# THE AI-ALOE SPOTLIGHT

**Ashok Goel**
Executive Director

Welcome to the Spring 2025 edition of the AI-ALOE Spotlight.

As we enter the fourth year of our journey, AI-ALOE stands as a vibrant and growing research institute dedicated to advancing AI in education. This newsletter highlights the remarkable progress we have made across our five pillars: theory, design heuristics, architecture, integration, and impact on learning. From innovative technologies to strategic data pipelines and visualizations, our projects continue to translate research into transformative educational practices.

This year, amidst broader shifts in federal funding and national research priorities, AI-ALOE has demonstrated resilience and adaptability. Our spring retreat charted a clear path forward, reinforcing our strategic focus and strengthening collaborations and partnerships. Across our community, members have earned prestigious awards, published 34 articles, and contributed thought leadership at major conferences and events, further solidifying AI-ALOE's position at the forefront of AI in education.

As we navigate this changing landscape, we remain deeply committed to our mission: expanding partnerships, scaling innovations, and advancing the science and practice of AI-enhanced learning. Thank you for your continued support as we shape the future of education together.

Warm regards,
Ashok Goel

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**AI-ALOE Social Media**

# A4L (Architecture for Learning)

### Theory

A4L blends learner-centered data pipelines with human-in-the-loop AI to personalize instruction and deliver real-time feedback grounded in adaptive learning theory.

### Design Heuristics

Dashboards are designed using HCI principles and instructor feedback to support personalized teaching, data-driven assessment, and actionable insights for adult learners.

### Architecture

The system uses an AI-embedded visualization pipeline on AWS with Redshift to deliver near-real-time learning analytics from multiple AI tools.

### Integration

Dashboards for Jill Watson, SAMI, and VERA are integrated via backend processes, with a future goal of unifying them through A4L 2.0 and standardized Caliper data.

### Impact on Learning

A4L supports personalized learning at scale, improving learner outcomes and engagement through adaptive feedback while enabling ethical and data-informed instructional decisions.
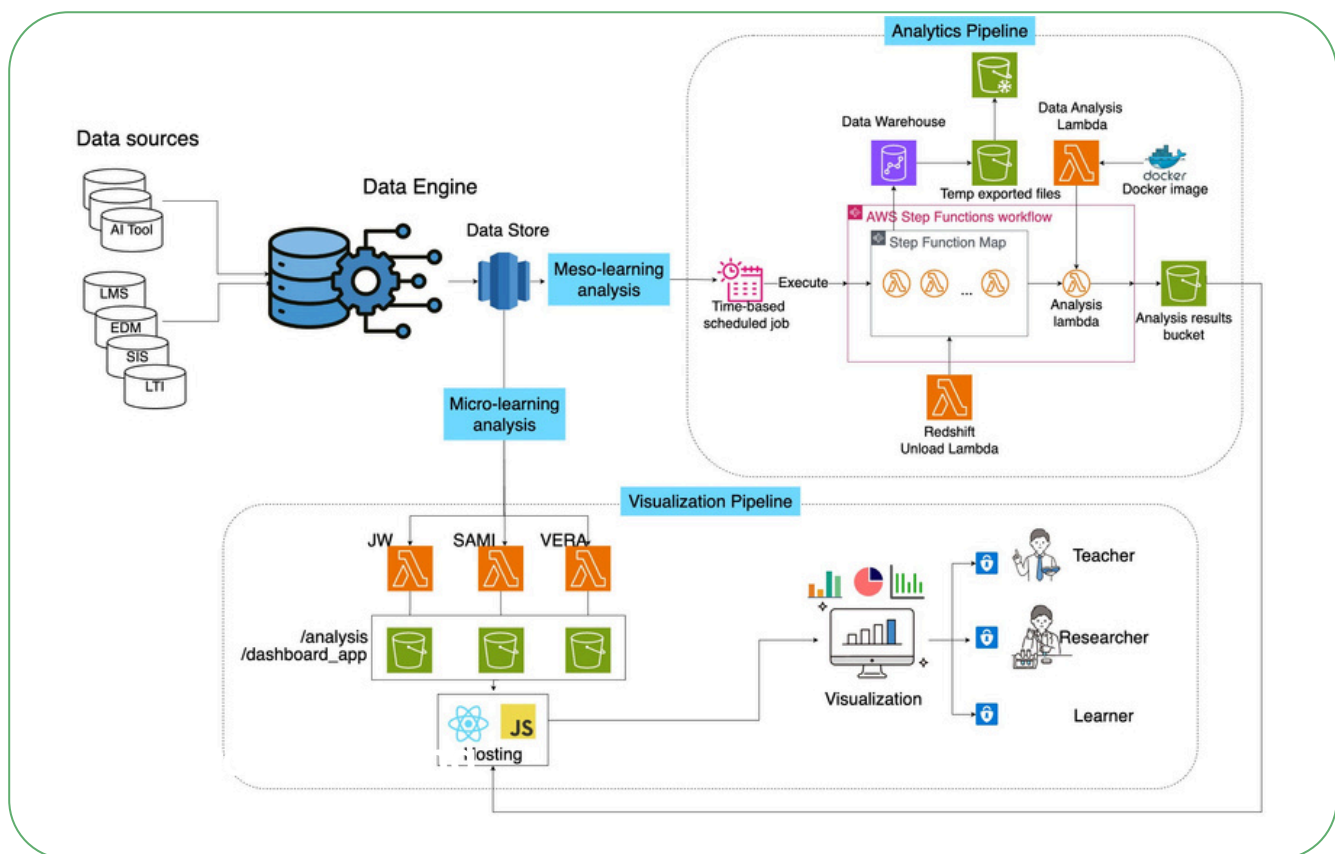


