



FALL 2026 REPORT

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FALL 2026 NEWSLETTER



Letter from the Director

Ashok Goel

Executive Director, NSF AI-ALOE Institute

This fall marks an exciting moment for AI-ALOE. We are not only **celebrating five years as a National AI Institute**, but also our **renewal by the National Science Foundation through 2031**. This milestone reflects the dedication of our researchers, educators, students, and partners and gives us an opportunity to build on what we have learned while looking ahead to new questions and opportunities.

From the beginning, AI-ALOE has been guided by a central question: **How can AI strengthen adult learning while keeping learners and instructors at the center?** Over the past five years, our research has explored that question through technologies developed and studied in real-world learning environments.

In this issue, we highlight several of those efforts, including **SAMI**, **VERA**, and **A4L**, which examine different dimensions of learning, from social connection and scientific reasoning to understanding learning across educational technologies and environments. We also share updates on **Apprentice Tutors**, **iTELL**, **SMART**, **Jill Watson**, and **Ivy**, each exploring different ways AI can support teaching, learning, and educational decision-making.

This issue also highlights the people behind this work. We feature **Sanaz Ahmadzadeh Siyahrood**, **Sandeep Kakar**, **Jinho Kim**, and **John Kos**, whose research explores important questions about AI, learning, and education. Their work, along with that of our many researchers, students, educators, and partners, continues to deepen our understanding of how AI can support learning.

Looking ahead, we will build on that foundation through renewed partnerships with research, education, and industry collaborators. Together, we will explore how communities of AI agents can support skilling, reskilling, and upskilling in areas such as advanced manufacturing and data science. Yet our goal extends beyond preparing learners for today's workforce. As AI continues to evolve, we seek to understand how it can help people develop the adaptive expertise needed to continually learn, apply new knowledge, and respond to changing opportunities throughout their lives.

Thank you for being part of the AI-ALOE community. We look forward to the work ahead.

Member Spotlights



SANAZ AHMADZADEH SIYAHROOD
GRADUATE RESEARCH ASSISTANT

Sanaz Ahmadzadeh Siyahrood is a Ph.D. candidate in design computing at Georgia Tech with a minor in Human-Centered Responsible AI. She works with Dr. Michael Hoffmann on the User-Engaged Design (U-ED) Team, where her research focuses on shaping the design of responsible AI tools developed through the AI-ALOE Institute. The team follows the IEEE Recommended Practice for Assessing the Impact of Autonomous and Intelligent Systems on Human Well-Being to understand the experiences of people affected by AI technologies. Sanaz previously earned a Master of Science in Information Technology with a concentration in Human-Centered Design and a Master of Science in Computational Design from the University of North Carolina at Charlotte.

Are you currently teaching any courses or participating in programs supported by AI-ALOE?

During summer 2026, I participated in the AI4Ed Summer Fellowship Program, supported by Google and the NSF AI Institutes Virtual Organization (AIVO), as one of two Ph.D. students selected from AI-ALOE. With a teammate from the INVITE AI Institute, I helped design and develop a four-phase AI agent to detect imbalance and facilitate equitable participation in online team projects. We focused on responsible design and explored whether LLM-simulated students could reflect realistic interactions and help evaluate the agent. This experience allowed me to combine my research interests with AI design and development while exploring how responsibly designed AI tools can support more equitable and inclusive collaborative learning.

What skills or experiences from your time with AI-ALOE have you found most valuable?

Working with users and stakeholders has been one of my most valuable experiences with AI-ALOE. Learning about their experiences, challenges and the impacts of AI on their well-being has broadened my perspective and strengthened my approach to AI design and evaluation. Through evaluating seven AI tools and applying the IEEE 7010-2020 standard, I developed skills in designing evaluation strategies, identifying findings, assessing well-being impacts and using evidence to improve AI systems and the evaluation framework. I am also grateful to my advisor, Dr. Hoffmann, whose guidance has strengthened my communication, technical and analytical skills, critical thinking, writing, problem formulation and problem-solving abilities.

Recent publications and projects:

I contributed to the institute-wide publication *Guidelines for Designing AI Technologies to Support Adult Learning* and, with the U-ED and SMART teams, I contributed to a book chapter on integrating GenAI into AI applications through user-engaged and use-inspired research, *GenAI Integration into an AI Application Through User-Engaged and Use-Inspired AI Research (2026)*.

I also presented A Collaborative Virtual Agent for Detecting Imbalance and Facilitating Equitable Participation in Team Projects of Online Students at the AIVO-Google.org AI4Ed AI Institute Research Fellowship summit in Chicago on August 18–20, 2026.

Discover more on [Google Scholar](#).

Member Spotlights



SANDEEP KAKAR
RESEARCH SCIENTIST II

Sandeep Kakar is a researcher with the National AI Institute for Adult Learning and Online Education (AI-ALOE) and a Research Scientist in the Design & Intelligence Lab at the Georgia Institute of Technology's School of Interactive Computing. He is part of the team leading Jill Watson, AI-ALOE's virtual teaching assistant designed to support students and instructors in online learning environments. Kakar's research focuses on using artificial intelligence to improve learning outcomes in online education. He holds an M.S. in computer science, a Ph.D. in physics and an M.B.A.

Are you currently teaching any courses or participating in programs supported by AI-ALOE?

My work with AI-ALOE primarily focuses on developing and deploying AI technologies in postsecondary education, particularly Jill Watson. Jill Watson has been deployed in a variety of learning environments, both in-person and online, to explore how conversational AI can support students and instructors.

What skills or experiences from your time with AI-ALOE have you found most valuable?

One of the most valuable experiences has been deploying AI research into classrooms. Working on Jill Watson has provided hands-on experience designing, deploying and evaluating conversational AI in classrooms, while emphasizing student needs and rigorously evaluating impact on teaching and learning.

I have also gained experience developing AI for efficiency and scale. Jill Watson's authoring tool enables instructors to create an agent in minutes by uploading course materials through a dedicated web interface. From summer 2024 through spring 2025, Jill Watson was deployed through Georgia Tech's OMSCS program and at four Technical College System of Georgia institutions—Gwinnett Technical College, Southeastern Technical College, Southern Regional Technical College and Augusta Technical College—reaching more than 3,000 students across 27 courses.

Kakar is now leading an effort to make Jill Watson available across Georgia Tech courses over the coming months.

