these transitions can be time-consuming and inefficient

#### **Benefits**

- Eases Job Replacement Fears: Al emphasizes career growth within the company, reducing concerns about being replaced by technology.
- placing talent where they can excel. Boosts Retention: Clear career paths keep

#### The IBM Apprenticeship Program: No degree? No problem!

The IBM Apprenticeship program is a full-time, earn-and-learn program for individuals who don't have a 4-year bachelor's degree in the field they're pursuing, but have acquired knowledge in the domain.

Part of IBM's "New Collar" initiative, the IBM Apprenticeship program provides participants

the unique opportunity to <u>reinvent their careers</u>. Apprentices can collaborate and network with real IBMers, receive mentorship from experts in their field, earn digital credentials, and fast-track their technical and professional development.

And by focusing on skills over traditional degrees, the program is helping to close the tech skills gap and bring new talent, regardless of educational degree, into the tech industry.



### APPENDIX Q



## Emory (practical) AI

embryonic steps along the Data Frontier

October 20, 2024

## Patient Experience: myEmory



#### **Digital Front Door**

We are deploying a new **myEmory** app, a new wrapper that sits on top of Epic MyChart that adds:

- Wayfinding
- Virtual Urgent Care
- Provider Finder
- Conversational AI
- Self-Triage







## Patient Experience: Conversational AI





#### **Hyro Conversational Al**

Hyro is a conversational AI platform that offers patients a natural language interface to answer questions like scheduling an appointments and provide general healthcare guidance 24/7.



#### Tracked patient actions - Date & Time - Desktop / Mobile

- Voice / Text - User Utterances
- Bot Utterances
- Click Events

EMORY

## **Care Team Experience: Ambient Listening**

# ABRIDGE

### **Ambient Listening**

We have deployed Abridge Inside Epic Haiku. Now, all outpatient providers have access

- Start recording in Haiku
- Verbalize exam findings
- Conversion is 1-2 minutes
- Make edits in Epic Hyperspace
- Submit note

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- ED/Inpatient units
- Pending Orders
- Nursing workflows
- E/M Coding (and CDI)



#### Care Team Experience: Al Camera LIDAR Array mics EdgeAl VIRTUSENSE[™] Wireless Camera VirtuSense Al Camera High-res camera with LIDAR sensor for Speaker highly reliable and accurate detection • LIDAR enhanced privacy and AI accuracy **Pressure Ulcers and Falls detect** . AI Edge computing VSTop **Open architecture** 7-array microphones **EMORY**



# () LiDAR

## Centralized AI Governance & Distributed Development Teams







## We have gathered 96+ Gen Al use cases with 10 in development...

Development	Alzheimer's Drug Therapy       Integrated Research Platform Chatbot       Image 2000         Identify, prepare for, and triage potential candidates for drug treatments and clinical trials       Chat bot to enable search within the platform for two use cases across healthcare and research		Clinical Trial Matching & Patient Recruitment Recommend and match patients for clinical trials based on specific and generic criteria	Nursing Education / Research Chat Bot Enable intelligent search information across systems for policies, processes, and guidance	
Newly Under	Precision Medicine & Molecular Tumor Board Summarize genomic data and recommend clinical trials for Breast & Multiple Myeloma patients	Chart Abstraction for Quality Reporting	Operating Room Coding & Billing       Image: Comparison of the coding/billing processes         Extract from surgical encounters documentation to automate coding/billing processes	Acute Care Diagnosis Coding	
Early Results	Cancer Registry Case Finding & Reporting       Image: Case Structure         Identify new cancer cases vs. duplicates and automatically extract data for registry reporting         Proof-of-Concept Results         • 100% accuracy across 4 cancer sites for pathology report data extraction;         • 94% average across 7 sites         • 50% of reports had at least one error found by the LLM		Ambient Listening for Patient Visits       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		



### **Clinical Reference LLM**



# "Em-Chat just taught me I was using an outdated policy."

Dr. Michael Kraft Medical Director of Virtual Care

### Em-Chat improved nurses' accuracy on policies by 30-35%



### 70-80% report Em-Chat as #1 way to look up policies/procedures



### **CLABSI Chart Abstraction LLM**



"Em-Chat is the coolest thing I have seen in 30 years."