**Figure 1: A4L Analytics and Visualization Architecture.** The A4L system integrates data from diverse educational sources into a centralized engine for meso- and micro-learning analysis. AWS-based analytics pipelines process and store insights, while a visualization pipeline powers real-time dashboards for Jill Watson, SAMI, and VERA, tailored for teachers, researchers, and learners. Together, these pipelines enable scalable, actionable insights to inform personalized instruction and educational research.

# Apprentice Tutors

**Theory**
Generative + cognitive AI integration allows teachers to create their own tutors, while HTNs support adaptive scaffolding and personalization.

**Design Heuristics**
Adult-centered UX design with adaptive problem selection and feedback dashboards informed by deployment studies.

**Architecture**
Symbolic task modeling and tutor platforms powered by LLMs and structured planning systems like HTNs.

**Integration**
Co-designed with TCSG instructors, supporting 46 tutors across nursing and math with visualization dashboards for faculty.

**Impact on Learning**
Improved assessment performance and in-class transfer among adult learners; voluntary use linked to higher outcomes.



**Figure 2: Design Guidelines for Apprentice Tutors.** Drawing on frameworks such as Social Presence Theory, Cognitive Load Theory, and Instructional Alignment, the design of Apprentice Tutors emphasizes human-centered integration, intuitive user experiences, clear instructional alignment, and transparent value propositions. Each principle is mapped to adult learner challenges—such as gaps in peer support, returning to academic learning, and resource constraints—and translated into actionable design recommendations.

# Interactive Videos (Ivy)

## Theory

- **AI & Learning**: Ivy promotes explanation-based learning and reflective inquiry by answering "how," "why," and "what" questions using structured responses grounded in the Task-Method-Knowledge (TMK) framework, fostering a deep understanding of procedural skills.
- **Cognition**: Ivy's TMK-based representations encode causal, teleological, and hierarchical knowledge, allowing it to reason like an expert and support learners by diagnosing gaps in their problem-solving logic.
- **Human-AI Interaction**: Ivy maintains a persistent, context-aware coaching presence across learning tasks—reducing cognitive load, supporting metacognition, and enhancing teaching presence.

## Design Heuristics

- **AI Agent Design**: Ivy models procedural skills using causal, teleological, and hierarchical reasoning structures that mirror expert problem-solving.
- **Human-AI Interaction**: Ivy provides real-time, persistent coaching across learning activities, including videos and quizzes.
- **Instructional Design**: Ivy is being extended to scaffold inquiry by using adaptive prompts and "what-if" questions that nudge learners toward understanding rather than offering direct answers.
- **Assessment Design**: Ivy will use TMK models and GenAI to diagnose learner misconceptions and generate targeted formative feedback during problem-solving.
- **Learning Analytics & Visualization**: Integrated with A4L, Ivy will collect and visualize learner interactions to inform students, instructors, and system designers—supporting reflection, personalization, and course improvement.

## Architecture

- While not yet integrated with A4L, Ivy is designed to collect structured learner interaction data, using TMK and GenAI to model misconceptions and guide feedback.
- Planned analytics and visualizations will support personalized learning, reflection, and system improvement.

## Integration

- Ivy is deployed in Georgia Tech's Knowledge-Based AI course (CS4635/7637), where it complements Jill Watson by addressing "how" and "why" questions related to procedural tasks.

## Impact on Learning

- Ivy is currently in live classroom use with 120 students and ongoing data analysis will assess its effect on learner understanding and engagement.
- Preliminary design anticipates improvements in problem-solving, knowledge transfer, and learner reflection through targeted, real-time coaching.

# iTELL

## Theory

- **Theory of Learning**: iTELL (Intelligent Texts for Enhanced Lifelong Learning) builds on Self-Explanation and Reading Training (SERT) and the ICAP framework, promoting comprehension through active engagement, self-explanation, and generative reading tasks.
- **Theory of Cognition**: iTELL supports skill acquisition by training learners in metacognitive reading strategies such as paraphrasing, elaboration, prediction, and bridging—key to monitoring and improving comprehension.
- **Theory of Human-AI Interaction**: iTELL's AI agents provide interactive, context-aware feedback and summaries during reading, creating a personalized, persistent support system that enhances teaching presence and reflective engagement.