Recent publications and projects:

- Reddig, J., et al. (2026). Guidelines for Designing AI Technologies to Support Adult Learning. In Proceedings of the 2026 Designing Interactive Systems Conference (DIS '26), 2474–2496. <https://doi.org/10.1145/3800645.3813102>
- Basappa, R., et al. (2025). Self-Explanation in Social AI Agents. arXiv. <https://arxiv.org/abs/2501.13945>
- Jill Watson: Conversational Courseware. AI-ALOE Virtual Research Showcase (2025). <https://aialoe.org/ai-aloe-virtual-fall-2025-showcase/>
- Discover more on [Google Scholar](#).

The AI-ALOE feature, [The Return of Jill Watson](#), provides an overview of the project and its development. [Self-Explanation in Social AI Agents](#) explores how AI social assistants can explain their actions to enhance transparency and trust in online learning.

Member Spotlights



JINHO KIM

GRADUATE RESEARCH ASSISTANT

Jinho Kim is a Graduate Research Assistant at AI-ALOE and a Ph.D. student in the Department of Learning Sciences at Georgia State University. Since joining the AI2 Research Lab in 2022, her research has focused on using artificial intelligence to improve teaching and learning through formative feedback and educational technologies. Her work spans AI-supported concept learning in online environments and scenario-based simulations for nursing education. Jinho earned bachelor's and master's degrees in education and a bachelor's degree in computer science from Yonsei University in Seoul, South Korea.

Which AI-ALOE technology group are you affiliated with?

I am part of the SMART (Student Modeling and Adaptive Response Technology) team at AI-ALOE, led by Dr. Min Kyu Kim. We have developed and deployed SMART, a web-based AI tool that supports formative feedback on students' written summaries across English, nursing, biology and other courses at the Technical College System of Georgia (TCSG), Georgia State University and Georgia Tech.

Are you currently teaching any courses or participating in programs supported by AI-ALOE?

This summer I participated in the AIVO AI4Ed Summer Graduate Fellow Program, sponsored by Google.org, which brings together students from the five NSF AI in Education Institutes. My teammates and I examined whether multimodal large language models can serve as pedagogically aware evaluators of educational diagrams, specifically whether these models can understand a diagram and reliably judge its correctness. Working with teammates from different institutes and research backgrounds has also given me the opportunity to find common ground and learn from others.

What skills or experiences from your time with AI-ALOE have you found most valuable?

Gaining experience working across disciplines has been one of the most valuable aspects of my experience with AI-ALOE. Given my background in both education and computer science, interdisciplinary collaboration has been especially rewarding. I have also gained valuable experience throughout the research process, from experiment design to deployment and evaluation, which I know will continue to shape my work in the future.

Recent publications and projects:

Recent publications include:

1. Kim, J., Galindo-Parra, M. F., Kim, S., Bae, Y., Hendry, T. M., Galen, S. S., & Kim, M. K. (2025). Design-based research for scenario-based, generative AI-augmented simulation in nursing education. In Proceedings of the 19th International Conference of the Learning Sciences (ICLS 2025) (pp. 2801–2803).
 2. Bae, Y., Kim, J., & Kim, M. K. (2026). Four years of AI-powered formative assessment: Exploring the 2-sigma effect and fairness. In Proceedings of the 20th International Conference of the Learning Sciences (ICLS 2026) (pp. 1382–1386).
- Discover more on [Google Scholar](#).

Additionally, I presented our AIVO AI Institute Summer Graduate Fellowship project, *Edu-MLLMs: Do Multimodal Foundation Models Understand or Just Trust the Diagram?*, at the August 2026 AIVO AI4Ed Summer Summit in Chicago, IL.

Member Spotlights



JOHN KOS
STUDENT RESEARCHER

John Kos is a third-year Ph.D. student in the School of Interactive Computing at Georgia Tech, where he conducts research in the Design and Intelligence Laboratory and contributes to the AI-ALOE VERA project. He earned undergraduate degrees in Business and Computer Science from the University of Maryland, College Park, before working as a Junior DevOps engineer at Power Auctions. His experience working alongside Ph.D. researchers sparked his interest in advanced research and led him to Georgia Tech's Online Master of Science in Computer Science (OMSCS) program. After joining the VERA project, he transitioned into the Ph.D. program and now serves as the project's doctoral researcher.

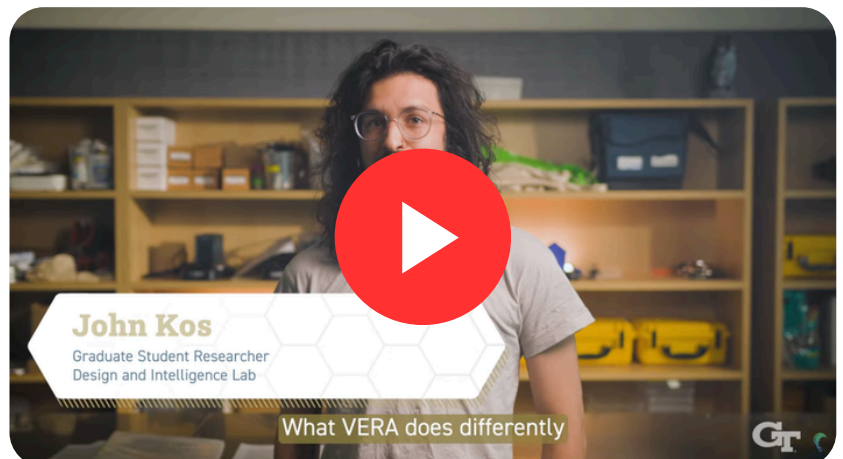
What skills or experiences from your time with AI-ALOE have you found most valuable?

One of the most valuable aspects of AI-ALOE has been the opportunity to collaborate with teams across a wide range of research projects. Although each project focuses on a different application, many share common theoretical foundations, such as encouraging student self-reflection, determining the right level of instructional support, and fostering meaningful interactions between teachers and peers. Seeing these connections has inspired me to think about how successful approaches in one domain can be adapted and applied to others.

Recent publications and projects:

John contributes to the AI-ALOE VERA project, an AI-guided learning technology designed to help students develop critical thinking skills. The video below provides an overview of VERA and explores how AI can guide students through learning and encourage deeper reflection.

Discover more on [Google Scholar](#).



