2024 AI Simulation Healthcare Inaugural Summit Proceedings

Navigating the future of collaborative research and practice

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LEADERSHIP

Co-Chairs	Amar Patel, DHSc, MBA, MS, NRP, CHSE, FSSH *Power of One Consulting* Alex Morton, PhD, MSHS, RN *SimConverse*
Manager	Ginny Do Bullock *Boston Children's Hospital*

PLANNING COMMITTEE

	Isabel T Gross, MD, PhD, MPH *Yale University School of Medicine* Maria Bajwa, PhD, MBBS, MSMS, CHSE *MGH Institute of Health Professions* Janice C Palaganas, PhD, APRN, ANEF, FNAP, FAAN, FSSH *MGH Institute of Health Professions*

FACILITATORS

Group 1	Suzan Kardong-Edgren, PhD, RN, ANEF, CHSE, FSSH, FAAN *MGH Institute of Health Professions* Jill Sanko, PhD, APRN, CHSE-FSSH *MGH Institute of Health Professions / Walden University*
Group 2	Aaron Calhoun, MD, FSSH *University of Louisville & Norton Children's Hospital Louisville* Krystle Campbell, DHA, MS, CHSE, FACHDM *UT Southwestern*
Group 3	Matt Charnetski, MS, NRP, CHSE, CHSOS *Dartmouth-Hitchcock Medical Center / MGH Institute of Health Professions* Tonya Schneidereith, PhD, MBA, CRNP, CHSE-A, ANEF, FSSH, FAAN *SIMPL Simulation, LLC*
Group 4	Jonathan P Duff, MD, MEd *University of Alberta* Isabel T Gross, MD, PhD, MPH *Yale University School of Medicine*

INVITED EXPERTS SEE APPENDIX II FOR ATTENDEE BIOS

Group 1	Melissa Morris (Sim)	Nova Southeastern University
	Vincent Han (AI)	Mobile Coach LLC
	Sunny Chung (AI)	Yale University School of Medicine
	Finale Doshi-Valez (AI)	Harvard University
	Henry Park (Sim)	Tampa VA / Univ of South Florida
	Eury Hong (AI)	Yale School of Medicine
Group 2	Mark Adler (Sim)	Northwestern University
	Dennis Shung (Sim)	Yale School of Medicine
	Sevag Tachejian (Sim)	The Hospital for Sick Children, Toronto
	Bonnie Kaplan (AI)	Yale University
	Jennifer Roye (AI)	Univ of Texas at Arlington
Group 3	David Rodgers (Sim)	Indiana University Bloomington
	Julie LeMoine (AI)	UMass Chan Medical School
	Arlen Meyers (AI)	Society of Physician Entrepreneurs
	Bethany Cieslowski (Sim)	George Mason University
	Dawn Wawersik (Sim)	Nova Southeastern University
	Yuanchao Ma (AI)	Polytechnique Montreal
Group 4	Cathleen Deckers (Sim)	California State University, Long Beach
	Nabit Bajwa (AI)	George Mason University
	Esli Osmanlliu (AI)	McGill University Health Centre
	Krzysztof Gajos (AI)	Harvard University
	Matteo Rosati (AI	Yale University
	Amar Patel (Sim)	Power of One Consulting

“THE BEST WAY TO PREDICT THE FUTURE IS TO CREATE IT.”

—— Abraham Lincoln

EXECUTIVE SUMMARY

The **AI Simulation Healthcare Collaborative Inaugural Summit 2024** was a landmark event bringing together experts from healthcare simulation and artificial intelligence to examine AI's evolving role in healthcare education and simulation.

Three main questions were addressed within four small groups:

1. **Future of AI in Healthcare Simulation**: Examining the long-term vision.
2. **Research Priorities**: Identifying key research areas and discussing AI as both a medium and subject for advancing healthcare simulation.
3. **Action Steps and Stakeholder Involvement**: Outlining necessary steps, infrastructure, and stakeholder engagement to advance research.

Collectively, the groups discussed the challenges and opportunities in integrating AI into healthcare simulation. Key points included the need to address data collection, usage, and sharing across institutions, considering legal and privacy implications. The discussions highlighted the importance of interdisciplinary collaboration, involving data scientists and computer scientists, and the ethical considerations of AI models. Actionable research goals focused on understanding human-AI interactions, the impact on administrators, and the ground truth in AI-based assessments. The summit emphasized the need for clear problem identification, public-private partnerships, and infrastructure development to enhance AI's role in healthcare education and simulation.

This summit serves as a foundation for collaborative research and ongoing contributions to AI-driven innovation in healthcare simulation. Facilitators played a pivotal role in realizing the summit's objectives by guiding, summarizing, and translating discussions into actionable insights.

SUMMIT OVERVIEW

BACKGROUND

The growing impact of artificial intelligence (AI) across all facets of life, coupled with its remarkable capabilities and vast potential necessitates its integration into healthcare education and training, including simulation. In healthcare simulation, AI offers significant potential to enhance personalized learning, improve diagnostic accuracy, and support team training assessments (Hamilton, 2024; Harder, 2023). It can also streamline scenario development (Rodgers et al., 2023; Maaz et al., 2024) and provide cost-effective alternatives to traditional training, increasing access and reducing the fading of skills (Brisk et al., 2018). However, challenges such as algorithmic bias, hallucinations, and lack of infrastructure for oversight pose risks that must be addressed to ensure trust and effectiveness (Hamilton, 2024; Masters, 2023). Furthermore, understanding AI's comparative advantages over other technologies and its potential role in advancing simulation-based professional development remains an area of inquiry (Harder, 2023).

The **AI Simulation Healthcare Collaborative (AISHC)** was created in 2023 by Alex Morton, Janice Palaganas, Isabel Gross, and Amar Patel, to tackle the unique challenges and opportunities that come with integrating artificial intelligence into healthcare simulation. It builds on the successful framework of the **Healthcare Distance Simulation Collaborative (HDSC)**, which was established by Drs. Janice Palaganas and Isabel Gross to advance simulation practices during the COVID-19 pandemic. Despite their shared structure, key differences between AISHC and HDSC quickly became apparent. The HDSC thrived on an open-sharing culture that encouraged widespread collaboration, an approach the AISHC hoped to replicate. However, the competitive and proprietary nature of AI development presents significant barriers to open communication. Industry developers and researchers often face constraints around sharing advancements due to intellectual property concerns, making collaboration more cautious. Recognizing these challenges, AISHC has prioritized the aim of establishing research agendas as a strategic venue for collaboration as it can serve as a common need for successful product development, enabling collaboration while respecting proprietary boundaries. This strategic focus allows the collaborative to support innovation and guide the development of AI-driven simulation tools and practices.

In January 2024, The Society for Simulation in Healthcare (SSH) charged the Technology Committee to establish an AI-focused subgroup tasked with understanding the state of the science of AI in healthcare simulation. The AI Subgroup explored and recently published a White Paper highlighting the domains of AI-related current uses, guiding principles, legislation, and future directions. Each of these domains had working groups. The domains of AI-related current uses and legislation groups outlined the current trends. The guiding principles group identified five principles: 1) healthcare simulation & AI industry partnership, 2) usability and human factors analysis, 3) governance, 4) oversight monitoring to mitigate bias, and 5) transparent empowerment for sustainable change (Patel et al., 2024). Recognizing the importance of this state of science in shaping a research agenda, particularly the literature search group, subgroup members were invited to be a facilitator to foster cross-pollination of

knowledge and multi-societal collaboration. Maria Bajwa, deeply involved in AI-focused subgroup activities, joined the AISHC Summit Planning Team to facilitate knowledge sharing, prevent redundant efforts, and promote collaboration. With over a decade of experience in conference management, Ginny Do Bullock brought her expertise to the team to oversee the Collaborative and Summit, ensuring seamless organization and execution.