Kari Love Director of Infection Prevention

### Em-chat saves infection preventionists (IP) ~25 mins/chart



### Em-Chat frees 10% of IP's time for more rounding & Education



# Stroke



#### EMORY HEALTHCARE

#### Automated Processing of Head CT Perfusion Imaging for Ischemic Stroke Triage: A Practical Guide to Quality Assurance and Interpretation

Charlotte Y. Chung, MD, PhD¹, Ranliang Hu, MD, Ryan B. Peterson, MD, Jason W. Allen, MD, PhD

#### Neuroradiology/Head and Neck Imaging · Review

#### Keywords

automated software, CT perfusion imaging, ischemic stroke, pitfalls, postprocessing, quality assurance

Submitted: Apr 28, 2021 Revision requested: May 12, 2021 Revision received: Jun 11, 2021 Accepted: Jul 2, 2021 First published online: Jul 14, 2021

R. Hu receives funding from the Marcus Stroke Network sponsored by the Marcus Foundation. The remaining authors declare that they have no disclosures relevant to the subject matter of this article.

Based on a presentation at the Radiological Society of North America 2019 annual meeting, Chicago, IL.

Supported by the Radiological Society of North American Research and Education

Recent successful trials of thrombectomy launched a shift to imaging-based patient selection for stroke intervention. Many centers have adopted CT perfusion imaging (CTP) as a routine part of stroke workflow, and the demand for emergent CTP interpretation is growing. Fully automated CTP postprocessing software that rapidly generates standardized color-coded CTP summary maps with minimal user input and with easy accessibility of the software output is increasingly being adopted. Such automated postprocessing greatly streamlines clinical workflow and CTP interpretation for radiologists and other frontline physicians. However, the straightforward interface overshadows the computational complexity of the underlying postprocessing workflow, which, if not carefully examined, predisposes the interpreting physician to diagnostic errors. Using case examples, this article aims to familiarize the general radiologist with interpreting automated CTP software data output in the context of contemporary stroke management, providing a discussion of CTP acquisition and postprocessing, a stepwise guide for CTP quality assurance and troubleshooting, and a framework for avoiding clinically significant pitfalls of CTP interpretation in commonly encountered clinical scenarios. Interpreting radiologists should apply the outlined approach for guality assurance and develop a comprehensive search pattern for the identified pitfalls, to ensure accurate CTP interpretation and optimize patient selection for reperfusion.

#### Significant Interpretative Pitfalls and ( Profiles on CT Perfusion Imaging (CTP)

#### **Do-Not-Miss Interpretive Pitfall**

Completed infarct on unenhanced CT fails to reach core i Underlying chronic delayed perfusion (proximal stenosis, arterial anatomy)

Ghost infarct core in hyperacute stroke Chronic infarct Extraaxial collections Vasogenic edema

#### Infarct excluded from FOV

Lacunar infarct that is too small to detect Reperfused acute infarct fails to reach core infarct thresh Acute infarct erroneously considered chronic based on C Abnormal hyperperfusion from alternative causes (seizur perfusion)

Posterior circulation occlusion

Bilateral anterior circulation occlusions

Acute stroke in the presence of contralateral chronic perf

### Publication on How (Not) to Use Stroke AI



## Intracranial Hemorrhage and PE





#### EMORY HEALTHCARE

### Challenges

- 01 Data Infrastructure (Azure, storage, security)
- 02 Data Governance (ethics, prioritization)
- 03 Validation and ongoing monitoring (FDA)
- 04 Resistant to change ("AI is taking over my job")
- 05 Measuring the ROI and getting funding from infrastructure 06
  - Talent acquisition model (skill gap, interdisciplinary teams)



## AI – Enhanced Education for Georgia's **Healthcare Workforce**

### **Georgia House and Senate AI Study Committee** Nov. 8, 2024

### D. Douglas Miller, MD CM, MBA, FACC

Professor of Medicine (Cardiology) and Radiology Medical College of Georgia





## AI = Technology Trend

REVIEW



CrossMark

### Artificial Intelligence in Medical Practice: The Question to the Answer?



D. Douglas Miller, MD, CM FACP,³ Eric W. Brown, PhD^b *New York Medical College, Valhalla; *Foundational Innovations, IBM Watson Health, Yorktown Heights, NY.