RESEARCH & TECHNOLOGY UPDATES



A central goal of AI-ALOE is to create and study AI-powered technologies that make learning more engaging, personalized, accessible, and effective for adult learners. Researchers across the institute continue to advance a growing portfolio of educational technologies designed to address challenges in online and lifelong learning, from providing individualized tutoring and feedback to fostering social connection, supporting skill development, and expanding access to hands-on learning experiences.

The following section provides updates from AI-ALOE's technology ecosystem, including **VERA**, **SAMI**, **A4L**, **Apprentice Tutors**, **iTELL**, **Ivy**, **Jill Watson**, and **SMART**. Together, these technologies support personalized learning, interactive reading and video experiences, virtual teaching assistance, learner connection and community building, automated feedback, and virtual laboratory experiences. The updates that follow showcase recent advances in research, development, deployment, and impact, illustrating how AI-ALOE technologies are helping shape the future of AI-enabled education.

VERA: From Ecological Simulations to a General-Purpose Learning Platform

VERA (Virtual Ecological Research Assistant) began with a focused goal: **helping learners develop scientific thinking by building, testing and revising models of complex ecological systems.** Today, that work is expanding toward a broader vision of AI-powered learning that can adapt across disciplines.

Developed through the NSF AI Institute for Adult Learning and Online Education (AI-ALOE), VERA investigates how artificial intelligence can support active learning, learning by doing, reflection and personalized feedback

Through model construction, simulation and iterative problem-solving, VERA enables learners to test ideas, analyze results and revise their thinking. This approach reflects a central AI-ALOE research goal: **using AI to support deeper cognitive engagement while helping learners develop both conceptual knowledge and practical skills.**

From Learning Through Simulation to Learning Through AI

VERA was initially developed around ecological modeling, enabling learners to construct graphical models of ecological systems, run agent-based simulations, analyze outcomes, and refine their models based on evidence.

The process is intentionally iterative. Instead of simply receiving an answer or being told whether a response is correct, learners are encouraged to **form hypotheses, construct models, test their ideas, evaluate outcomes** and **revise their models.**



Rather than simply receiving an answer, learners form hypotheses, construct models, test their ideas, evaluate outcomes and revise their models. This enables researchers to study not only what learners know, but how they reason through complex systems.

The approach is particularly relevant to adult learning, as learners may bring varied levels of prior knowledge and experience to realistic, interactive learning environments.

From Research to the Classroom

A major milestone in VERA's development came through AI-ALOE's 2022 partnership with the North Georgia Technical College (NGTC).



VERA was deployed in two environmental science courses, ESCI 2030: Forest, Stream and Wetland and ESCI 2060: Advanced Wildlife Management. During the summer 2022 semester, students in ESCI 2030 used VERA as part of a final exam focused on modeling a fish ecosystem native to North Georgia. Rather than working from a completed model, students built their own, step by step, and ran simulations. **Across the activity, 13 students created 25 models.**

The deployment enabled researchers to examine how learners approached complex modeling tasks in an authentic educational environment. Students spent an average of **more than 11 minutes** developing and refining their solutions, which were **approximately 2.5 times more complex than necessary** to answer the question, based on the number of components and relationships included.

These findings raised questions about how learners use AI-supported modeling environments and whether their modeling behavior differs between high-stakes assessments and lower-stakes activities designed for exploration and practice.

Beyond demonstrating classroom implementation, **the NGTC partnership provided an important research environment for understanding how AI-powered learning tools can influence learner behavior, reasoning and engagement.**

Turning Classroom Use Into Learning Research

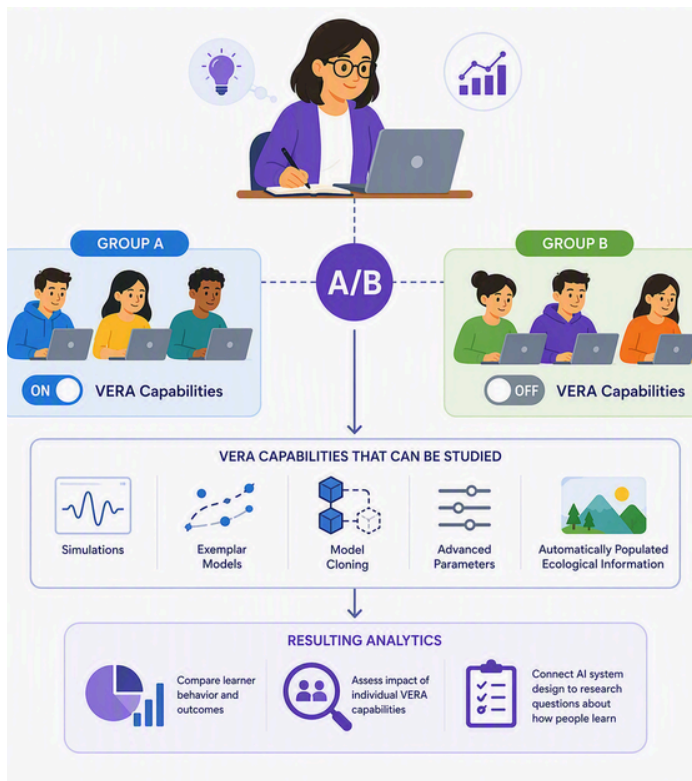
As VERA developed, AI-ALOE researchers also began building capabilities that could help instructors and researchers understand what happens while students interact with the platform.



TEACHER MODE

Teacher Mode provides instructors with a web-based dashboard for managing course rosters and viewing student analytics. Instructors can examine measures such as time spent working and model complexity at both the individual and aggregate levels.

These analytics connect learner activity with instructional decision-making, helping instructors understand how students engage with complex modeling tasks.



RESEARCHER MODE

Researcher Mode supports controlled studies of the learning environment. Researchers can **conduct A/B experiments** by enabling or disabling specific VERA capabilities for different groups of learners. Features under study can include simulations, exemplar models, model cloning, advanced parameters and automatically populated ecological information.

The resulting analytics connect specific system features with research questions about learner behavior and outcomes.

Expanding Beyond Ecology

While VERA was originally developed for ecological modeling, current research is exploring its application in other domains, including **personal financial planning**. A 2026 VERA poster introduced a domain-agnostic architecture that generates runnable simulations from human-readable specifications (see *Figure 1*), enabling researchers to investigate whether AI-supported modeling and simulation can help learners reason about complex systems across disciplines.