As the inaugural summit, it is essential to establish a solid foundation for advancing research that draws on the combined expertise of both simulation and AI professionals.

SUMMIT THEME, MISSION & GOALS

Theme	Navigating the future of collaborative research and practice
Mission	Our mission is to lead the integration of artificial intelligence into healthcare simulation, setting a new benchmark for excellence in healthcare education and patient safety. Through research, innovation, and collaboration, we focus on helping to create adaptive, data-driven simulations that prepare healthcare teams to excel in real-world scenarios.
Vision	We envision a future where AI-driven education becomes the standard in healthcare training, ensuring that every healthcare professional is equipped with the skills and knowledge necessary to provide safe, effective, and compassionate care. By harnessing AI's transformative power, we aim to elevate patient safety and healthcare quality globally.
Summit Goals	1. Gain insights into the journey of AI and simulation within the healthcare community. 2. Formulate actionable recommendations that address current gaps in AI and healthcare simulation, ensuring that these insights can be applied to practice and research. 3. Navigate the spectrum of AI simulation topics, from foundational concepts to complex applications, leveraging both simulation and industry expertise.

APPROACH

Planning of the inaugural Summit was undertaken using a low-cost and generative structure based on the generous contribution of time by committed team members and passionate simulationists and AI experts. The planning team approached the summit using these steps:

1. Selection of co-chairs and planning team
2. Deep exploration of AI as a focus
    i. Insights: Acknowledge that we don't know what we don't know
3. Decision to start with the experts, marry simulation expertise with AI expertise, creating two tracks to be intertwined during the summit
4. Provision of efficient education for each track (provide simulationists with education about AI and AI experts with information about simulation-based education) (i.e., Podcasts, videos)
5. Understanding of the state of the science: Conduct a Survey (in preparation for submission) in conjunction with the Future Directions for AI White Paper
6. Selection and invitation of experts
7. Setting of a summit agenda and selection of facilitators
8. Invitation to all attendees
9. Facilitator Orientation
10. During Summit: AI generation and analysis of transcripts
11. Reflection on Summit
12. Proceedings Report

Co-chair and Planning Team Selection

To ensure broad representation and diverse perspectives, we selected co-chairs strategically positioned at the intersection of healthcare, AI, and simulation. The planning team was carefully curated to include experts with extensive knowledge across these domains, all committed to leveraging AI to enhance healthcare simulation, improve clinical outcomes, and advance educational effectiveness. The leadership team's diverse expertise and experience in summit-planning enabled them to establish the Collaborative and create and implement a research-focused summit.

Exploratory Discussion: Understanding the Challenges of AI as a Topic

We chose to model the new AI Simulation Healthcare Collaborative after the successful framework of the Healthcare Distance Simulation Collaborative. However, not all aspects of the structure were directly transferable, as the nature of AI in simulation presents unique challenges. For instance, the involvement of engineering and industry representatives is critical for productive research discussions. Furthermore, concerns around intellectual property and product development can hinder the open exchange of ideas and data, requiring careful navigation to foster collaboration.

At this stage, the buzz surrounding AI in simulation was significant, but it largely reflected interest rather than established expertise. It became clear that advancing the field to the forefront of science and practice required a carefully curated summit. Discussions among the committee members highlighted "we don't know what we don't know." Therefore, it was considered essential to carefully consider all stakeholders who play a part in AI-related healthcare simulation. Therefore, this gathering needed to **bring together simulation experts, AI specialists, and key contributors from engineering, law, ethics, and industry** to foster meaningful progress and informed collaboration. We identified and searched for experts through literature, professional organizations, conferences, and social media.

Providing Education Across Tracks: Leveraging Podcasts and Videos

We recognized the importance of first bridging the knowledge gap between AI experts and simulation experts, ensuring they shared a common understanding to enable meaningful and productive discussions. To facilitate knowledge exchange between AI and healthcare simulation experts, we chose podcasts and videos as educational tools ideal for the busy attendee. The goal was to provide attendees with insights into AI and AI technologies while also educating AI industry representatives about healthcare simulation practices. The series featured expert interviews, discussions on best practices, and real-world case studies, fostering a mutual understanding of both fields and promoting cross-disciplinary learning.

Understanding the State of the Science: Survey and White Paper

To deepen our understanding of the current state of AI and healthcare simulation, we conducted a comprehensive survey of individuals who have spent allocated or dedicated time working in simulation-based education for healthcare professionals. The survey aimed to capture a snapshot of the intersection of AI and healthcare simulation, exploring how it is being used across various learner types and settings. It focused on understanding who is using AI, the motivations behind its adoption, its specific purposes, and the methods of implementation. Additionally, the survey sought to identify what information is needed to better support future AI integration in healthcare simulation.

Additionally, a white paper was published by the Collaborative and the Society for Simulation in Healthcare that synthesized existing research and provided a guide on how to incorporate AI in healthcare simulations with a thoughtful focus on ethical matters, governance, and the place of AI within education.

We drew upon both bodies of work to shape the summit agenda, design focus group questions, and guide the selection of experts and facilitators.

Expert Selection and Engagement

The selection of experts for our summit was a meticulous process. We identified individuals with extensive experience in healthcare simulation, AI programming, development, and engineering, law, ethics, policymaking, and industry needs. Following the agenda development (below), these experts were **invited** to share their insights and participate in discussions during the summit.

Summit Agenda Development

The summit theme, mission, and objectives were set (see above) and used to guide the structure and agenda of the event. To ensure a productive and impactful summit, we carefully crafted an agenda that utilized breakout groups and used this as a networking opportunity. The agenda was designed to address key foundational questions and challenges facing that could best generate a strong and thoughtful research agenda.

The time agenda was as follows:

Time (ET)	Duration	Session
9:00 - 9:20 am	20 min	Welcome & Setting the Stage
9:20 - 12:30 pm	180 min	Facilitated Working Groups (Breaks Integrated)
12:30 - 12:35 pm	5 min	Break
12:35 - 1:00 pm	25 min	Report-out & Closing

Facilitator Orientation

All Facilitators had extensive experience with facilitation, as well as expert simulationists. The planning committee developed and distributed a facilitator guide. An orientation meeting was scheduled and held to review the facilitator guide and technology with the facilitators.

For the facilitated working groups, facilitators of each group were provided a semi-structured interview plan which included the following questions:

1. What is the future of AI in healthcare simulation/education research?

2. What are the research priorities to achieve excellence in AI in healthcare simulation?
    a. Going forward, what are future research priorities?

3. You have your research priorities, what needs to happen next?
    a. Who are the stakeholders that need to be involved?
    b. What are the facilitating factors that you need to get to the next point?
    c. What is the infrastructure needed to drive AI research at a national level?
    d. How do we translate this knowledge to improve healthcare education?

Report Generation and Dissemination: Utilizing AI

To streamline the report-writing process and enhance efficiency, we employed tools, such as Zoom (zoom.us) transcript service, Otter AI (https://otter.ai/), and OpenAI (https://openai.com/). These tools assisted in analyzing survey data, summarizing key findings, and generating initial drafts of the report.

Post-Summit Reflection and Writing

Immediately upon ending the summit, planners and facilitators remained for a debriefing to inform lessons learned. Additionally, the planners reviewed the transcripts of the breakout groups and engaged in further reflection, discussing common themes, unfamiliar terminology, and additional insights.