#### ABSTRACT

Computer science advances and ultra-fast computing speeds find artificial intelligence (AI) broadly benefitting modern society-forecasting weather, recognizing faces, detecting fraud, and deciphering genomics. AI's future role in medical practice remains an unanswered question. Machines (computers) learn to detect patterns not decipherable using biostatistics by processing massive datasets (big data) through layered mathematical models (algorithms). Correcting algorithm mistakes (training) adds to AI predictive model confidence. AI is being successfully applied for image analysis in radiology, pathology, and dermatology, with diag-nostic speed exceeding, and accuracy paralleling, medical experts. While diagnostic confidence never reaches 100%, combining machines plus physicians reliably enhances system performance. Cognitive programs are impacting medical practice by applying natural language processing to read the rapidly expanding scien-tific literature and collate years of diverse electronic medical records. In this and other ways, AI may optimize the care trajectory of chronic disease patients, suggest precision therapies for complex illnesses, reduce medical errors, and improve subject enrollment into clinical trials. © 2018 Elsevier Inc. All rights reserved. • The American Journal of Medicine (2018) 131, 129-133

KEYWORDS: Analytics; Artificial intelligence; Big data; Chronic disease; Deep learning; Electronic medical reco Machine learning; Medical imaging; Natural language processing; Neural networks; Precision medicine

Miller, DD, Brown, EW. Am. J. Med. 2018



Leverage its ongoing engagement in digital health and other priority areas for improving patient outcomes and physicians' professional satisfaction to help set priorities for health care

understanding of the promise and limitations of health care AI,

Explore the legal implications of health care Al, such as issues of liability or intellectual propert and advocate for appropriate professional and governmental oversight for safe, effective, and equitable use of and access to health care Al.

Identify opportunities to inter of practicing physicians inter design, validation, and impl care AI.

Promote development of the high-quality, clinically valid

#### Augmented intelligence in health care*

est in augmented intelligence (Al) and its pote Interest in augmented intelligence (AI) and its potential to dramatically impact medicine is growing public among Congress, fiederal agencies, and other health case stakholdes: As a loader in American medicine, our American Medical Association (AMA) is uniquely politioned to ensure that the evolution of AI in medicine benefits patients, physicians, and the health care community. This report contains baseline policy to guide AMA's engagement with a broad cross-section of stakholdes and policymakers to ensure that the policy of spatial physicians in various practice settings informs and influences the dialogue as this technology develops.

suring the appropriate implementation of AI in health e will require that stakeholders forthrightly address Ensuing the appropriate implementation or x in mean carw will require that stakeholders forthrightly address challenges in the design, evaluation, implementation, and oversight of Asystems, Through its strategic pagacity of a strategic and the strategic pagacity, availation, and implementation of high-quality, chically validation, and implementation of high-quality, across the health care community. A strong tradition of advocacy well positions our AMA to explore the legal implications of the emerging technologies of AI in health care and advocate effectively for appropriate professional and goverimental oversight for safe, effective, equitable use of and access to health care AI.