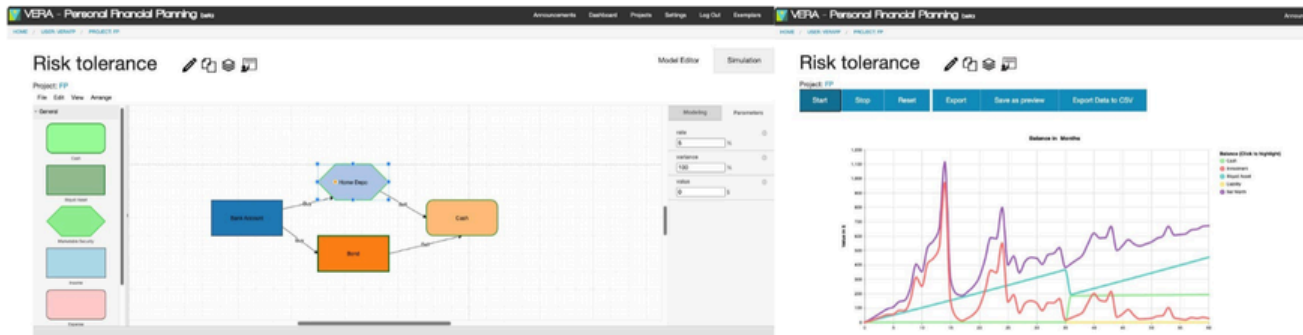


Figure 1: Snippet from research poster “Personalization of Learning: Extending VERA to Personal Finance and Beyond”

From Ecological Modeling to a Broader Learning Platform

VERA's evolution illustrates AI-ALOE's approach to educational innovation: developing a technology, deploying it with learners, studying its effects, and using those findings to guide future development. The initial ecological application **provided a focused environment for developing and testing the technology**, while the North Georgia Technical College deployment **generated new insights into learner behavior and AI-supported modeling**. Teacher and Researcher Modes **expanded VERA's value for instructors and researchers**, and current work in personal financial planning is **testing whether the architecture can support learning in substantially different domains**.

Underlying this progression is a broader AI-ALOE goal: **developing AI that supports learners without taking over the learning process**. VERA provides guidance, simulations, and feedback while leaving learners responsible for forming hypotheses, making decisions, testing ideas, and interpreting results. More than an AI tutor, VERA has become a platform for studying and supporting how people learn to reason about complex systems.

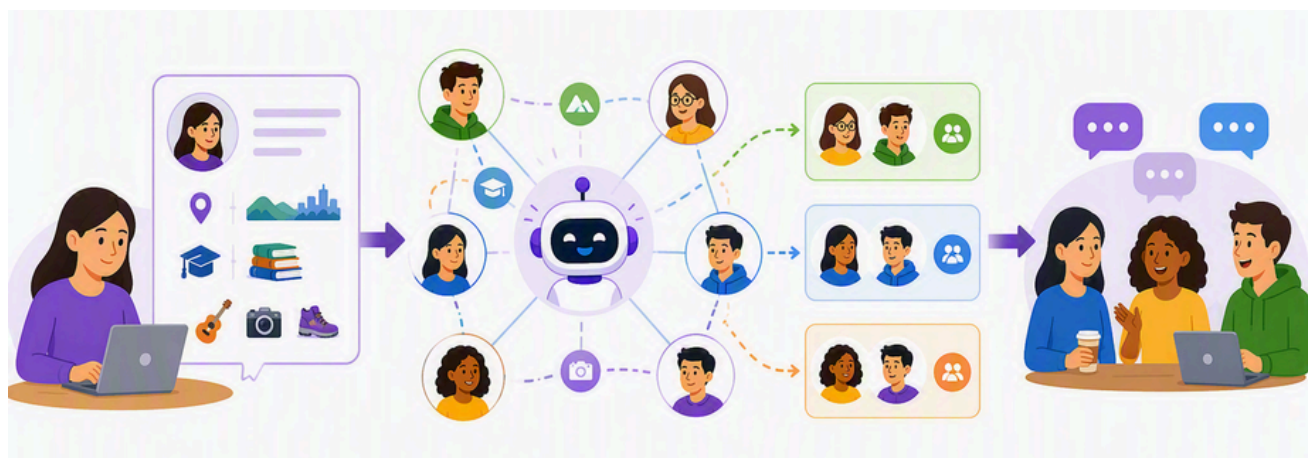
From ecological modeling to emerging applications in personal financial planning and other domains, VERA demonstrates how AI-ALOE develops technologies, tests them with learners, and uses evidence from those deployments to create more adaptable systems for adult learning and workforce education.

SAMI: From Connecting Online Learners to Building More Trustworthy AI Agents

SAMI (Social Agent Mediated Interactions) began with a simple question: **Can artificial intelligence help students build meaningful social connections in large online classrooms?** Developed through the NSF AI Institute for Adult Learning and Online Education (AI-ALOE), SAMI was created to address one of the persistent challenges of online education: social isolation.

While online learning expands access and flexibility, learners often have fewer opportunities to build relationships with classmates and instructors. Research has linked social engagement to stronger learning outcomes, including increased interaction with course materials, improved task completion, and higher academic performance. SAMI addresses this challenge by acting as a **social AI agent** that helps students discover one another based on shared interests, experiences, and academic goals.

Students begin by posting introductions in an online discussion forum. SAMI uses natural language processing to identify characteristics such as **hobbies, location, courses, and academic interests**, represents this information in a knowledge graph, and applies a **matchmaking algorithm to recommend classmates with similar characteristics**. .



As researchers studied how students interacted with SAMI, a new question emerged: **If an AI agent is influencing how students connect with one another, should it also be able to explain how it makes those decisions?** This question now shapes the next phase of SAMI's development and reflects a broader AI-ALOE interest in making AI systems more transparent, trustworthy, and accountable.

Testing Whether AI Can Increase Belonging

AI-ALOE researchers began studying whether SAMI's matchmaking approach actually changed students' experiences in online courses.