The proceedings report was written before, during, and after the summit. By leveraging AI, we were able to produce a comprehensive and informative report in a timely manner. All final products were reviewed by the planning committee and used to assist in human synthesis, additional reflection with appropriate fact-checking, and writing.

FINDINGS

Thirty-four attendees joined the consensus building. A list of attendees can be found under 'Acknowledgements'. Simulation (53%), AI (24%), and Research (68%) expertise were well-represented in the summit. Expertise as well as professions were distributed between groups. Demographics per group included the following:

GROUP	Expertise	Professions	Geography
Group 1 (8)	Sim (4) AI (3) AI developer (1)	PhD (2) Nurse PhD (3) Physician (2) Industry (1)	USA (8)
Group 2 (7)	Sim (4) Sim+AI (1) AI Law & Ethics (1) AI Machine Learning (1)	PhD (1) Nurse EdD (1) Nurse DHA (1) Physician (3) MD PhD (1) Industry (1)	USA (6) CAN (1)
Group 3 (8)	Sim (5) AI (1) AI Developer (1) AI Software Engineer (1)	Engineer PhD (1) EdD (1) Nurse PhD (1) RN PHD MBA (1) DNP (1) Nurse (1) Physician MBA (1) MScA Engineering (1)	USA (7) CAN (1)
Group 4 (8)	Sim (1) Sim+AI (2) AI (2) AI Computer Science (2) AI Engineering (1)	PhD (1) Nurse EdD (1) Physician (2) MD PhD (1) DHSc MBA (1) Research Intern (1) MS AI, Med Student (1)	USA (6) CAN (2)
Admin (3)	Sim + AI (3)	Nurse PhD (2) Physician (1)	USA (3)

Findings of each group were summarized using zoom transcripts (zoom.us) of each breakout group. Each transcript was then uploaded to ChatGPT-4o (https://openai.com/) to generate slides summary. Each summary was then uploaded to a shared google drive (drive.google.com) for report out. Group facilitators reviewed slides for accuracy and revised accordingly using it to present their findings at the conclusion of the summit.

We present the findings collectively according to the summit goals and in more detail per group in Appendix I.

Future of AI in Healthcare Simulation

AI's role in healthcare simulation is seen as an augmentation tool, enhancing rather than replacing the roles of educators and clinicians (Group 1). It can provide tailored learning experiences, consistent feedback, and personalized simulations, but challenges such as bias in datasets and limited interactivity beyond text-based applications remain significant (Group 1, Group 3). There is a pressing need to bridge the gap between technology developers and end-users to ensure that AI solutions address real-world problems in simulation-based education (Group 4). Additionally, fostering interdisciplinary collaboration among clinicians, data scientists, and technologists will be critical to overcoming ethical and equity challenges while broadening AI's functionality (Group 3).

Research Priorities

Key research priorities include leveraging large datasets to improve simulation outcomes, reassessing outdated teaching methods, and exploring AI's potential to enhance debriefing and advanced teaching practices (Group 1). Studies should focus on human-AI interactions to understand users' perceptions and identify necessary guardrails for safe and effective use (Group 2). Defining "ground truth" in AI-driven assessments is essential to ensure AI scoring aligns with meaningful human behaviors (Group 2). Collaborative frameworks for standardization, reproducibility, and identifying major challenges in healthcare education—such as spaced learning and complex assessments—are central to advancing AI research in this domain (Group 4). Specific research ideas may be found in 'Future Directions'.

After research priorities, what needs to happen next?

To advance AI research in or using healthcare simulation, public-private partnerships are needed to address infrastructure challenges and establish legislative and ethical guidelines (Group 1). Expanding national infrastructure to support energy-efficient AI models and facilitating interdisciplinary knowledge-sharing platforms are critical steps (Group 3).

Stakeholders from diverse fields—clinicians, educators, technologists, and policymakers—must work together to define challenges, align goals, and develop robust solutions (Group 3, Group 4). Addressing user acceptance and usability testing will ensure successful integration into education (Group 2). By prioritizing collaboration and actionable research, AI can effectively enhance healthcare education and simulation (Group 4).

Stakeholders, Facilitating Factors, and Infrastructure Needs:

Collaboration between industry, government, and educators is vital to drive AI research forward (Group 1). Engaging data scientists, clinicians, and computer scientists will create a transdisciplinary framework to address challenges in simulation and education (Group 3). Facilitating factors include creating platforms for knowledge exchange, ensuring transparency in AI's functionality, and addressing privacy and equity concerns (Group 3). Developing flexible infrastructure that supports cutting-edge AI tools and aligns with ethical standards will be pivotal in integrating AI into healthcare education on a national scale (Group 1, Group 4).

Translating Knowledge to Improve Healthcare Education:

To translate AI advancements into improved education, systematic and standardized approaches are necessary for integration (Group 1, Group 2). Educating stakeholders on AI's capabilities and limitations is key, emphasizing safety, usability, and accessibility (Group 2). Collaborative knowledge-sharing platforms can bridge gaps across institutions, enabling data pooling and actionable insights (Group 3). AI-driven innovations should focus on solving practical problems while maintaining human oversight for nuanced tasks, ensuring its applications remain aligned with the evolving needs of healthcare education (Group 4).

The discussions revealed numerous additional areas that we summarize in Box 1.

Box 1. Areas of Discussion for AI Simulation in Healthcare

Data Collection and Usage in AI Models
There is a critical need for a comprehensive understanding of how data is collected, used, and valued in AI models. It is important to create generalizable models that go beyond data from a single institution, which can introduce biases. Data sharing across institutions is suggested as a solution, but it must be carefully managed with respect to legal and privacy concerns. The attendees also highlight the role of diverse stakeholders, including data scientists and computer scientists, in developing robust AI simulations.

Interdisciplinary Collaboration and Resource Considerations
Interdisciplinary and transdisciplinary collaboration in AI simulations will be necessary, emphasizing the involvement of various specialties. There are different types of computer scientists needed and there is a need for more research on collaborative opportunities. Resource and infrastructure needs, such as electricity and computing power, were also

highlighted, along with ethical and equity considerations, especially in deploying AI solutions to underserved populations.

Actionable Research Goals and Collaboration Platforms
Defining specific problems for AI to address is challenging and requires focused, bounded discussions. Collaborative frameworks and rigorous research practices are essential to ensure reproducibility. A collaboration platform is proposed to facilitate data sharing and gap identification, with a call for connections to the broader AI and healthcare ecosystems to leverage existing expertise and resources.

AI in Simulation-based Healthcare Education and Research Agenda
AI's potential in healthcare education is limitless with a particular need for generative AI in assessments. Concerns were raised about the "ground truth" behind AI-driven assessments and whether AI scoring offers genuine objectivity. AI is already being applied in simulation programming and virtual reality. The discussions proposed that our research agenda include qualitative studies on human-AI interactions and the challenges faced by administrators in integrating AI.

AI as an Augmentation Tool in Education
AI was discussed to be an augmentation tool to support, rather than replace, educators and clinicians. The ability to customize simulations to fit individual learners' needs and contexts is most valuable. Additionally, there is a need to update outdated teaching methods and address biases in AI datasets. AI has the potential to offer consistent, unbiased feedback on repetitive tasks and may help predict future performance.

Research Priorities and Public-Private Partnerships
Public-private partnerships in fostering robust AI research will be key to any research priority. Understanding organizational needs and establishing legislative frameworks for AI in healthcare will become necessary. Privacy and data ownership are also key concerns, alongside the importance of usability testing and considering human factors to promote AI adoption effectively.