## Design Heuristics

- **Multi-Level ICAP Personalization**: Engages learners across all ICAP levels.
- **Human-Centered Interface Design**: Follows WCAG accessibility standards with screen-reader compatibility, customizable color schemes, intuitive navigation, and dashboard visual hierarchy based on eye-tracking research.
- **AI Agent Design**: Uses Retrieval-Augmented Generation (RAG) to answer content-based and system navigation questions.
- **Gamification Elements**: Incorporates friendly competition options to increase engagement and promote self-regulated learning.
- **Pedagogical Prompt Tuning**: Prompt "tournaments" using crowd-sourced evaluations optimize AI feedback quality.

## Architecture

- iTELL has developed data pipelines compatible with Sharable Content Object Reference Model (SCORM) standards to align with LMS infrastructure used by industry partners.

## Integration

- iTELL's visualization infrastructure enables real-time tracking and insights into learner interactions.

## Impact on Learning

- Across multiple experimental studies (A/B tests, RCTs), iTELL users demonstrated increased learning gains, better summary writing, and improved knowledge retention, especially among lower-performing students.
- AI-enhanced texts consistently outperformed traditional or non-AI conditions in both engagement and revision behaviors, suggesting a positive cognitive and metacognitive impact.

| | |
|---|---|
| **Accessibility** | • iTELL should be as accessible as possible to all users, regardless of disability |
| **Simplicity** | • iTELL's aesthetic is simple and minimalist |
| **Intuitiveness** | • iTELL should be easy to use out of the box |
| **Gamification** | • iTELL should be fun |

**Figure 3: iTELL Human-Computer Interaction (HCI) Design Principles.** iTELL's design emphasizes accessibility, intuitive navigation, and learner engagement through features like floating input boxes, customizable settings, and gamified elements to support active, inclusive learning experiences.

# Jill Watson

### Theory

- Jill Watson is grounded in the Community of Inquiry (CoI) and ICAP frameworks, promoting teaching presence and cognitive engagement, and leverages the Cognitive Theory of Multimedia Learning (CTML) through its multimodal features.

### Design Heuristics

- Design Goal
  - Amplify teaching presence
  - Motivate higher-order critical thinking
  - Reduce cognitive overload for students
  - Inform instructors of student interactions
- Design Guidelines
  - Make it conversational for in-depth engagement centered around class learning materials
  - Make VTA-learner engagement multimodal.
  - Leverage frictionless UI to enable easy access
  - Ensure cost-effective scalability
  - Build trust to enhance student engagement
  - Suppress unwanted speech and irrelevant queries
  - Caliper standards-compliant data collections

### Architecture

- Jill Watson uses large language models constrained by course-approved materials, enabling contextual and accurate responses.
- The tool supports audio input, moderation, and data tracking through standardized protocols, ensuring safety, scalability, and personalization.

### Integration

- Deployed in over 25 courses across multiple Georgia institutions and disciplines, including cybersecurity, English composition, and business.
- Supports thousands of students via LMS integration and offers frictionless access across diverse platforms and institutions.

### Impact on Learning

- Preliminary data show improvements in grades, course completion, and depth of student questioning (per Bloom's taxonomy).
- Students demonstrate increasing engagement with higher-order thinking over time, highlighting Jill Watson's impact on cognitive development.



- Textual or auditory input and output
- Conversational
- Uses RAG to mitigate against LLM hallucinations and toxic interactions
- Source attribution enabled
- Moderated inputs/outputs
- Scalable and cost-effective - deployed as an LTI tool in class LMSs

**Figure 4: Jill Watson as a Generative AI-Based Virtual Teaching Assistant (VTA)**, designed to amplify teaching presence, support cognitive engagement, and scale instructional support through multimodal, conversational AI.

# SAMI

## Theory

- SAMI (Social Agent Mediated Interactions) is grounded in the Community of Inquiry (CoI) framework, Legitimate Peripheral Participation (LPP), Bandura's Social Learning Theory, and Social Emotional Learning (SEL), enhancing social presence, learner participation, and self-efficacy. SAMI as a social agent is also grounded in Mutual Theory of Mind.

## Design Heuristics

- Design Goal
  - Increase social presence
  - Support cognitive presence
  - Increase participation
  - Increase self-efficacy and sense-of-belonging
  - Support emotional well-being
  - Improve retention rates
- Design Guidelines
  - Prefer interfaces with lower cognitive load
  - Integrate with existing tools
  - Agents should be able to explain and correct themselves
  - Agents should use a metacognitive framework
  - Agents should prefer offering choices over making choices

## Architecture

- SAMI uses knowledge databases, large language models to perform Named Entity Recognition (NER) and generate natural language responses, and communication APIs (EdForum, Blackboard, Slack) to integrate into existing platforms.
- SAMI data is used in the A4L 1.0 pipeline and is collaborating with A4L and 1EdTech to send data through the A4L 2.0 pipeline.

## Integration

- SAMI has been deployed in over 30 classes at Georgia Tech, and is expanding to deploy in the Technical College System of Georgia.