During the Summer 2026 term, approximately **700 students provided feedback** on their experiences with SAMI. Among students who connected with one or two classmates, **77%** reported that SAMI helped them discover people they would not have found on their own. Among students who connected with three to five classmates, that figure **increased to 83%**, and **60% agreed that a tool like SAMI can help reduce the isolation often associated with online courses.**



Students who built multiple connections rated SAMI 3.2 out of 5 overall. Among those who carefully reviewed their matches before reaching out, **47% rated the experience a 4 or 5 out of 5**, suggesting that more intentional engagement may lead to stronger outcomes.

These findings are consistent with earlier research. In a 2024 study of an online course, students who used SAMI reported a stronger sense of belonging than students who did not, with average scores of **3.96 out of 5** compared with **3.53 out of 5**, respectively. Two years and **more than 11,000 learner enrollments** later, the evidence continues to suggest that students who actively engage with SAMI report stronger connection and belonging within their online learning communities.

A4L: Building the Infrastructure for AI-Augmented Learning

As AI becomes increasingly integrated into education, institutions face a new challenge: **How can we make sense of the growing amount of data generated by students, learning platforms, and AI-powered educational tools?**

Developed through the NSF AI Institute for Adult Learning and Online Education (AI-ALOE), A4L (Architecture for AI-Augmented Learning) provides the infrastructure needed to capture, standardize, analyze, and share learning data across educational systems and AI tools. By enabling data to move securely across educational systems and AI tools, A4L creates the foundation for an interconnected learning ecosystem.

At the center of A4L is a simple feedback loop: **capture learning activity, analyze what it means, and return those insights to students, instructors, and AI systems to support more personalized learning.**

The Challenge: Learning Data Is Fragmented

A foundational contribution of A4L is its emphasis on data standardization. AI learning tools generate large amounts of interaction data, but that information is only useful for broader analysis if it can be represented consistently and linked to other educational data.



To address this challenge, A4L maps AI-generated interactions into standardized educational events using the 1EdTech Caliper Analytics standard. For example, interactions from tools such as **Jill Watson** and **VERA** can be translated into a common data model, enabling researchers to analyze learning across technologies rather than analyzing each one separately.

This creates new opportunities to investigate how AI interactions relate to engagement, learning behavior, and academic outcomes.

From Data to Actionable Insights

A4L converts learning data into actionable information through a multi-layered architecture consisting of a **Data Engine**, **Data Standardization and Anonymization**, a **Data Store**, and interconnected **Analytics** and **Visualization Pipelines**. Together, these components transform fragmented learning data into insights that support research, instruction, and personalized learning—see *Figure 1*.

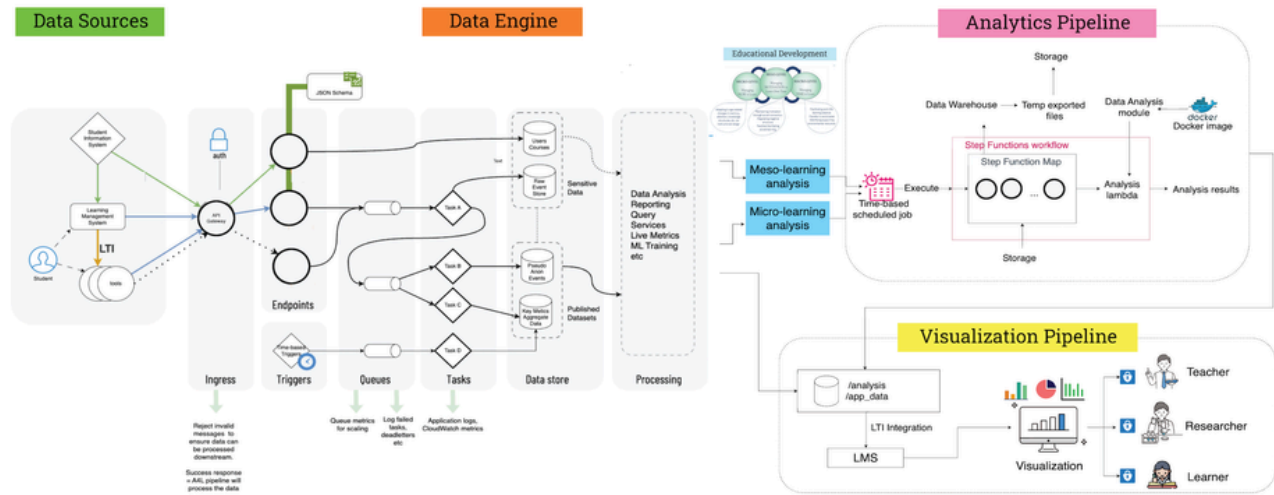


Figure 1



The **Analytics Pipeline** processes and analyzes data to identify patterns at different levels of learning, from individual interactions to broader course-level trends.



The **Visualization Pipeline** transforms those analyses into accessible dashboards and visual tools for students, instructors and researchers.

One example of this is the **Questions Over Time dashboard** developed around **Jill Watson**. Rather than simply reporting whether a student interacted with an AI assistant, the dashboard places those interactions within the context of the broader learning activity, helping instructors better understand help-seeking behaviors, engagement trends, and opportunities for intervention.

These capabilities create the foundation for a **bidirectional feedback loop** in which insights generated from learning data can be returned to students, instructors, and AI systems to support more informed decisions and personalized support.

Personalization at Scale

A4L's broader vision is to enable personalization at scale.

- **For instructors**, this may mean receiving timely insights into student engagement and performance that support targeted interventions.
- **For students**, it may mean receiving recommendations or learning support tailored to their activity and progress.
- **For AI systems**, it may mean gaining additional context about the learner and the course environment to deliver more relevant and adaptive assistance.

Together, these capabilities support a more connected and personalized learning ecosystem.

From Architecture to Deployment

A4L has increasingly moved from defining an architecture to testing it in real educational environments. A key milestone was the **Spring and Summer 2026 deployment of the A4L 2.0 infrastructure in Georgia Tech's Online Master of Science in Computer Science Knowledge-Based AI (KBAI) courses.**



The deployment incorporated data from institutional systems and AI learning technologies, with development focused on **data integration, standardization, analytics, and dashboards.** The team worked to integrate data from the Student Information System and Canvas while establishing standardized data flows for **Jill Watson, SAMI, and VERA.**

Importantly, the deployment introduced live learning data into the architecture, moving beyond demonstrations based on static datasets. This transition represents a significant step toward establishing A4L as an operational learning-data infrastructure rather than a research prototype.