#### AMA policy

Anna points' As a leader in American medicine, our American Medical Association (AMA) has a unique opportunity to ensure that the evolution of augmented intelligence (AI) in medicine benefits patients, physicians, and the health care community. To that end our AMA will seek to:

Content derived from Assemented Intelligence (All in Health Case (Annual Meeting 2018

Encourage education for patients, physicians, medical students, other health care professionals, high-quality, clinically valid inter-ing designed and evaluat practices in user-center for physicians and other care team: Univer-ing transparent: Univer-ordermits bleading str reproduct/billy; encould calces step adoparties including get ency at look on vulner-away expansions, encou-new at look on vulner-away expansions, encou-new at look on vulner-away expansions, encou-new at look on vulner-away expansions, enco-integrity of personal information. Encourage education for patients, physicians; medical students, other health care professionals; and health administrators to promote grater of the provides with initiations of and health administrators to promote greater understanding of the promise and limitations of health care Al.

### Augmented Intelligence in Health Care, AMA 2018

### **Pre-AI** Medical Education – INFORMATION FLOWS



## **Pre-AI** Medical Education - SKILL ACQUISITION





## AI Era - DATA INFORMING EXPERT-BASED SYSTEMS



## AI in Medicine – MCG Course 2020



## AI-Data Interfaces – EXPERIENTIAL LEARNING

IBM Watson Studio - the workspace for AI/ML database query & analytics

### **Publicly Available Databases**

Genomics

Cancer mutations <u>https://cancer.sanger.ac.uk/cosmic</u> Clinical cancer genomics <u>https://www.cbioportal.org/</u>

Medical Imaging - visual recognition & image classification

https://echo360.org/media/bc3c85ee=92c6-4816-8b29-f93777a05fb6/public

- ABNXray15 dev set
- NORMXray20 dev set

### Supporting YouTube instructional videos

<u>https://m.youtube.com/watch?v=wvsE8jm1GzE</u>



## **Course EVALUATION & ASSESSMENT**

24 questions pre- & post-course quiz/exam

Pre-Assessment	Final Exam		Topic Co	overed In:
Points Grade	Points Grade	Topic Area	Pre- Clerkship Phase	Clerkship Phase
1.6	15.0	Antibiotic stewardship		
1.3	15.0	Artificial intelligence	*	*
2.0	17.5	Community health		
1.0	15.0	Counseling for behavioral change		
1.9	13.3	Developmental disabilities		
1.5	16.7	Environmental health		
1.3	13.3	Evaluation of health science literature	0	
2.4	15.0	Gun safety		
Mean Pre-course Score	Mean Post-courseScore			•••
1.5	13.8			



## Machine Learning Insights on Medical Learners



- Accurately classified medical learners into 4 unique clusters
- Reliably predicted cluster-specific academic outcomes

- Identified individual learners' place (**x**) within the data matrix and tracked their academic trajectories





Are Large Language Model "Stochastic Parrots"? # of Parameters (B)



## **Human Performance Emulation**

ChatGPT-3.5 Just Passes USMLE Without Special Training or Reinforcement



### ChatGPT-3.5 Explanations

- 305/376 publicly available USMLE questions were encoded
- Independent MD adjudicators
- High concordance & insight



Kung, TH, ChatGPT, et al. medRxiv, Dec. 2022

## **Human Performance Emulation**



Sensitivity = 84% Specificity = 75% Accuracy = 80%

Radiologists Sensitivity = 84% Specificity = 87% Accuracy = 85%



## **AI REALITY Meets Medical Practice 2023**



## LLMs – Effective Compute Power 2018-2028



Aschenbrenner, L. (OpenAI), 2024

## Physicians' ETHICAL Responsibilities

Lend Knowledge domain expertise to guide computer scientists' model design

Rules-based: describing decision steps and identifying special contexts ML-based: noting cause-effect inferences for predicting future outcomes

### Have Sufficient Al literacy to explain 'black box' predictive models to patients

Genetic risks of future diseases, in-hospital event risks, etc. Reducing physician - patient (data) disintermediation in the clinic



Miller, DD. npj Digital Medicine (Nature), 2019

## Physicians' *ETHICAL* Responsibilities

**Be aware of data provenance** - **quality impacts model scalability, reproducibility** Ophthalmology office retinal photo training data does <u>not</u> work using phone pics in rural India Older (pre-2021) training data may not reflect current uses

### Get involved in data inputting & quality assurance

Data wrangling before modeling (i.e., curating, pre-processing, etc.) Leading post-market release quality control (per FDA)



Miller, DD. npj Digital Medicine (Nature), 2019

## My Current Take...

"Willingness to adopt AI is <u>not the same</u> as individual/organizational readiness to use this potent technology responsibly..."