## Impact on Learning

- Meso-learning analysis shows that students who use SAMI report a statistically significant increase in sense-of-belonging than students who do not.
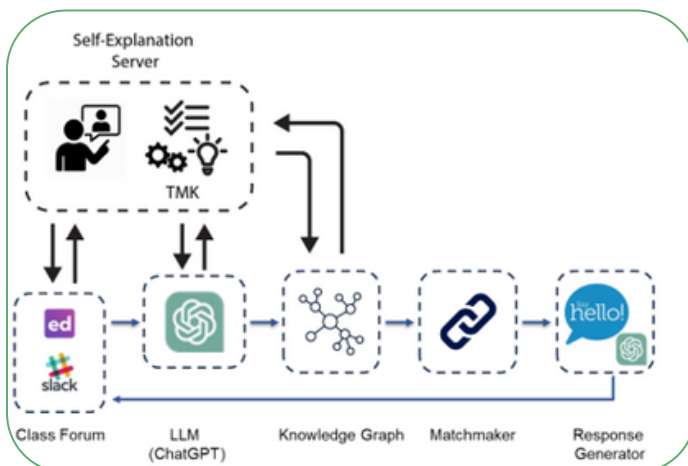


**Figure 5: SAMI Database Infrastructure.** SAMI has been updated with a persistent backend database architecture. This allows SAMI to have longitudinal data on student profiles spanning multiple classes. Additionally, this architecture enables SAMI to operate more flexibly throughout the semester.

# SMART

## Theory

- SMART(Student Mental Model Analyzer for Research and Teaching) adopts a whole-person learning model that integrates cognition/knowledge, personality/temperament, and contextual factors.
- It draws on Community of Inquiry (CoI) and ICAP (Interactive-Constructive-Active-Passive) frameworks for engagement and learning behaviors, and Self-Determination Theory (SDT) to support learner motivation and self-efficacy.

## Design Heuristics

- **Cognition and Knowledge**: Provides multimodal, step-by-step feedback to enhance knowledge construction, reduce cognitive load, and promote generative learning through scaffolding and visual cues.
- **Personality and Temperament**: Increases self-efficacy and motivation through positive messaging, autonomy-supportive choices, social comparison feedback, and opportunities for controlled revision.

## Architecture

- SMART uses AI-powered natural language processing (NLP) to extract concept models from text, visualize concept learning, and track learning trajectories.
- It leverages generative AI to provide definitions, examples, and normative feedback, enhancing self-regulation and instructional presence.

## Integration

- SMART has been deployed across more than 10 courses at the Technical College System of Georgia, Georgia State University, and Georgia Tech, covering diverse subjects from English and biology to IT and nursing.
- Integrated through LTI connections, SMART offers seamless access to hundreds of adult learners at various educational levels.

## Impact on Learning

- Analysis of scaled datasets shows SMART-enhanced revisions significantly improved concept learning and subsequent assignment performance.
- Quasi-experimental studies found that targeted feedback notably improved learners' summary writing quality and engagement.
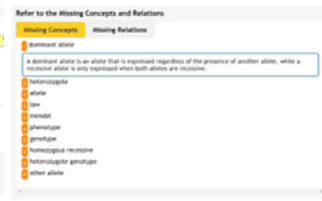


**Figure 6: Personalized Feedback Feature on SMART**. SMART provides personalized, AI-powered feedback through four key features: concept maps, engagement behavior visualizations, AI-generated concept definitions, and example statements that explain propositional relationships—together supporting self-regulated learning and conceptual understanding.

# VERA

## Theory

VERA (Virtual Experimentation Research Assistant) is an inquiry-based ecology-focused conceptual modeling and simulation tool. It provides students with a beginner-friendly introduction to scientific modeling through model creation and critique. Engaging learners at the higher levels of the ICAP framework (Interactive, Constructive, Active, Passive), VERA promotes deeper cognitive involvement through hands-on inquiry and reflection.

## Design Heuristics

- Design Goals
  - Encourage Learner Self-Explanation
  - Promote Self-Directed Learning
  - Focus on Metacognitive Skills
- Design Guidelines
  - Exemplify Scientific Thinking
  - Encourage Effective Help-Seeking
  - Make complex systems tractable for learners for manipulatable representations
  - Scaffold Domain Knowledge to allow learners to focus on Inquiry

## Architecture

- VERA architecture uses a conceptual modeling frontend that is then compiled into backend NetLogo code for simulation, allowing for students to practice the scientific method.
- VERA uses several coaches, orchestrated through large language models and TMK offers learners personalized feedback.

## Integration

- VERA has been deployed in five classes across Georgia Tech and North Georgia Technical College.
- Over 1000 learners have used VERA, with several hundred self-directed learners not tied to any institution.
- VERA is accessible through Encyclopedia of Life and the Smithsonian for use by citizen scientists.