Apprentice Tutors

Expanding Classroom Deployment

Apprentice Tutors is an AI-powered tutoring system that provides personalized, adaptive support while helping instructors monitor student learning and progress.



This year, Apprentice Tutors expanded into mathematics and nursing courses across the **Technical College System of Georgia (TCSG)**, where researchers are conducting A/B studies to evaluate its impact on learning outcomes. The team is also finalizing **TEACH**, a platform that will enable educators to build and customize their own intelligent tutors, with broader prototyping planned for Fall 2026.

Researchers under this technology are currently analyzing data from spring deployments to better understand the system's effects on student learning and course performance.

Recent findings from A/B experimental studies were presented at an Artificial Intelligence in Education (AIED) workshop, demonstrating the project's commitment to rigorous evaluation and dissemination.

The project also celebrated several notable milestones. AI-ALOE researcher **Glen Smith** received a Center for Scientific Software Engineering at Georgia Tech fellowship to expand work on Teachable AI, and team members **Jenn Reddig**, **Glen Smith**, **Momin Siddiqui**, and **Daniel Weitekamp** completed their graduate and postdoctoral studies, contributing to AI-ALOE's mission of developing the next generation of researchers and innovators.

iTELL (Intelligent Texts for Enhanced Lifelong Learning)

Scaling Interactive Learning

iTELL is an AI-powered platform that transforms digital content into interactive learning experiences that support comprehension, reflection, and engagement.



A major milestone this year was the development of iTELL into a self-service platform that enables users to upload PDFs and convert course materials into intelligent, interactive content. The platform was field-tested with design partners at the **SkillsCenter at Colorado State University** and the **Tennessee Board of Regents**, helping the team refine usability and improve platform stability. New design partnerships were also established with **Motlow State Community College** and the **Sustainability Management Institute** to support continued development and deployment.

Feedback from these collaborations has provided valuable insights into the user experience and informed ongoing improvements that create a more seamless and accessible platform.

Several other notable advancements further expanded the platform's capabilities and reach. Researchers presented work on automated cloze generation methods at the **Society for Text and Discourse Annual Conference**, completed the **NSF Innovation Corps (I-Corps)** program, and were invited to present at the **Postsecondary CTE Summit**. In recognition of the technology's commercialization potential, iTELL received a **Chancellor's Launch Grant from Vanderbilt University** to support future product development and translation.



A public-facing product website, [iTELL.ai](https://itell.ai), was launched this year.

SMART (Student Mental Model Analyzer for Research and Teaching)

Deployment and Discovery

SMART is an AI-supported formative assessment system that helps learners strengthen their understanding of course content through personalized feedback on written summaries.



This fall, SMART is being deployed in nursing courses at **Georgia State University**, expanding opportunities to study how AI-supported feedback can enhance learning in authentic educational settings. The team is also preparing to deploy Jill Watson and SMART in tandem, advancing research on how multiple AI-enabled supports can be integrated to improve learner and instructor experiences.

Researchers continue to analyze learning behavior data from previous nursing course deployments at Georgia State. Initial findings suggest that **SMART's effectiveness may interact with important learner characteristics**, including race and first-generation student status. Additional analyses **identified two distinct learner archetypes**, providing new insights into how different students engage with AI-supported learning environments.

The SMART team remained active in research dissemination throughout the year. The project contributed a short paper, two posters, and a symposium paper at the **International Society of Learning Sciences (ISLS) Annual Meeting** in June, along with a new manuscript. SMART research was also featured through five posters at the **AI-ALOE Annual NSF Review** and a presentation at the **2026 AIVO AI4Ed Summer Summit**.



Attendees of the 2026 AIVO AI4Ed Summer Summit in Chicago, IL, gather for a photo.

Dr. Min Kyu Kim was invited to virtually present at **Inha University** in Incheon, South Korea, as part of a workshop series on instructional innovation and introduced examples of AI-augmented instruction in higher education and adult learning to an audience of more than 200 faculty and staff members.

Scaling AI Coaching for Procedural Learning

Ivy is an AI coaching system designed to help learners understand not just what to do, but how and why procedures work, supporting deeper procedural learning and problem-solving.

Ivy's first full-course deployment came in Spring 2026 in Georgia Tech's Knowledge-Based AI (KBAI) course. It **supported approximately 115 learners**, achieved **91.4% participation**, and **received more than 2,000 student questions**. Embedded alongside instructional videos, Ivy served as an always-available coach that helped students explore procedural skills within structured learning activities—see Figure 1.

Deployments have scaled quickly: **714 learners across 25 lessons** in the online OMSCS KBAI course in Summer 2026, and **over 1,000 students expected in Fall 2026** across two courses, KBAI and a new AI in Education (AIE) course, making it the project's largest deployment to date.