Why Not AI?

To assure patient safety, state medical licensing agencies require postgraduation continuing education, certification &/or credentialing in:

- Advanced life support (CPR, etc.)
- Use of controlled substances
- Pain management
- Tele-health/medicine
- Professional boundaries/misconduct



### **APPENDIX S**



## Georgia Senate Study Committee on Artificial Intelligence

Maria Saab, AWS Public Policy, and Brad Dispensa, AWS Security Specialist

## Agenda

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AI 101 What do I need to know?



Al Use Cases: Justice and Public Safety Organizational problems being solved



Regulatory Landscape Under Development Legislation, standards, recommendations and more...

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## AI 101



### Artificial intelligence (AI)

Any technique that allows computers to mimic human intelligence using logic, if-then statements, and machine learning

### Machine learning (ML)

A subset of AI that uses machines to search for patterns in data to build logic models automatically

### Large Language Models (LLM)

Extremely large sets of data used by artificial intelligence algorithms and deep learning techniques to summarize, generate, and predict new content



### Generative AI

Powered by large models that are pretrained on vast corpora of data and commonly referred to as foundation models (FMs)

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### **Artificial Intelligence Use Cases**

#### ORGANIZATIONAL PROBLEMS BEING SOLVED



## **Justice and Public Safety**

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### **Non-Emergency Call Diversion Chatbot**

#### ○ 9-1-1 staffing shortages

- Can range from 10% to over 30%
- Non-emergency calls placed to 9-1-1 create extended wait times for actual emergencies

#### o Non-emergency lines (10 digit lines)

- 2:1 ratio of 9-1-1 to non emergency calls)
- Some centers have wait times over 10 minutes
- Some centers not answering 10 digit lines at all

#### If needed, Non-emergency calls (10 digit lines) can still be automatically routed to 9-1-1

#### Automate the answering of non-emergency calls placed to 10 digit lines

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generation

Q&A



#### 2.0 Enable Beneficial Partnerships and Constituent Services 5.0 Proactively Detect and Using AI to Improve **Resolve Risks** 6.0 Promote Technology Enabled Business **Case Management** Performance 6.1 Provide IT 2.13 Provide The Los Angeles County Public Defender's office implemented 5.1 Ensure rvices (i.e. ourt & Legal Services Compliance Service an Al-powered client case management system. Catalog) The AI tool helped reduce manual data entry from documents 85%. Eliminated the need for the public defender staff to manually scan in thousands of paper files received daily. 160 million records stored in 23 different legacy systems were consolidated in one cloud based application. The AWS AI/ML Lab developed a custom system that ingests scanned PDFs, classifies useful pages, extracts agency-specific information and allows the Public Defender's office staff to verify results. Text Text aws Text © 2024, Amazon Web Services, Inc. or its affiliates. All rights reserved. generation extraction summarization 5.0 Proactively Detect and Resolve Risks Using AI to Improve Safety and 6.0 Promote Technology Enabled Business Performance Compliance 6.4 Maintain 5.1 Ensure 5.2 Ensure Security, Privacy & Compliance Safety Continuit Analyze content and identify objects of interest from large volumes of images and videos with Amazon Rekognition Detect personal protective equipment (PPE) to improve worker safety Analyze vehicle traffic and pedestrian and bicycle safety Detect objects of interest in video and reduce human effort required to review footage Image classification aws Video Analysis Search © 2024, Amazon Web Services, Inc. or its affiliates. All rights reserved.



## **Guidelines for AI Policy Development**

### Overarching principles:

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- » AI/ML is key to tackling some of humanity's most challenging problems.
- » AI/ML should be human-centric and for the benefit of all.

