HFES Training Technical Group Newsletter

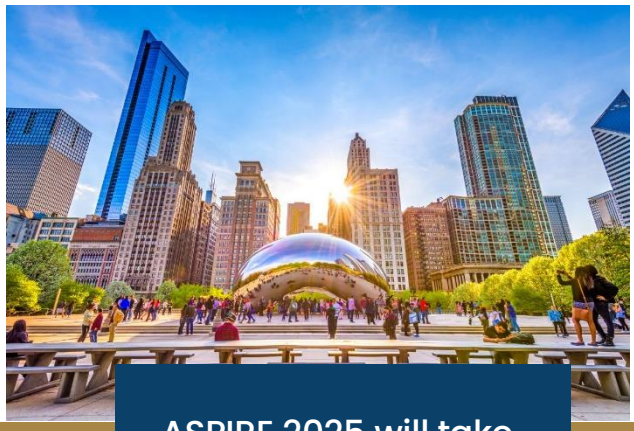
Issue Highlights

- TTG Member Spotlight
- TTG Lab Highlights
- Upcoming Webinar August 13th
- ASPIRE student competition deadline August 15th
- Upcoming ASPIRE Conference

Dear Training TG Member,

In this issue we present information about the upcoming 2025 HFES ASPIRE event, provide updates for ongoing TTG activities and feature ongoing research in labs across industry and academia. We look forward to seeing you in Chicago this fall!

HUMAN FACTORS and ERGONOMICS SOCIETY



ASPIRE 2025 will take place in Chicago, IL Oct. 13-17

A Message from the Chair

Dr. Oleksandra Molloy
University of New South Wales

As we move through 2025, I would like to thank each of you for being the HFES TTG valuable member! In this Newsletter, I am delighted to share with you the latest updates within the Training TG, spotlight our members' achievements and research groups, and share the news about the upcoming sessions and awards at the ASPIRE HFES Annual Meeting.

We are looking forward to co-host together with the Extended Reality Technical Group the webinar about 'Innovative Training Approaches to Evaluate and Enhance Human Performance'. The insightful session will explore cutting-edge training methodologies in human performance assessment and enhancement. This webinar will be held in the format of a discussion panel, presented by Dr Stephanie Fussell (Aptima), Dr Ziho Kang (University of Oklahoma), Dr Sandro Scielzo (CAE), and moderated by myself. This webinar is planned for August 13 at 5PM Eastern time. More details about joining the webinar are shown in the sections below.

I'm excited to announce that at the Annual Meeting, TTG will announce 3 awards: TTG Best Student Paper, TTG Best Proposal Award, and the Best Poster Award! If you are interested in being a review for the awards, please see details from the Awards Chair below. We have introduced a new student competition, for those interested in innovations in Training and Human Factors, which is open to both undergraduate and postgraduate students. More details from our Comms Chair see (Contests | HFES Training TG).

Importantly, we are looking forward to meeting you in Chicago, IL, at ASPIRE—the 69th HFES International Annual Meeting happening in October 13-17, 2025. Thank you to everyone who has submitted their work with the TTG this year, as well as a special thank you to all reviewers who supported this process. We really appreciate your support!

We are planning to connect at the in-person Business Meeting and the joint social event with the Extended Reality Technical Group. The details of these events are coming soon.

Come and say 'Hi' to the TTG team and the TTG sessions!
Reach out to me via o.molloy@unsw.edu.au or the TTG Chairs and share your news about your research and research groups, achievements, and exciting news about training, human factors, and innovations! We are looking for EOI for Leadership Positions for the Training TG and would like to hear from you, if you are interested.

Looking forward to meeting you in Chicago!

A Message from the Program Chair

Dr. Megan Morris
Air Force Research Lab

Hello, fellow TTG members.