Mismatch Between Technology and Educational Needs
There is a gap between the capabilities of AI technology and the specific needs of education. This necessitates bringing simulation educators together to identify major challenges or "big, hairy problems" in education. Specific issues such as implementing spaced learning and assessment with technology were discussed, with suggestions for AI to handle simpler data tasks in assessments, allowing human experts to focus on more complex evaluations.

Collectively, the groups discussed the challenges and opportunities in integrating AI into healthcare simulation. Key points included the need to address data collection, usage, and sharing across institutions, considering legal and privacy implications. The discussions highlighted the importance of interdisciplinary collaboration, involving data scientists and computer

scientists, and the ethical considerations of AI models. Actionable research goals focused on understanding human-AI interactions, the impact on administrators, and the ground truth in AI-based assessments. The summit emphasized the need for clear problem identification, public-private partnerships, and infrastructure development to enhance AI's role in healthcare education and simulation.

Post-Summit Reflection

Upon closing of the summit proceedings, the planning committee reviewed group transcripts and reflected on themes that appeared throughout the summit, noting four common themes in sentiment.

COMMON THEMES:

- We need to drive AI, not let it drive us.
- Trust, Mistrust, and Assurance
- You can't eliminate the human.
- Establishing Guardrails

We need to drive AI, not let it drive us.
The current state of AI simulation healthcare research has been to test the application of existing AI, typically created for other specific reasons. The integration of artificial intelligence (AI) into various areas of healthcare simulation requires deliberate human oversight and direction to ensure that its development and applications align with simulation-based education (SBE) values and goals. Allowing AI to dictate decisions without clear human guidance risks prioritizing efficiency or automation over SBE goals, ethics, equity, and safety. Group 4 made the salient point of "slowing down"—to not feel rushed to adopt new, exciting tools, but rather to first characterize the problems that we are trying to solve first. By maintaining control and purposefully steering AI's evolution, simulationists can ensure that these technologies remain tools for productivity rather than unchecked forces.

Trust, Mistrust, and Assurance
For AI to be effective and widely adopted, building trust is critical. Simulationists must have confidence in AI's accuracy, fairness, and reliability, which requires transparency in its design and decision-making processes. However, mistrust often arises from unclear methodologies, data biases, or past failures. There is also mistrust due to our area of human behavior where there was sentiment that we don't know how the mind works yet or enough about human beings in general to be able to effectively even train or assess AI systems. Assurance mechanisms, such as rigorous testing, certification, and ongoing evaluation, are essential to address these concerns and foster trust while safeguarding against misuse or over-reliance.

You can't eliminate the human.
While AI offers powerful tools for automation and efficiency, the human element remains irreplaceable in decision-making, creativity, and empathy. In fields like healthcare, education, and ethics, human judgment provides critical context and emotional intelligence that

machines cannot replicate. Two groups discussed giving agency to AI, or the concept of designing AI with the ability to act autonomously without human intervention. The goal should not be to remove humans from the equation but to enhance their capabilities with AI while ensuring that final accountability and decision-making rest with people.

Establishing Guardrails

Guardrails are essential to ensure that AI operates within ethical, legal, and practical boundaries. These safeguards include clear policies, transparency standards, and mechanisms to prevent unintended consequences, such as biased decisions or unethical behavior. Through a collaborative such as this, we can engage in forward thinking, define these parameters early, and continuously updating them as AI evolves, stakeholders can mitigate risks and ensure that AI technologies are used responsibly and for the greater good.

ADDITIONAL INSIGHTS:

It became obvious to us the caliber of attendees (see bios in Appendix II) and the power of bringing expert minds together. We describe here additional insights that we gained from reviewing the transcripts and reflection. Many of our insights motivated new questions.

- We came across **new terminology** beyond the terms defined in the white paper that we define here:

Term	Definition
Optimizer	An algorithm used to adjust the weights and biases of a model during training to minimize error and improve performance
Synthetic Data	Artificially generated data that mimics real-world data patterns and is used to train, test, or validate AI models while addressing privacy or data scarcity concerns
Temperature	A parameter that controls the randomness of model predictions, with lower values producing more focused outputs and higher values generating more diverse responses
Ground truth	The accurate and reliable data or labels used as a reference to train, validate, and evaluate the performance of a model
Multi-agent AI	AI involves systems where multiple AI entities interact, collaborate, or compete to solve complex tasks or simulate environments that involve multiple decision-makers
Intervention-Generated Inequalities	The concept that disparities arise when interventions, such as new technologies, unintentionally benefit certain groups over others, exacerbating existing inequalities or creating new ones
Functional Fidelity	The degree to which an AI system accurately replicates the essential functions or behaviors of a real-world process or task it is designed to simulate or support
Assurance labs	Specialized facilities for testing, validating, and certifying the performance, reliability, and compliance of AI systems to ensure their safe and ethical deployment

AI Standards

- Establishing assurance labs can help simulationists build trust in AI while addressing concerns of mistrust.

- What human assessments can be applied to AI?
    - While we demand full transparency from AI to trust it, we often trust humans without requiring complete knowledge about them.
    - If AI is to teach, should its abilities be assessed as rigorously as human educators, such as through competency or certification measures that exist today? Interestingly, we frequently learn from human teachers without verifying their credentials.
    - Our most effective teachers often possess unique strengths and flaws that make them impactful. If we attempt to combine these qualities into a single AI, it might be less effective than creating multiple AIs, each offering a distinct approach to learning.

Paving Smoother AI Experiences

- Using Group 1's self-parking analogy (see Appendix I), learners must first master the skill, then grow comfortable with the new technology, and finally learn how to maximize its potential—steps that are often overlooked.

- It is essential for educators, researchers, and simulationists to deeply understand AI to effectively teach, use, and study it. How do we measure proficiency in this area?

- Over time, it may not be the AI that improves significantly, but rather the user's ability to utilize it more effectively.

- Many existing technologies provide frameworks and models that can guide future directions in AI to overcome the challenges that we identified in this summit.

Future Challenges

- AI depends on recorded data. To be able to best use AI both in practice and in simulation, video and audio recordings as well as other sensitive data will be needed from the patient care environment which violates current practices of patient privacy.

- The ethical dilemmas already encountered in predictive analytics will also arise in AI as datasets expand; these existing discussions can provide valuable guidance for addressing these challenges.

- We will need to be cognizant about using and attributing work to AI when the systems were not designed or intended to perform the tasks we may ask of it.

Directions in AI Simulation

- There was a natural progression for the groups to discuss healthcare practice versus health professions education, prompting the question: Does intertwining simulation with healthcare practice in this early stage of funding serve as an advantage?

- Simulation is vital for advancing AI in healthcare. It provides a safe environment to test and refine AI systems for development, implementation, adoption, and ensuring patient safety.

- We need to educate this collaborative as leaders in AI simulation. This will require defining use cases and hosting playground sessions.

Our collective insights, combined with those from each group, emphasize the importance of prioritizing research and dedicating time, as was done during this summit, to strategize future directions for AI in simulation.

FUTURE DIRECTIONS

This summit identified multiple future directions. Common ideas included the following directions:

- Conduct yearly qualitative studies to understand the lived experiences and perceptions of learners, facilitators, and administrators regarding human-AI interactions in simulation-based education.

- Undertake research to understand the "ground truth" behind AI-based assessments and how they translate to meaningful changes in practice.

- Investigate the role of industry, government, and public-private partnerships in conducting robust research on the use of AI in simulation-based education, including understanding organizational needs, legislation, and infrastructure requirements.

- Convene a group of simulation educators to identify the "big, hairy problems" that could potentially be addressed through technological solutions, including the use of AI.