## Impact on Learning

- VERA helps learners develop a strong understanding of what models and how they are used in scientific professions.
- VERA allows learners to practice working with complex systems, allowing them to engage in systems thinking.
- VERA walks learners through the process of inquiry sharpening their higher- order thinking.
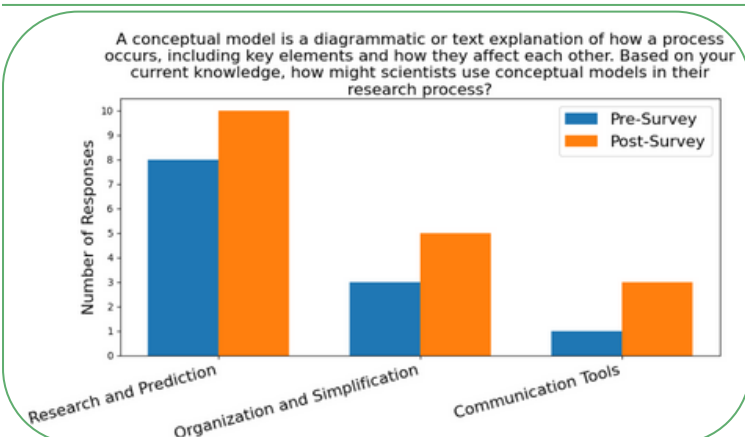
**Figure 7: Impact of an Interactive Learning Environment on Understanding Modeling in Science**. Comparison of pre-survey and post-survey responses to the question- "How might scientists use conceptual models in their research process?"- reveals increased recognition of the roles of conceptual models in research and prediction, organization and simplification, and communication, indicating growth in students' understanding after engaging with the interactive learning environment.

# AI-ALOE RETREAT



The 2025 AI-ALOE Retreat on March 6 & 7 brought together the entire team to discuss the future of the institute. The two-day event focused on design, architecture, theory, integration, partnerships, and strategic planning.

Day One opened with a welcome address from Executive Director, Professor Ashok Goel, followed by morning sessions centered on design and architecture, the driving forces behind AI-ALOE's technology development. The speakers shared latest technology development, breakout groups collaborated on ideas for a collective publication, and 1EdTech Consortium facilitated discussions on system architecture to support continued scaling. In the afternoon, attention turned to theory, integration, and partnerships. Participants examined the theoretical frameworks shaping AI-ALOE's innovation trajectory, discussed strategies to enhance integration across projects, and explored expansion of industry partnerships. Breakout sessions reinforced cross-team collaboration, setting the stage for the institute's next phase of growth and impact.

Day Two focused on aligning AI-ALOE's trajectory with the evolving landscape of national AI initiatives. Participants formed four breakout groups to explore key areas: risk analysis, contingency planning, technology commoditization, and data sharing. Reports from each group provided valuable insights into how AI-ALOE can continue to lead in advancing AI-driven education, ensuring resilience, scalability, and innovation leadership.

The retreat concluded with a clear articulation of next steps to strengthen alignment, expand partnerships, and scale innovations, demonstrating AI-ALOE's readiness for its next stage of growth and long-term impact.

# AI-ALOE Webinars

AI-ALOE's webinars featured distinguished researchers, scientists, and experts in AI and education. These three webinars attracted a total of 213 attendees in Spring 2025.



**January 22, 2025**: Cornell University's Dr. Rene Kizilcec delivered a webinar introducing the National Tutoring Observatory (NTO), a groundbreaking initiative aimed at improving teaching and learning through artificial intelligence. The session highlighted the NTO's mission to leverage authentic recordings of tutoring sessions to create high-quality, diverse datasets for research and development. These resources are designed to address learning losses caused by pandemic disruptions and improve AI teaching models, which currently lack sufficient training in effective teaching practices.



**February 26, 2025**: Dr. Shayan Doroudi, an assistant professor at the University of California, Irvine's School of Education, delivered a talk exploring the longstanding connections between AI and education. Doroudi emphasized that AI's influence on education predates the recent wave of innovation. He reflected on distinct approaches to AI development and corresponding visions for education.



**April 9, 2025:** Dr. Duri Long, Assistant Professor at Northwestern University, highlighted the growing need for accessible, engaging learning experiences that empower the public to make informed decisions about AI. Long emphasized that as AI technologies increasingly influence everyday life, fostering public understanding is not just beneficial—it's essential. Her work seeks to develop a framework for AI literacy across varying audiences, from middle school students to adult learners and journalists.