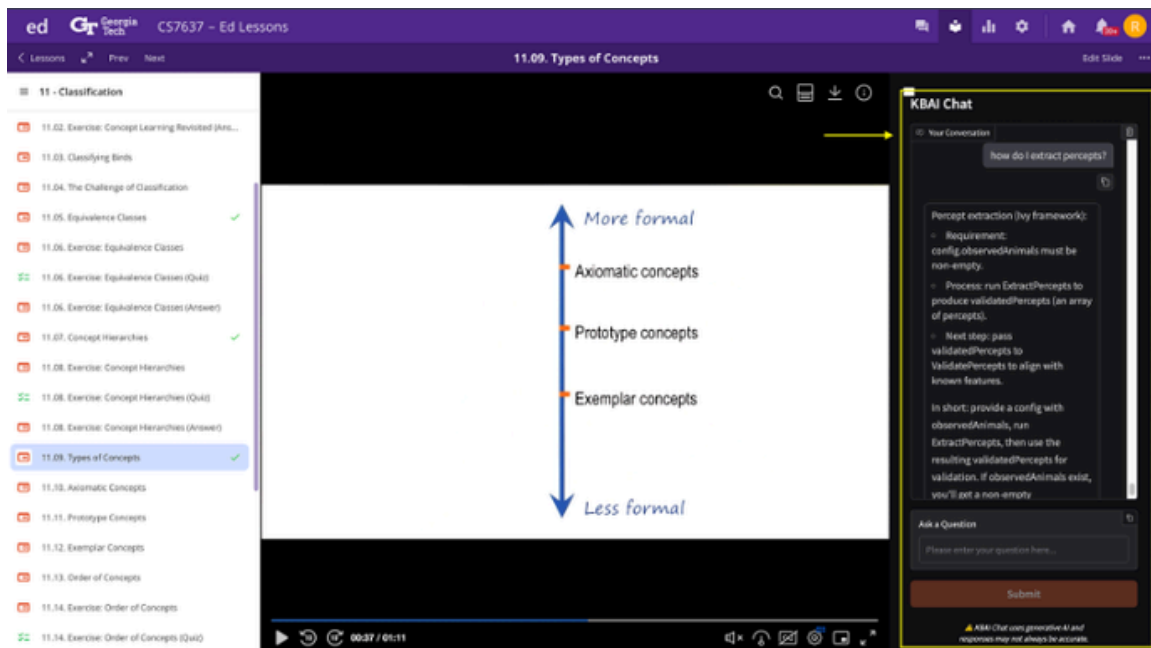


Figure 1: Ivy, accessed via the KBAI Chat interface, embedded alongside an instructional video on Ed Lessons deployed in the Spring 2026 KBAI course.

Early analysis is promising. Among assignment-driven questions, **69% reached Bloom's Apply-through-Creat**e levels (Krathwohl, 2002), compared with **41%** of voluntary questions, and **61.3%** of all student questions focused on procedural reasoning. These findings are not yet evidence of learning gains, but they suggest Ivy's structured coaching may encourage deeper inquiry and reasoning.

A major research advancement this year was the development of an AI-assisted Text-to-Model methodology that significantly improves Ivy's scalability. Previously, creating a procedural skill model required approximately seven hours of expert effort, making course-wide deployment difficult. In "Developing Models of Procedural Skills using an AI-assisted Text-to-Model Approach" (Dass et al., 2026), the team introduced a human-in-the-loop process that transforms instructional materials into Task-Method-Knowledge (TMK) models using ontology-constrained prompting and template-based generation. **Applied across 23 procedural skills, the approach reduced expert modeling time by 50%-70% while achieving approximately 90% correct grounding in TMK components.** The work was presented as a full research paper at **ACM Learning @ Scale 2026** and was featured in a [Georgia Tech research spotlight](#).

The team presented two papers at the **AIED 2026 Workshop on Designing and Evaluating Next-Generation Learning Interfaces**. The first, "From Explanation to Diagnosis: Next Generation Interactive Video Coach with Misstep Awareness" (Jin et al., 2026), introduced a new Pedagogical Model that identifies learner misconceptions and grounds feedback in the specific reasoning behind an error, outperforming TMK-only Ivy on targeting, actionability, transferability, and scaffolding appropriateness. The second, "Constructing Evaluation Datasets for Procedural Reasoning: Balancing Naturalness, Grounding, and Multi-Hop Coverage" (Elshabrawy et al., 2026), found that the most learner-like evaluation questions are often the least grounded, while strict generation from a TMK model produced the highest share of usable benchmark items (**92.6%**), arguing that AI coaches should be judged by whether an answer traces back to the knowledge the system actually reasons over.

The project's work also reached broader audiences this year. Ivy researchers contributed to an AI-ALOE design guidelines paper (Reddig et al., 2026) accepted at **ACM DIS 2026** and authored "Beyond the Chatbot: Deploying Ivy, a Knowledge-Based AI Coach, in a Georgia Tech Online AI Course" (Dass et al., 2026) for [Georgia Tech's Academic AI Playbook](#), providing practical guidance for instructors interested in AI-supported learning. In addition, team lead Rahul Dass received an [Institute for Technology and Civic Leadership \(ITCL\) seed grant](#) for "Studying Learner Use and Experience of AI Coaching in Online Skill Learning," one of 32 projects funded through the program's inaugural grant competition.

Looking ahead, the team is extending misconception-aware coaching into deployment and integrating Ivy with multi-modal Jill Watson and the A4L learning analytics infrastructure to support new research on personalized learner engagement and AI-supported instruction.

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Expanding AI-Supported Learning at Scale

Jill Watson is an AI-based virtual teaching assistant that answers student questions and supports learning within college courses.

This year, its use continued to expand across subjects and schools, including computer science, nursing, English, business, and accounting courses at the **Georgia Institute of Technology**, **Georgia State University**, various community colleges in the **Technical College System of Georgia**, and **California State University, Stanislaus**.

In Fall 2024, Jill Watson gained the ability to supplement its written answers with relevant images and diagrams from the course. This update was based on established research on how students learn through combined text and images. Through a controlled study comparing **1) the picture-and-text version**, **2) a text-only version** and **3) a standard course search tool**, it was found that students using the picture-and-text version scored significantly higher on follow-up tests without spending any additional time studying. Led by Karan Taneja, Anjali Singh, and Ashok Goel, this work was presented at the **2026 International Conference on Artificial Intelligence in Education**.

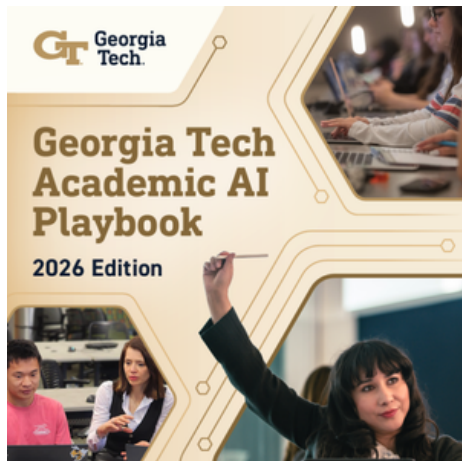
By Summer 2026, researchers completed development of a more intuitive version of Jill Watson that allows instructors to set up the program without technical assistance. This version **connects directly to the online systems that schools already use to manage their courses**, such as Canvas, Brightspace, Blackboard, and Moodle.

During this time, the team also completed an early working version of a more personalized version of Jill Watson. This variation adjusts its feedback based on how students learn best and the difficulty of the question asked. Broader use is planned for Spring 2027.