- Explore the potential for AI to become a "personal healthcare coach" and provide customized learning for healthcare providers using healthcare simulation.

Next steps for the Collaborative are to form working groups to address these themes as well as consideration of the specific ideas listed below under "Preparing for AI Innovation."

SPECIFIC IDEAS FOR FUTURE STUDY

Specific future research was identified by each group. In the spirit of dissemination and collaboration, we list those here. *NOTE: Readers who may want to engage in research under any of these topics, please email info@aisimhealthcollab.org and indicate the topic and group number so that we can connect you with the idea progenitor. If your work is accepted for*

publication or presentation, we request that you use this language in your acknowledgements "The Idea for this study originated from the 2024 AI Simulation Healthcare Collaborative Proceedings Report."

Preparing for AI Innovation

- What is the taxonomy of AI in healthcare simulation? Where will it exist and function? (Group 1)
- Create checklists for industry to create AI that can support SBE (i.e. behavioral analysis for visual-based AI) (Group 1)
- What are valuable and difficult tasks in simulation? How could AI help? (Group 4)
- What are the learning theories in AI? (Group 1)
- How can we as a collaborative take the lead over AI development rather than finding ways to apply existing AI? (Group2)
- Priotitize the research identified in this summit (Planning Committee, Group 2)
- Change Management/Differential Management (Group 2)
- Define the use cases of AI in healthcare simulation (Group 2)
- Use grounded theory and apriori studies on understanding the whole system (beyond just the technology) based on literature in other areas of technology (Group 2)
- Conduct an ethnography focused on how people attribute meaning to the technologies as it lends to anthropomorphization. (Group 2)
- What are the perspectives that exist in this collaborative? (Group 2)
- Guidelines/Rules/Tools to assess how to bring in new tools to simulation—how do I evaluate that it is good enough to be used in simulation or education? (Group 2)
- Differentiate the data in AI in simulation and how to appropriately separate them (Group 3)
- Discuss intellectual property as a challenge for collaboration and collaborative discussions (Group 3)
- Creation of simulation assurance labs (Planning Committee)
- Explore the return on investment and expectations of AI for simulation programs (Group 4)
- Explore Intervention-generated inequalities (Group 4)
- Explore: Why do you need or want AI? What is the purpose for your experience? (Planning Committee)

Assessment

- Explore AI's role in assessment (Group 4)
- Investigate the accuracy of AI in scoring simulations, such as ACLS cases and debriefings (Group 3)
- Compare human vs AI evaluations in medical education, e.g. OSCEs (Group 3)
- Explore AI's potential in providing consistent, unbiased feedback on repetitive tasks (Group 2)
- Study the effectiveness of AI in providing feedback and coaching for experienced healthcare professionals (Group 4)

Validation of AI

- Understand the "ground truth" behind AI evaluations in medical education (Group 2)
- Conduct a conceptual exploration of ground truth (Group 2)
- Disclosing AI testing as a validation processes (Group 1)
- Determine what makes an educator excellent and apply it to AI as a way of validation (Group 1)
- Understand functional fidelity (Group 4)

Ethics and Biases

- Examine the ethical implications and biases in AI-driven healthcare education (Group 3)
- Discuss the mechanism of understanding who is training the AI? What is their bias? And the issues with this level of transparency (Group 1)

Student Potential

- Study AI's ability to predict future performance of healthcare providers (Group 1)
- Exploring AI's potential in predicting which individuals may excel in specific medical specialties and the implications (i.e. risks) of this potential (Group 1)

Personalized learning

- Research AI-powered personalized learning and simulation tailored for the individual learner (Group 1)
- Research the development of AI-powered healthcare coaches for personalized, long-term skill improvement (Group 4)

Teaching & Learning

- Investigate AI as a tool for improving debriefing methods and teaching skills (Group 1)
- Study the integration of AI into existing educational and simulation frameworks (Group 3)
- Research AI's potential in reducing cognitive load for educators and clinicians (Group 1, Group 4)
- Research AI's potential in increasing cognitive load for educators and clinicians (Group 1)
- Use AI to observe common procedural training with multiple educators so that AI can teach better, incorporating the teaching pearls/secret sauce that each educator has. (Group 1)
- Study what can humans do better? What can AI do better? (Group 1)
- Study which skills are needed to put AI into an educational curricula? (Group 1)

- Study whether or not AI can detect if student is having a meaningful experience (i.e., where AI is not too perfect but still making it challenging and engaging) (Group 1)

Understanding the Experience

- Conduct phenomenological studies on human-AI interactions in healthcare education (Group 2)
- Examine the pressures on administrators regarding AI implementation in healthcare education (Group 2)
- Investigate the power differential in AI vs Faculty (Group 1)

New Simulation Technology

- Investigate the potential of voice AI in healthcare simulations (Planning Committee)
- Investigate AI's role in rare event simulations and leadership training (Group 2)
- Develop AI to emulate how different persons or populations would respond so that practitioners can practice application in various contexts. (Group 1)
- Train AI to extract flags from lay language for patients who are not able to articulate in medical language (Group 1) Train AI to assist practitioners on detecting the language detected (Group 1) Then create simulations of different patients (Group 1) with different cultural languages (Group 1)
- Study AI's ability to assist practitioners from fixation error, allowing a balance and flow of divergent to convergent thinking (Group 1)
- Study procedural training using VR with haptics to increase exposure to low-frequency procedures (Group 1)
- Develop cognitive aids using AI in a way where visual time and field is not occupied (Group 1)
- Study the time it takes to learn an AI system as compared to the actual task without AI? (Group 2)

LESSONS LEARNED

The debriefing following the summit identified many lessons learned. Despite identified issues, the session was productive, with valuable insights shared.

Challenges with Research Priorities. Groups experienced difficulty in staying focused on specific research priorities, with many groups getting sidetracked by discussions on AI's influence on healthcare rather than education. The team discussed the natural progression of discussions from education to healthcare, noting that this alignment might be beneficial (i.e., Should we start with AI in practice and allow that to inform SBE?). Participants suggested that more explicit objectives addressing education could have helped in addition to involving more educators in each group. Some groups successfully stayed aligned with the summit's goals by continuously revisiting and bounding their conversations. Planners and facilitators discussed the normalcy and fallacy of inaugural summits, mentioning how the inaugural Healthcare Distance Simulation

Summit focused on terminology rather than research priorities, despite having demonstrated strong research agendas and publications following the first summit.

As anticipated, Intellectual property concerns also hindered free-flowing conversations when discussing potential research directions. Despite an NDA and language discussing the spirit of sharing while respecting intellectual property and the respectful courtesy to invite and inform those who promoted ideas, IP prevented open sharing. The planning committee discussed surveying those with IP as to research needs that could help inform their projects without breaching company IP. Several participants expressed willingness to have one-on-one discussions as they felt constrained by sharing IP in a larger group setting.

Education and Simulation Knowledge. A divide in knowledge about AI and simulation in education emerged, largely influenced by ambiguous terminology. While many participants had a foundational understanding of AI and simulation, differing interpretations of the term "simulation" led to varying perspectives. This ambiguity underscored the need for a shared vocabulary to ensure productive discussions. Although the planning committee prepared and provided pre-summit work informing simulationists of AI and AI experts about simulation-based education, this preparatory work was likely not completed in light of the debriefing discussions. During planning, the committee initially discussed short podcasts and videos as educational methods with a supplemental one-page summary. The committee opted for this approach over an additional hour of summit time. While the podcasts and videos were shared, a one-page summary was not. More brainstorming about perhaps revisiting an additional introductory hour (two breakout sessions for AI experts and Sim experts) or other ways to achieve a universal design approach for motivating the completion of this preparatory work is needed.