# AI-ALOE in the Press

## Jill Watson Featured in the Silver Lining for Learning Podcast
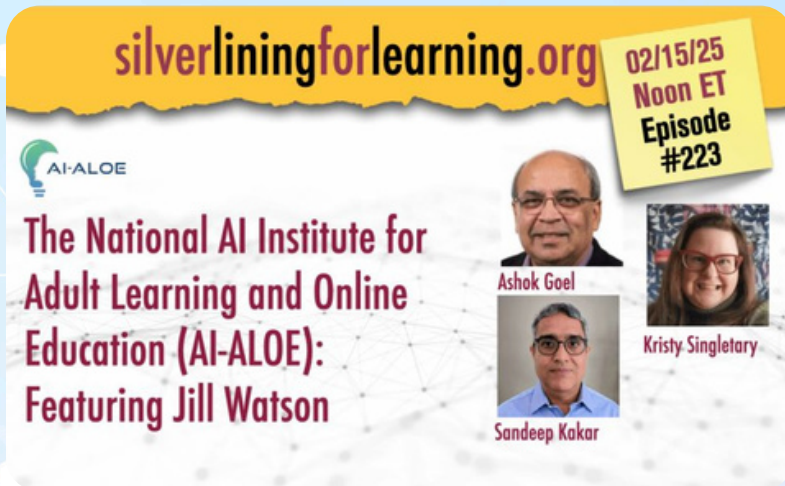


**Listen to the Podcast**

AI-ALOE was featured in the Silver Lining for Learning podcast on Saturday, February 15th. In this episode, Drs. Ashok Goel and Sandeep Kakar, along with Kristy Singletary, discussed one of AI-ALOE's technologies, Jill Watson, a generative-AI-based virtual teaching assistant. It is deployed on class learning management systems to engage in extended, cognitively-rich, and factually grounded one-on-one conversations with students about topics in instructor-approved course materials anytime and anywhere.

## Research Paper on Intelligent Textbooks Featured in DevDiscourse

A pioneering study, "The Textbook of Tomorrow: Rethinking Course Material Interfacing in the Era of GPT," authored by Audrey Olson, Pratyusha Maiti, and Dr. Ashok Goel, was featured in a blog post on DevDiscourse.

This research paper explores how embedding AI-powered virtual teaching assistants (VTAs) into digital textbooks can enhance learning experiences. The intelligent textbook introduces transformative features that redefine how students engage with academic content.

Published in the Proceedings of Machine Learning Research, this work envisions a future where static course materials transform into interactive, adaptive, and student-centric resources, bridging gaps in traditional online education.
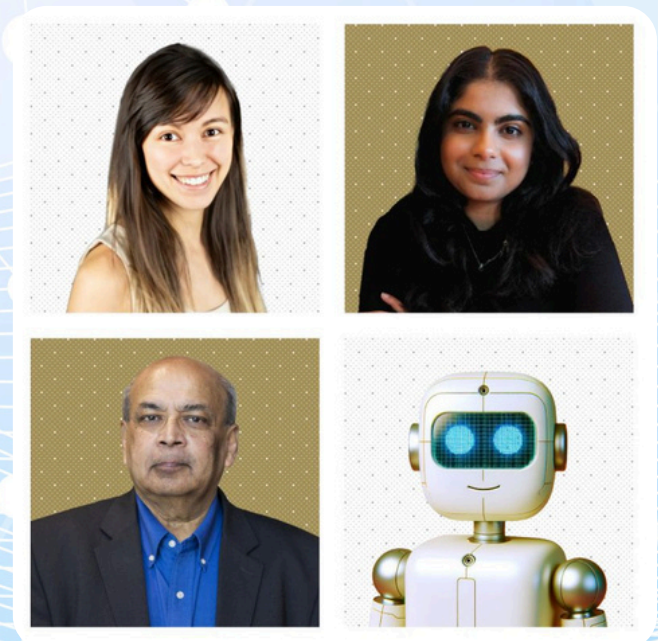


**Read the Blog Post**

# Awards and Honors

## Ashok Goel Receives Awards from AAAI and Georgia Tech

Dr. Ashok Goel, AI-ALOE Executive Director and Professor in the School of Interactive Computing at Georgia Tech, received the 2024 AAAI Distinguished Award for outstanding leadership in AI and sustained interdisciplinary contributions to education in and through AI. He also received the 2025 Georgia Tech College of Computing Dean's Award, recognizing exemplary representation of the College's highest values.

## Art Graesser Named Fellow of the Cognitive Science Society

Dr. Arthur Graesser, professor emeritus at the University of Memphis and Honorary Research Fellow at the University of Oxford, was named a Fellow of the Cognitive Science Society, a prestigious honor recognizing his outstanding contributions to the field. Graesser is a valued AI-ALOE External Advisory Board member.

## Min Kyu Kim Receives Outstanding Faculty Research Mentoring Award

Dr. Min Kyu Kim, an AI-ALOE researcher and associate professor in the College of Education and Human Development at Georgia State University, has been awarded The Outstanding Faculty Research Mentoring Award for his exceptional commitment to mentoring faculty colleagues and doctoral students in research. Dr. Kim was also featured in the Research Innovation Newsletters and highlighted in Georgia State University's College of Education & Human Development (CEHD) in Spring and Fall 2025.

## Adie Shimandle Receives Albert Nelson Marquis Lifetime Achievement Award

Adie Shimandle, AI-ALOE Executive Committee member and Executive Director of the Technical College Directors' Association of Georgia under the Technical College System of Georgia, received the Albert Nelson Marquis Lifetime Achievement Award in recognition of her distinguished leadership and contributions across educational administration and technological innovation.