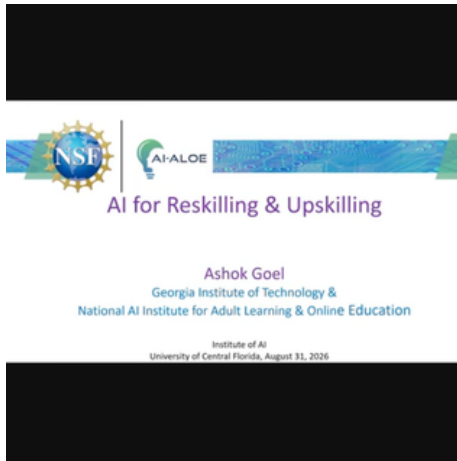
In parallel, development began on a **mobile version of Jill Watson** so students can access it on their phones as easily as on a laptop, **targeted for release in Fall 2026**.

Additionally, progress has been made in connecting Jill Watson to its learning-analytics system (A4L), which is in development at Georgia Tech, allowing researchers and instructors to explore how students learn. This process involved changing how Jill Watson's data is stored and shared so that interactions with students can be securely tracked, anonymized, and analyzed alongside other course data, giving a fuller picture of how AI support affects learning over time.

Looking ahead to Fall 2026, Jill Watson will **gain real-time voice conversation capabilities**, allowing students to interact naturally through speech rather than text. The platform will then be deployed more broadly across Georgia Tech courses, completing its transition from a research prototype to institution-wide infrastructure by Spring 2027.



[AI-ALOE Research Featured in Georgia Tech's 2026 Academic AI Playbook](#)



[Ashok Goel Presents AI for Reskilling and Upskilling at University of Central Florida CRVC IAI Colloquim](#)



[AI-ALOE Highlights Progress and Initiatives at IDEaS Fall 2026 Retreat](#)



[U.S. Representative Lucy McBath Visits AI-ALOE To Learn How AI Is Transforming Education](#)



[Ashok Goel Speaks at AI4OPT Faculty Training Program Conference](#)



[AI-ALOE Hosts Annual External Advisory Board \(EAB\) Meeting](#)



RAHUL DASS RECEIVES SEED GRANT

AI-ALOE member Rahul Dass has been awarded a 2026 ITCL Seed Grant for his project, *Studying Learner Use and Experience of AI Coaching in Online Skill Learning*. Using deployment data from Ivy collected during Spring 2026, the project explores how learners interact with AI coaching tools and how those experiences can inform the design of more effective online skill-learning environments.

Read More: [ITCL Seed Grants Support Campuswide Innovation in Curriculum, Research](#)

Featured News Stories

AI-ALOE at Seoul Conference

AI-ALOE **Executive Director Ashok Goel** recently shared the institute's vision for the future of AI in education through **two high-profile speaking engagements**. At the Festival of Learning 2026, he joined a panel on educational chatbots and conversational AI, discussing their opportunities, challenges, and responsible use in learning. He also delivered a keynote for Learning @ Scale at the same event, highlighting how AI-ALOE innovations are supporting reskilling, upskilling, and workforce development through AI-powered learning technologies. AI-ALOE member Rahul Dass presented his research, Developing Models of Procedural Skills using an AI-assisted Text-to-Model Approach, in the Wednesday session.



AI-ALOE researcher Rahul Dass presents his work "Developing Models of Procedural Skills using an AI-assisted Text-to-Model Approach."



Ashok Goel on Discussing the Future of Conversational AI Agents in Education Panel at Festival of Learning 2026



Ashok Goel Delivers Keynote on AI for Reskilling and Upskilling at the 2026 Festival of Learning

AI-ALOE Makes Cameo in NSF AIVO Podcast Trailer

In a podcast teaser from the NSF AI Institutes Virtual Organization (AIVO), Ashok Goel provides insight into the driving force behind AI-ALOE's mission to skill, reskill, and upskill workers while protecting data privacy and security. The preview highlights how AI-ALOE and other NSF National AI Research Institutes are advancing beneficial AI research to address complex challenges across education, workforce development, and beyond, offering a glimpse into the conversations that will be featured in the upcoming series.



NSF AIVO - AI Institutes Today - Podcast Teaser

Upcoming Events

SEPT
28

The **Tech AI Symposium and AI Career Fair** bring together students, researchers, faculty, industry leaders, and employers to explore the future of AI through panels, presentations, and discussions on emerging technologies, industry collaboration, and workforce development. | [Learn More](#)

OCT
12-13

Presented by the City of Atlanta, **Avant South** is an annual event supporting Atlanta's growth as a leading tech hub. The event features discussions from leaders at the intersection of culture, innovation, and technology, highlighting how AI is reshaping these industries. | [Learn More](#)

OCT
13

AI-ALOE Director Ashok Goel will join **AI Week**, hosted by the Georgia Tech Library, to discuss how AI-powered cognitive partners like Jill Watson are advancing personalized learning and student engagement at scale. | [Learn More](#)

OCT
15

The AI-ALOE **Virtual Showcase** brings together researchers, educators, and partners to explore the latest advances in AI-powered learning. The event will feature research presentations, technology demonstrations, and discussions on the future of adult learning and online education. | [Learn More](#)

NOV
2-4

Hosted by the NSF AI Institutes Virtual Organization, the **Summit for AI Institutes Leadership (SAIL) 2026** explores pioneering AI research across multiple fields at the 30 AI Institutes in the NSF National AI Research Institutes program. | [Learn More](#)

NOV
11

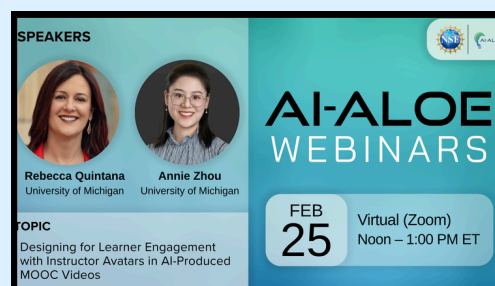
Webinar Series Kickoff

AI-ALOE's webinar series kicks off with George Veletsianos, a Professor of Learning Technologies and Bonnie Westby Huebner Chair in Education and Technology at the University of Minnesota.

Previous Talks...



[AI Seminar: The New Hybrid: From AI Tools to Pedagogical Systems](#)



[AI-ALOE Webinar: Rebecca Quintana and Annie Zhou \(University of Michigan\)](#)

Publications

AI-ALOE researchers are producing new insights, technologies, and evidence-based approaches to support adult learning and online education. Explore the latest publications and research outputs below, or tap the banner to view [AI-ALOE on Google Scholar](#) or the [AI-ALOE Publication Page](#).

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