Group Experiences and AI Output Issues. Some groups benefited from having additional participants to help them stay on track. Technical challenges were acknowledged, including issues with AI-generated outputs due to changes in transcription tools and platform restrictions. Time constraints were also discussed, with suggestions that a shorter session length might have been more effective, while evaluations indicated that attendees felt that the summit used "the right amount of time."

Future Improvements and AI Tools. The planning committee and facilitators highlighted the need for better transcription and summarization tools for future meetings. Suggestions included using more reliable audio transcription methods and centralized storage for audio and video files to improve output quality. Discussions emphasized the importance of refining workflows and leveraging updated AI tools for more accurate summaries and insights. Like any technology, the use of AI needs contingency planning with multiple detailed strategies if any part of the intended process fails. For example, the planning committee intended to 1) download zoom transcripts, 2) upload to Otter AI to generate a summary, 3) upload this summary to ChatGPT to generate a PowerPoint slide. The committee piloted this approach successfully the evening prior, however, an unbeknownst Otter AI update at midnight removed the ability to upload text to Otter, forcing the group to problem solve on the spot with a final solution of 1) downloading zoom transcripts, 2) upload to ChatGPT as a file given character limits to generate a PowerPoint slide. The output was rather disappointing without time to improve the process. Part of improving the process was having matching methods of prompting. Creating step-by-step instructions and prompts prior to the summit would have been an effective contingency plan.

While the AI-generated summaries were helpful as a draft ready for revision, some groups felt that self-generated summaries would have better captured the thoughts of their group. In reviewing the breakout group transcripts against the AI-generated summaries, it was evident that often the most powerful contributions of knowledge were "one-off" comments that indicated that AI summaries, in this case, was not the most fruitful approach.

Fast Dissemination of Work. To make a timely impact in AI advancements, researchers must be agile and disseminate their findings immediately. Often, the knowledge that one needs has not yet been published, encouraging researchers to take a step back and conduct research that has already been well researched, just not published. In AI, the hierarchy of impact differs from traditional research where peer-reviewed publications are the most trusted source. In AI, communities of practice, such as The AI Simulation Healthcare Collaborative, is a primary source of knowledge.

With the understanding of expedient dissemination, the planning committee assigned two members to focus solely on the proceedings report. This, along with the help of AI in generating summaries of the breakout group discussions and in assisting with smoother writing, allowed a one-day turnaround time to publication.

Attendance. Attendees were hand-selected based on simulation or AI expertise that would best inform the summit agenda. After the invitations were sent, personal emails were followed by those on the planning committee who had the closest relationship to that attendee. Using this approach, there was a 80% acceptance rate. While most accepted, there were 2 drop-outs weeks before the summit and 2 drop-outs just prior to the summit. The planning committee expressed concern at the start of the summit, however, in the end, the lower number of groups was not only adequate, but also made the data more manageable.

Limited Diversity of Attendees. While five of our attendees identify with other countries (Poland, Pakistan, Germany, Australia, and China), all participants currently reside in North America, primarily USA. The limited diversity of attendees presents significant challenges in fostering a global perspective. This geographic concentration restricts the inclusion of diverse cultural, educational, and healthcare system experiences, which are crucial for addressing global challenges in simulation and AI in healthcare. Furthermore, only one attendee represented the target audience of health professions students, and only one attendee was a junior researcher. Including junior attendees would be beneficial as it provides fresh perspectives, fosters mentorship opportunities, and ensures that emerging voices are included in shaping the future of AI in healthcare education. Such homogeneity may result in solutions and discussions that lack relevance or applicability to regions with different resource levels, healthcare infrastructures, and cultural practices. Expanding participation to include attendees from underrepresented regions can enrich discussions, introduce novel approaches, and ensure the development of inclusive and equitable strategies.

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APPENDIX I: GROUP DISCUSSION NOTES

GROUP 1 Highlights

"It's like the self-park function in a car. If you don't know how to park the car yourself and you just hit the button and let it self-park, it's a very scary experience because you don't understand what it's doing, and the only way you can get comfortable with the self-park function is if you yourself know the skill and know if it's on track or off track." -Jill Sanko

1. Role of AI

- AI is seen as an augmentation tool rather than a replacement for educators and clinicians. AI is very limited to things that are recorded and doesn't have access to one's full life experience (values and lived experiences) and, for this reason, AI is far off from this capability.
- AI has a lot of advantages, including infinite memory, the ability to recognize patterns from the past that we might not have at the top of our minds, and the ability to recognize patterns immediately. To understand its future in healthcare simulation, we must think about these advantages.
- In education, AI could provide consistent, unbiased, and personalized feedback and tailor simulations to individual learners' needs. It can be a part of the education continuum, especially when educators are not present.
- The potential exists for AI to act as a personal healthcare coach or learning tracker.

2. Current Challenges

- Addressing biases in AI training data and understanding the inputs ("black box") is critical.
- Expanding AI beyond text-based applications into visuals, audio, and interactive formats is necessary for greater functionality.
- Ethical concerns include the risk of AI making premature predictions about individual capabilities and the potential for pigeonholing learners.
- An AI's ability to adapt to the unique person will require further development.
- Personal preferences to interact with a person, not a computer.
- Future AI will need detailed observational checklists.
- Humans are multi-sensory in learning. If AI is to mimic humans, multi-sensory capability will need to be refined in AI systems.
- Prompt design and engineering training will be key to effective use.

3. Future Applications

- AI might assist in assessing skills, predicting learner outcomes, and enhancing debriefing methods for educators.
- It holds promise for helping advanced clinicians refine their skills further, beyond novice and intermediate levels.

Research Priorities

1. Public-Private Partnerships

- Investigate how industry and government can collaborate to advance AI research and implementation.
- Explore legislation and guardrails needed to build trust in AI processes.

2. Privacy and Ownership

- Examine regulations for patient privacy, data ownership, and organizational control of AI-generated information.

3. Human-AI Interactions

- Study the emotional and human factors involved in interactions with AI, focusing on usability and acceptance.

4. Education and Standardization

- Develop systematic approaches to integrate AI into healthcare education.
- Address how to educate clinicians and learners about AI, including its limitations and benefits.

5. Infrastructure and Regulation

- Consider national-level infrastructure and policies required for implementing AI in healthcare, including education regulations and testing for AI applications.
- Consider where the responsibility of certain research should reside as it relates to education or patient care: government or industry?
- Develop mechanisms for shared datasets.

GROUP 2 Highlights

"Human Development starts from an embodied experience and LLMs are not embodied."
-Dennis Shung

1. Understanding AI in Assessments

- Concerns arose about how learners perceive agency in AI where it doesn't exist. We must have a deep understanding of the human mind to transfer agency to AI and we don't know enough about the human being.
- Discussions highlighted the challenges of determining "ground truth" in AI-driven assessments, questioning whether AI's numerical accuracy translates to meaningful, human-level outcomes.

2. Exploration of New AI Applications

- Participants identified areas where AI could excel, such as supporting simulation programming, program development, and making complex technologies like virtual reality more accessible.
- These applications may better align with AI's strengths compared to its current uses.

- The group discussed the following questions: When in the future would you let it work alone? When is it going to meet that? And if it's not going to then what's the middle ground to co-teach and co-debrief? When can you eliminate the human element? Never? Should it ever be?

3. Research Priorities

Phenomenological Studies

- Investigate how learners and facilitators perceive and interact with AI in healthcare education.
- Explore how users understand the outputs and processes of AI systems, identifying gaps and guardrails for safe and effective use.