# Thought Leadership and Engagement

As part of AI-ALOE's commitment to advancing the field of AI in education, our team members have been actively engaged as invited speakers, panelists, and keynote presenters at major conferences, workshops, and events. These opportunities reflect the growing impact and recognition of AI-ALOE's research, innovation, and thought leadership across academic, industry, and policy communities.

### Suzanne Carbonaro

- Student Success Summit, Keynote speaker, Ball State University, September 2024
- Leading Improvements in Higher Education, Podcast, Assessment Institute, September 2024
- Association of American Medical Colleges (AAMC) 2025 Data Symposium: Designing the Future, Opening Panel Presenter "The Importance of Data and Standards for a Digital Era"

### Scott Crossley

- Keynote, American Association for Corpus Linguistics Conference (AACL 2024)
- Keynote, EARLI Sig Writing Conference (Sig Writing 2024)
- Best Publicly Available Educational Data Set Prize, International Educational Data Mining Society, 2024
- Lessenich Fellowship, Bonn University, Germany (summer 2025)

### Chris Dede

- Symposium on AI, AERA 2024
- World Economic Forum, Education Global Learning Network panel 2024
- Webinar for African Development Bank on Learning Portals for Adult Capacity Building
- Keynote, Learning Ideas Conference 2024
- Keynote, Learning@Scale Conference 2024
- Keynote, National Technological University of Singapore, AI for Education Conference 2024
- Keynote, Peking University, AIEd Forum 2024

### Ashok Goel

- Chair, AAAI 2024 Panel on AI Strategic Initiatives and Policies, February 2024.
- ILA Webinar on Learn AI, AI & Leadership Summit, December 2024.
- Silver Lining for Learning Podcast Panel, February 2025
- Keynote Speaker, Federal Reserve Bank QuantConference, Atlanta, February 2025.
- Tech AI Fest Invited Talk on AI in Education and Back, March 2025

# Research Fellow Highlight

Peter Shea, MA is a learning professional with extensive experience as a designer, instructor, editor, writer, and professional development manager. He has been advocating for AI learning tools since 2019. In 2020, he founded the LinkedIn group AI in Education. In 2021, he co-edited the book "Transforming Digital Learning and Assessment: A Guide to Available and Emerging Practices and Building Institutional Consensus." He is a faculty member of the AAC&U Institute on AI, Pedagogy, and the Curriculum.

**Peter Shea**

### What is your role within AI-ALOE?

My role in AI-ALOE is to communicate how community colleges are integrating AI into their work and to support AI-ALOE research initiatives that could benefit from collaboration with these institutions.

### What are your main research interests and what has your career path looked like?

With a background in instructional design, I'm particularly interested in research on educational tools that apply learning science principles. My career has evolved from teaching in traditional college classrooms to learning simulation labs. I'm especially passionate about developing a new, sustainable paradigm for learning—particularly in the context of workplace education.

### What's a hobby or activity you enjoy when you're not immersed in research?

I enjoy reading and writing about history, bicycling, and emailing back and forth with friends and colleagues who have the same interests.

### What's something surprising or fun about you that most people wouldn't know?

I once wrote a book about failed presidential candidates.

### Citation for a recent publication

Shea, P. (2024, August 14). Taking the lead: Why instructional designers should be at the forefront of learning in the age of AI. The Quantastic Journal.

# Teaching Fellow Highlight

Albena Nikolaeva Asenova-Belal is a distinguished professional with over 25 years of global experience in electrical engineering, information technology, and cybersecurity. She earned her MS and PhD in Electrotechnology from the Technical University of Sofia, Bulgaria, where her doctoral thesis, Technological Application of the Capacitive Electric Charge, led to a patent and several publications. Her academic journey includes serving as a Visiting Assistant Professor at Cairo University and later contributing significantly to cybersecurity education in the United States. At Gwinnett Technical College, she directed the Cybersecurity Program, earning National Center of Academic Excellence in Cyber Defense designations in 2022 and 2024. She also received numerous accolades, including the Women in Technology (WiT) Club of the Year Award in 2023 and multiple nominations for WiT's Women of the Year Awards.

**Albena Asenova-Belal**

**What is your role within AI-ALOE, and how did you become interested in your field?**

AI-ALOE provides educators like me in the Technical College System of Georgia an exceptional opportunity to harness AI technologies to transform teaching and learning. This fellowship allows me to engage in cutting-edge research, collaborate with researchers and scientists, and co-design responsible AI solutions tailored for educational contexts. My interest in this field stems from a passion for leveraging technology to enhance education. The program equips me with the skills to integrate AI into my teaching philosophies confidently, fostering innovation while contributing to a dynamic community of educators dedicated to advancing AI-driven learning practices. Through this experience, I aim to shape the future of education by embracing collaboration, ethical AI development, and a shared commitment to excellence.

**What skills or experiences from your time at AI-ALOE do you think will be most valuable throughout your career?**

The skills and experiences I gained through my time at AI-ALOE will be invaluable throughout my career. One of the most significant benefits has been mastering the integration of AI technologies into teaching methodologies. Tools like the virtual teaching assistant Jill Watson answer questions based on textbooks and other courseware to provide personalized and adaptive learning experiences for students. This hands-on experience has equipped me to address diverse educational challenges, optimize student engagement, and enhance their mastery of complex concepts.