### How do we think about regulation at AWS?

» AI/ML regulation should be risk-based and appropriately assigned to the actor(s) best placed to address potential risks.

Technological advancement must respect the rule of law, human rights, and dignity, as well as our shared values of inclusivity, privacy, and fairness

### **Top Public Sector AI Concerns**



## **Regulatory landscape under development**

Various standards, recommendations, and regulations are currently being discussed to better understand and mitigate risk of AI systems.

European Commission

THE ALACT





Newly passed Colorado AI Act will impose obligations on developers and deployers of high-risk AI systems

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# THANK YOU!

### APPENDIX T

## Future-Ready: Harnessing Al to Enhance Public Safety and Emergency Response Outcomes

Presentation to: Senate Study Committee on Artificial Intelligence (AI)

November 8, 2024

Your Mission Matters

### MissionCriticalPartners

### **Understanding the Promise and Considerations of Al**

### **Discussion Topics**

- Top AI trends in public safety
- Public safety AI in the next 3-5 years
- Thoughts on ethical AI use, transparency, and public trust



Your Mission Matters



## Sampling Today's Top AI Use Cases In Public Safety

### Use of AI tools is increasing across the public safety ecosystem

- 911 / Emergency Communications Centers (ECCs) Non-emergency call diversion, transcription, translation and quality assurance
- Predictive Response Using historical data to identify potential hotspots and locations to stage EMS / paramedics
- Video Monitoring and Anomaly Detection Al-enabled cameras can detect vehicle crashes and wildfires to alert responders
- Report Writing Al-assisted report generation reduces the administrative burden on responders to document incidents

#### **Your Mission Matters**

MissionCriticalPartners

### **AI-Assisted Report Generation**

#### Without Al Tools

- The user relies on memory and hastily-handwritten notes
- Notes are transcribed into legacy, data-collection forms
- The process can literally take hours to complete, not including supervisor review

### With AI Tools

- Data is collected automatically using a mix of video, audio and data recording
- High-quality reports are drafted automatically, with users stepping through a comprehensive review process
- Reports are checked for quality in real-time, reducing the back-and-forth manual review process
- With hours saved, responders can get back to responding to emergency calls



**Your Mission Matters** 

### Next 3-5 Years: "Endless" Opportunities For AI Tools

- Autonomous Emergency Response Al-powered drones, robots, and autonomous vehicles could lead in responding to emergencies
- AI-Enhanced Cybersecurity AI will be essential for protecting critical networks from cyber-attacks by autonomously detecting and neutralizing cyber threats
- Enhancing Training Scenarios Al offers immersive, realistic, and dynamic simulations that adapt to different learning needs
- Augmented Reality (AR) for Navigation and Assessment Al could help firefighters navigate buildings or disaster sites, with overlays showing structural weak points or live temperature maps

MissionCriticalPartners

### **AI-Enhanced Scalable, Realistic and Adaptive Training**

- 911: Scenarios that mimic live emergency calls, including difficult or confusing callers, background noise, and stressful situations
- Police: Practice de-escalation, handling confrontations and high-stress situations like domestic disputes or active threat scenarios
- Fire: Simulations that mimic real fire behavior, showing how fire spreads based on building materials, airflow, and temperature
- **EMS**: Practice diagnosing and treating conditions, such as trauma, cardiac arrest, or stroke, in real-time AI scenarios

**Your Mission Matters** 

Your Mission Matters

MissionCriticalPartners

## Ethical Ai Use, Transparency and Maintaining Public Trust

- Responsible use of AI in government is a critical concern
- Al must be applied with full transparency, rigorous oversight, and immediate correction of any instances of bias
- Safeguards against bias must be built into the early stages of system selection and testing
- Al systems will support, *rather than replace*, human decision-making (maintaining a "human in the loop")
- We must protect the public from the risks of unchecked automation



MissionCriticalPartners

#### **Your Mission Matters**

### **APPENDIX U**

### Deloitte.

## Georgia Senate Discussion Artificial Intelligence

November 8, 2024

### Agenda and Key Objectives

#### CONTENT

01 Our Al Footprint

- Al Spectrum Overview
- Health Care Use Cases
- 02 Becoming AI Ready

Ready AI Framework

Trustworthy Al



Question and Answer

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# AI is Rooted in Everything We Do



# The Al Spectrum

Al encompasses a wide range of capabilities that use computer systems to generate human-like outcomes. Al delivers a myriad of business benefits regardless of your position on the Al spectrum.