Administrative Pressures

- Examine how administrators perceive and implement AI, focusing on policy pressures and potential oversimplifications in practice variations.

Defining Ground Truth

- Research what constitutes "ground truth" in AI evaluations of communication and interactions.
- Assess whether AI's reproducible scoring reflects meaningful human behaviors and outcomes in healthcare.

4. Implications for Future Use

- The group emphasized the need to establish clear guardrails and educate users for the appropriate application of AI.
- They noted that without a deeper understanding of AI's impact and user experience, its implementation risks being misaligned with human-centric goals.
- We now have a set of human perceptions of tools that may or may not be using them in ways for which they're optimally calibrated or can even perform.
- The use of AI is a whole system, not just the technology, so everything is going to affect everything.

GROUP 3 Highlights

"Will AI replace simulationists? No, a simulationist who knows AI will replace a simulationist."
-David Rodgers

1. Functional and Data Considerations

- The conversation began by addressing functional questions and identified gaps, emphasizing the challenge of understanding and connecting diverse data sources. The need to ensure AI models are generalizable and mitigate biases tied to localized datasets was a recurring theme, along with addressing privacy and legal challenges in data sharing.

2. Interdisciplinary Collaboration

- A critical insight was the importance of involving a wide range of professionals beyond clinical roles, such as data scientists and computer scientists, in creating and integrating

AI into simulations. The concept of transdisciplinary collaboration was emphasized, highlighting the need for diverse skill sets and professions.

3. Infrastructure and Resource Needs

- Discussions delved into the requirements for running AI models, noting their computational and energy demands. Emerging smaller and more efficient devices were acknowledged, but there remains a need to balance cutting-edge developments with practical implementation and equity considerations.

4. Ethical and Equity Concerns

- The biases within AI models and their implications for underserved populations were key concerns. Ensuring that AI tools do not reinforce inequities and remain accessible across diverse groups was identified as a priority.

5. Defining Research Goals

- A major challenge identified was the lack of clear problems to address with AI, leading to discussions that were too expansive. The need to focus research goals and establish collaborative frameworks for reproducibility and rigor was emphasized.
- There are 3 types of validation: technical, clinical, commercial.

6. Collaboration and Knowledge Sharing

- Participants suggested reframing AI as a collaboration platform, enabling knowledge and data sharing across institutions. This would help identify gaps, standardize practices, and foster partnerships.

7. Engagement with the Broader Ecosystem

- Recognizing the wealth of expertise outside the simulation field, participants stressed the importance of connecting with organizations and experts already advancing AI in healthcare.
- There is a need to understand return on investment of AI acquisition, development, and use.

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GROUP 4 Highlights

"We need AI to support facilitators and decrease their mental load, allowing them to focus on higher-level tasks and more meaningful interactions with learners."

--Isabel Gross

"We built it, we trained it, but we don't know what it's doing."

– Sam Bauman (through Jon Duff)

1. Mismatch Between Technology and Needs

- A significant gap exists between the capabilities of AI technologies and the actual problems educators and clinicians face.
- Developers and end-users often lack communication, leading to tools that may appear impressive but lack practical application.

2. Identifying Core Challenges

- The group proposed convening educators to identify "big, hairy problems" in education, such as logistical challenges in implementing spaced learning or difficulties in assessing multiple learners effectively.
- There is a general discomfort with using AI currently. The group discussed how to determine the infrastructure to increase adoption and confidence.
- Intervention-generated inequalities may ensue, so it will be key to track all interventions and intervention generated inequalities.

3. Optimizing AI's Role

- AI could address lower-hanging fruit in areas like assessments, automating simple data gathering while leaving nuanced, complex evaluations to human experts.
- This hybrid approach allows AI to augment human capabilities without overstepping its current limitations.
- AI could assist in furthering assessment and realism/fidelity.
- There is value in understanding failures and struggles that occur in learning which AI could help identify.
- AI could assist with the logistics of spaced learning.

4. Next Steps for Progress

- Establishing collaborative forums to align the needs of educators with the development of AI solutions.
- Exploring how technological advancements can solve specific educational challenges, such as improving retention through spaced learning.
- Exploring the return on investment and expectations of AI for simulation programs.

APPENDIX II: ATTENDEE BIOS

Mark Adler, MD Feinberg School of Medicine, Northwestern University	Dr. Mark Adler is a leading expert in simulation-based healthcare education, with a focus on pediatric emergency medicine. He has made significant contributions to the field through his research and leadership roles in various simulation initiatives.
Maria Bajwa, PhD, MBBS, MSMS, CHSE MGH Institute of Health Professions, Dept. of Health Professions Education, School of Healthcare Leadership	Dr. Maria Bajwa is an expert in health professions education and simulation. She has extensive experience in designing and implementing simulation-based learning experiences for healthcare professionals. Dr. Bajwa is the Lead Researcher for AI using simulation for assessment at the MGH IHP REBEL Lab.
Nabit Bajwa, MS, PhD-CS(c) George Mason University	Nabil Bajwa is a leading researcher and data scientist in artificial intelligence and its applications in healthcare at Merck. His work focuses on developing innovative AI solutions to improve patient care and clinical decision-making. Nabit's work focuses on AI in K-12 education and pursuing a PhD in computer science.
Aaron Calhoun, MD, FSSH University of Louisville and Norton Children's Medical Group	Dr. Aaron Calhoun is a skilled physician with a passion for healthcare simulation. He has expertise in using simulation to enhance clinical skills and improve patient outcomes. Dr. Calhoun is Associate Editor-in-Chief of Simulation in Healthcare and In-coming President of the Society for Simulation in Healthcare.
Krystle Campbell, DHA, MS, CHSE, FACHDM UT Southwestern	Dr. Krystle Campbell is Director of Operations for the simulation center at University of Texas Southwestern Medical Center with a keen interest in emerging technology for medical education. She is also an Assistant Professor through the Dept of Emergency Medicine. Dr. Campbell is Chair of the External Relations Committee of the Society for Simulation in Healthcare. Dr. Campbell is currently involved in AI research.
Matt Charnetski, MS, NRP, CHSE, CHSOS Dartmouth-Hitchcock Medical Center / MGH Institute of Health Professions	Matt Chametski is a renowned healthcare simulation specialist with extensive experience in designing and managing simulation-based learning experiences. He is passionate about using simulation to improve patient care. Matt is currently Director of simulation-based education at Dartmouth Health with interest in AI integration.
Sunny Chung, MD Yale University School of Medicine	Dr. Sunny Chung is a physician with a keen interest in artificial intelligence and its potential to revolutionize healthcare. He is actively involved in exploring the use of AI in clinical practice.
Bethany Cielowski, DNP George Mason University College of Public Health	Dr. Bethany Cielowski is a public health expert with a strong focus on healthcare simulation. She utilizes simulation to educate healthcare professionals about public health issues and improve their response to public health emergencies.Dr. Cielowski is a Researcher at George Mason University focusing on extended reality and AI integration in public health.
Cathleen Deckers, EdD, RN CNE, CNEcl, CHSE	Dr. Cathleen Deckers is a renowned nursing educator with significant experience in using simulation to enhance nursing