**Read more on the AI-ALOE website!**

Additionally, collaborating with researchers and scientists in co-designing responsible AI solutions has strengthened my ability to innovate while maintaining ethical considerations in technology development. The AI-ALOE fellowship program has not only enhanced my teaching strategies but also positioned me to contribute meaningfully to the evolving landscape of education and workforce training.

**What's a hobby or activity you enjoy?**

I like to always learn new things. In my spare time I'm re-learning to play the piano and re-training my voice for singing with the help of my husband who is a musician. Recently, I was "hooked" into embroidery thanks to my 18-year-old daughter and to building complicated Legos, thanks to my 30-year-old son.

**What's something surprising or fun about you that most people wouldn't know?**

I used to play piano and sing in a group touring around Europe.

# Student Highlight

Yoojin Bae is a graduate research associate and PhD student in Learning Sciences at Georgia State University. Her research interests lie at the intersection of education and computer science, with a focus on leveraging artificial intelligence to support adaptive learning environments. Currently, She works with multimodal large language models to analyze video data in educational contexts.

**Yoojin Bae**

### What are your main research interests and how did you become interested in your field?

My research focuses on multimodal data analysis and the application of AI in education, particularly in understanding how learners engage in real-world learning environments. Within the ALOE project, the SMART team has continuously refined how our system delivers multimodal feedback. This iterative, developmental process has given me valuable opportunities to consider how multimodal feedback can be effectively designed, analyzed, and delivered. As my interest deepens, I am exploring its application in hands-on, practice-based learning environments.

### What exciting projects are you working on at AI-ALOE?

I'm part of the SMART team at AI-ALOE, where we've deployed the system in courses across TCSG, Georgia State, and Georgia Tech to support learners' conceptual understanding. I'm leading a summative evaluation using multi-cohort data and quasi-experimental designs to assess SMART's impact and examine how AI-driven feedback shapes cognitive, affective, and contextual aspects of adult learning. This work has strengthened my skills in data analytics and AI design, deployment, and evaluation across diverse educational settings.

### What's a hobby or activity you enjoy when you're not immersed in research?

When I'm not immersed in research, I enjoy discovering new recipes and spending time cooking. I mostly make Korean food, but if I have the right ingredients in my fridge, I love trying dishes from other cuisines as well.

### What skills or experiences from your time at AI-ALOE do you think will be most valuable for your future career?

One of the most valuable experiences has been managing field-based projects and collaborating directly with educators to deploy and refine AI tools in real educational settings. Through this work, I've applied AI in multiple disciplines, contributed to the development and evaluation of an AI-driven learning tool, and deepened my learning analytics skills. I've also had the opportunity to expand my understanding of foundational AI concepts beyond the learning sciences, which I believe will be crucial in my future career at the intersection of AI and education.

### What's something surprising or fun about you that most people wouldn't know?

This spring semester, I started learning K-pop dance. I only go once a week, but it gives me energy for the rest of the week.

# Staff Highlight



**Emma Green**

Emma Green has been affiliated with AI-ALOE and Georgia Tech for a year and a half. She previously worked in academic advising, admissions, and financial aid. A Double Eagle from Georgia Southern University, she earned her bachelor's degree in public relations and her master's degree in higher education administration. Emma enjoys a variety of hobbies, but above all, she loves being an aunt to her three nephews and a cat mom to a precious girl named Wanda.

**What is your role within AI-ALOE, and how did you become interested in your field?**

I'm a program support coordinator. I became interested in working in higher education through campus jobs during my undergraduate studies. I always knew I wanted to help people—I just didn't know in what capacity. I ended up having an "aha" moment while job hunting and kept seeing openings at universities that excited me. I decided to pursue my graduate degree in my final year of my bachelor's program and never looked back.

**What are your main responsibilities with AI-ALOE?**

I coordinate events and assist with administrative and financial tasks as needed. As you can imagine, it's a little bit of everything.

**What skills or experiences from your time at AI-ALOE do you think will be most valuable for your future career?**

I think event coordination will be the biggest one. Every department I've worked in has had events, so knowing how to go from start to finish with an event will be helpful, especially if I want to take on a leadership role down the road. Organization will be second. There are a lot of moving pieces, and I've improved my ability to prioritize and complete tasks efficiently. Thirdly, being self-sufficient, since there are a lot of moving pieces and everyone has their own tasks, I've learned to figure out answers on my own which has given me a sense of confidence.

**What's a hobby or activity you enjoy?**

I enjoy camping, weightlifting (though I've been slacking), swimming, and going to Atlanta United games. I also love making homemade bread—I've really nailed a recipe! Above all, I enjoy trying new things, especially new foods.

**What's something surprising or fun about you that most people wouldn't know?**

My two front teeth are fake—no, I can't take them out! Also, I'm a cat mom to Wanda, who turns 1 year old in April.

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