-2

# **Health Care Use Cases**



DOCUMENT GENERATION Health Care Notices/ Correspondence, Invoices, Appointment Scheduling, ICD Code Assignment



#### CASE/ PROVIDER MANAGEMENT

Diagnostic Assistant, Patient History Analysis, Inspect Al, Social Determinants of Health



K N O W L E D G E M A N A G E M E N T VR/ AR Training, Epidemiology Hub, Health Outcome Analysis



#### BACK-OFFICE FUNCTIONS

Health Plan Comparison, Code Assist, HR Agents, Public Health Data Platform



CUSTOMER/ PATIENT

Connected Customer, Call Centers, Generative Chat, Patient Alerts, Al Assist

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#### Case Study

### TennCare Long Term Services and Supports (LTSS) Aldvisor

The LTSS (Al)dvisor solution is a **document-based generative Al question and answering solution** that enables LTSS staff to ask LTSS guideline-related questions and **return clear and summarized answers** using TennCare policy manuals, system documents, and process maps as reference materials. TennCare (Al)dvisor

Impact

Data access workflow automation enables the ability to gain untapped knowledge about data in real-time Cloud Foundation enables implementation of additional Al solutions across its business lines Reduced training burden on LTSS program staff and increased efficiency in case processing

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# Translating Health Care Policy into Reality

Interpret and explain policy to enhance compliance and improve operational efficiency



*Trustworthiness, Security, & Risk and Customer & User Experience are core to all AI capability areas and should be considered throughout the AI Journey

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# Governing AI using the Trustworthy AI[™] Framework

Trustworthy AI is a framework than enables our clients to identify, mitigate and manage AI risk.



## 2024 state AI policy landscape

According to the National Conference of State Legislatures, over 480 AI bills were introduced during the 2024 legislative sessions. Enacted AI legislation predominately focused on regulating deepfakes in elections, explicit materials, or in audio or visual productions as well as creating AI study committees. Additionally, two states passed legislation imposing obligations on employers' use of AI.



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## 2024 comprehensive state AI policy landscape

Colorado was the first state to pass comprehensive AI legislation, imposing obligations on developers and deployers of AI. Utah passed legislation that imposes disclosure requirements on certain occupations when using GenAI. California also passed numerous pieces of legislation that impose obligations around the use of AI.

Utah	Colorado	California
<ul> <li>SB 149: Establishes liability for use of GenAI that violates consumer protection laws if not properly disclosed</li> <li>Regulated occupations shall prominently disclose when a consumer is interacting with GenAI</li> <li>Others subject to Utah Consumer Protection laws must disclose interactions with GenAI, if asked or promoted by the user</li> <li>Creates the Office of AI Policy</li> <li>SB 84: Creates the Innovation in AI Grant Pilot Program</li> </ul>	<ul> <li>SB 205: Sets guardrails around developers and deployers of high-risk AI systems, defined as systems making a consequential decision</li> <li>Disclosure requirements and impact assessments for both developers and deployers</li> <li>Expect changes to the law before it takes effect in February 2026</li> <li>HB 1468: Establishes an AI task force</li> </ul>	<ul> <li>SB 942: Requires providers to make available a free AI detection tool and offer users the option to watermark AI-generated content</li> <li>AB 2013: Requires developers to disclose the data used to train systems of service</li> <li>SB 896: Requires state agencies to include disclaimers when using GenAI to directly communicate with public regarding services and benefits</li> </ul>

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