California State University, Long Beach	education and clinical practice. Dr. Deckers is currently the Associate Director of Nursing at Cal State Long Beach, with an interest in AI.
Finale Doshi-Velez, PhD Harvard University	Dr. Finale Doshi-Velez is a leading researcher in the field of artificial intelligence. She focuses on developing AI algorithms and tools to improve healthcare delivery and patient outcomes. Dr. Doshi-Velez is a Computer Science Professor at Harvard. Her work in AI focuses on decision support tools and human-AI interaction in clinical settings.
Jonathan Duff, MD University of Alberta	Dr. Jonathan Duff is a Pediatric ICU physician with 20 years of simulation experience with a recent focus on assessment using AI. Dr. Duff is passionate about improving patient care through simulation-based learning. Dr. Duff is the Co-Chair of INSPIRE, a research collaborative in simulation
Krzysztof Gajos, PhD Harvard University	Dr. Krzysztof Gajos is a leading researcher in the field of human-computer interaction and AI. His work focuses on developing AI systems that can effectively interact with humans and support decision-making in healthcare. Dr. Gajos is a Professor of Computer Science at Harvard, working on human-AI interaction in healthcare.
Isabel Gross, MD PhD MPH Yale University	Dr. Isabel Gross is a physician-scientist with a passion for using AI to improve healthcare. She is actively involved in research to develop AI-powered tools for diagnosis and treatment. Dr. Gross is currently a pediatric emergency physician at Yale and incoming co-chair of INSPIRE, a research collaborative in simulation.
Vince Han Mobile Coach LLC	Vince Han is technologist from Utah and founder of Mobile Coach. Vince has 12 years of experience in chatbot technology, particularly in healthcare.
Eury Hong, MA Yale School of Medicine	Eury Hong is a Researcher and Medical Educator focusing on integrating AI into healthcare, public health, and pediatrics, particularly in communication-based simulation. Her current research focuses on using AI to enhance medical simulation education.
Bonnie Kaplan, PhD, FACMI Yale University	Dr. Bonnie Kaplan is a leading expert in medical informatics and AI. She has made significant contributions to the development of AI-powered tools for healthcare data analysis and decision support.
Suzie Kardong-Edgren, PhD, RN, ANEF, FSSH, FAAN MGH Institute of Health Professions	Dr. Suzie Kardong-Edgren is a renowned nursing educator with a strong focus on healthcare simulation. She has extensive experience in using simulation to improve nursing education and clinical practice. Dr. Kardong-Edgren is currently faculty at Mass General Hospital Institute of Health Professions with current research in simulation and virtual reality.
Julie E. LeMoine, PhD UMass Chan Medical School	Dr. Julie E. LeMoine is a faculty member at UMass Chan Medical School, where she leverages simulation to enhance healthcare education and training. Dr. LeMoine is currently the faculty lead for AI and XR at UMass Chan Medical School and member of the Digital Medicine Project. Dr. LeMoine was part

	of the team who created the internet. Her experience in integrating AI and extended reality focuses on medical education.
Yuanchao Ma, MScA, Ing. PRT Polytechnique Montreal	Yuanchao Ma is a Researcher at Polytechnique Montreal, specializing in artificial intelligence applications for healthcare, particularly in medical image analysis and decision support systems. Yuanchao is affiliated with University of Montreal and McGill University. Experienced in developing chatbots for primary care.
Arlen Meyers, MD, MBA Society of Physician Entrepreneurs	Dr. Arlen Meyers is a physician-entrepreneur and founder of the Society of Physician Entrepreneurs, where he promotes innovation and entrepreneurship in healthcare. Dr. Meyers is Emeritus Professor at the University of Colorado School of Medicine where he is Involved in AI ecosystems and AI entrepreneurship.
Melissa Morris, PhD, RN, CPN, CHSA Nova Southeastern University	Dr. Melissa Morris is the Director of Simulation and Technology Integration at Nova Southeastern University. Dr. Morris' research focuses on AI, distance simulation, and new simulation technologies.
Alex Morton, PhD, MSHS, RN SimConverse	Dr. Alex Morton is a healthcare simulation expert and the VP of Education at SimConverse, a company focused on providing innovative simulation solutions for healthcare education. Dr. Morton is involved in many industry and educator aspects of AI from development, testing, and marketing.
Esli Osmanlliu, MD, MSc Research Institute - McGill University Health Centre	Dr. Esli Osmanlilu is a researcher at the Research Institute-McGill University Health Centre, where he investigates the use of AI to improve patient care and clinical decision-making.
Janice Palaganas, PhD, APRN, ANEF, FNAP, FAAN, FSSH MGH Institute of Health Professions	Dr. Janice Palaganas is a renowned simulationist and behavioral scientist. Dr. Palaganas is a Professor MGH Institute of Health Professions, where she is PI of the REBEL Lab, a lab dedicated to simulation research priorities, including AI and simulation.
Henry Park, MD Tampa VA / University of South Florida	Dr. Henry Park is a physician and healthcare simulation expert at the Tampa VA and University of South Florida, dedicated to improving patient care through simulation-based training. Dr. Park is the Medical Director of Simulation and part of the AI work group of the Society for Simulation in Healthcare.
Amar Patel, DHSc, MBA, MS, NRP, CHSE, FSSH Power of One Consultant	Dr. Amar Patel is the Founder and Principal at Power of One Consulting, focusing on AI integration in healthcare. Dr. Patel has expertise in designing and implementing technology-based programs to enhance healthcare education and training.
David Rodgers, EdD, NRP, FAHA, FSSH Indiana University Bloomington	Dr. David Rodgers is a Professor of Emergency Medicine and Healthcare Simulation at Indiana University Bloomington, where he leads simulation-based training programs for healthcare providers. His current research focus is on applying AI to simulation-based education.

Matteo Rosati, BS Yale School of Medicine	Matteo Rosati is a third-year medical student at Yale with a background in computer science and AI with a passion in AI applications in healthcare simulation.
Jennifer Roye, MSN, RN, CHSE, CNE, EdD(c) University of Texas at Arlington College of Nursing and health Innovation	Dr. Jennifer Roye is a nursing professor and healthcare simulation expert at the University of Texas at Arlington, where she leads innovative simulation programs to enhance nursing education and practice. Dr. Roye's role involves integrating AI into UTA's Smart Hospital.
Jill Sanko, PhD, MS, APRN, CHSE-A,FSSH MGH IHP / Walden Universtiy	Dr. Jill Sanko is a education and healthcare simulation expert at MGH IHP and Walden University, where she focuses on using simulation to improve patient care and clinical decision-making. Dr. Sanko is a nurse with decades of experience in simulation and research, including work with virtual reality.
Tonya Schneidereith, PhD, MBA, CRNP, PPCNP-BC, CPNP-AC, CNE, CHSE-A, ANEF, FSSH, FAAN SIMPL Simulation, LLC	Dr. Tonya Schneidereith is a healthcare simulation expert and the founder of SIMPL Simulation, LLC, where she provides innovative simulation solutions for healthcare education and training. Dr. Schneidereith is faculty at Johns Hopkins University School of Nursing with an interest in AI applications in nursing education.
Dennis Shung, MD MHS PhD Yale School of Medicine	Dr. Dennis Shung is a physician-scientist at Yale School of Medicine with a focus on AI and its application in medical research and clinical practice.
Sevag Tachejian, MD, FRCPC The Hospital for Sick Children, Toronto	Dr. Sevag Tachejian is a physician at The Hospital for Sick Children in Toronto, where he investigates the use of AI to improve pediatric care and clinical decision-making.
Dawn Wawersik, PhD, RN, CHSE, CNEcl Nova Southeastern University	Dr. Dawn Wawersik is Executive Director of Interprofessional Simulation Institute at Nova Southeastern University, where she leads innovative simulation programs to enhance nursing education and practice. Dr. Wawersik is Co-Chair of the Healthcare Distance Simulation Collaborative.

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