Thank you to all authors who submitted extended abstracts and demonstrations to the TTG. We had 21 lecture submissions (compared to 13 last year) and 5 poster submissions (compared to 6), as well as 1 demonstration submission (compared to 2) this year. It was very exciting to see the growth of lecture submissions. And a huge thank you to our 23 TTG reviewers who rated and provided feedback on all of these submissions and associated conference proceeding papers! We cannot put together a successful conference without these impactful submissions and rigorous reviews and meaningful feedback. Based on these reviews, our TTG has four lecture tracks at HFES ASPIRE 2025:

T1: Artificial Intelligence Processes in Training (Tuesday Oct 14th 4:30 p.m. - 5:30 p.m.)
T2: Team Processes and Dynamics in Training (Wednesday Oct 15th 11:30 a.m. - 12:30 p.m.)
T3: Game-Inspired Design in Training (Thursday Oct 16th 1:30 p.m. - 2:30 p.m.)
T4: Challenges in Training (Thursday Oct 16th 3:00 p.m. - 4:00 p.m.)

For those attending the conference, we hope you can attend these sessions and participate in interesting discussion afterward. Also, thank you to those who have volunteered to be session chairs and looking forward to a great HFES ASPIRE 2025 in Chicago!

A Message from the Vice Program Chair

Dr. Jayde King
Air Force Research Lab

Hello Training TG Members!

I hope you're all having a wonderful summer! As your Vice Program Chair, I want to express my sincere gratitude to everyone who contributed to our research efforts this year. Whether you submitted an abstract, a full paper, or volunteered your time as a reviewer, your participation is invaluable. Your engagement is truly critical to advancing training research and fostering innovative solutions and approaches within our field.

I'm eagerly anticipating our annual meeting in October and the opportunity to learn more about the exciting work you're all doing. I look forward to insightful discussions and collaborative idea-sharing.

On that note, keep an eye out for updates regarding this year's social event! We're working hard to finalize the date and location, and we promise it will be a fantastic opportunity to connect. The social is always a highlight of the annual meeting for me – I truly value the chance to engage with you all in person, learn about your backgrounds, and strengthen the connections that make our community so vibrant.

Until we meet in Chicago, please stay engaged with the Training TG! Share your thoughts and insights on LinkedIn and HFES Connect to keep the conversation flowing. See you in Chicago!

A Message from the Awards Chair

Dr. Shafiqul Islam
University of Illinois Urbana-Champaign

Hi,

I am Shafiqul Islam, working as a Post Doctoral Research Associate at the University of Illinois Urbana-Champaign. I am serving as the Awards Chair for the Training Technical Group (TTG). Our TG has numerous opportunities for students. As the award chair, I look over three annual student awards. These awards are:

- Best Student Research Proposal
- Best Student-Authored Conference (HFES-ASPIRE) Lecture
- Best Student-Authored Conference (HFES-ASPIRE) Poster

The deadline for Best Student Research Proposal was 30th June 2025. Please consider submitting your proposal next year if you missed this year's deadline. We will award a best student-authored lecture and a poster award during this year's HFES annual meeting. All award winners will be publicly announced and introduced during TTG Business meeting.

If anyone is interested in learning more about these awards, feel free to send an email to shafiqul@illinois.edu. In addition to that, we are always looking for potential judges/reviewers for our awards. If anyone is also interested in volunteering as a judge/reviewer for the awards listed, please let me know. We appreciate your support.

A Message from the Communications Chair

Dr. John Kleber
Embry-Riddle Aeronautical University

Hello Training Technical Group Members,

I hope this message finds you well! As we continue to build our community of professionals dedicated to advancing training, research, and practices, I want to take a moment to thank you for being an integral part of the TTG. Your involvement makes a difference. This quarter, we encourage you to stay engaged and connected. Be sure to check out our platforms for the latest updates on webinars, contests, and other initiatives aimed at fostering innovation and collaboration:

LinkedIn: Follow us for event announcements, member highlights, and more. TTG website: Explore resources, learn how to get involved, and discover new ways to connect with the TTG.

HFES Connect: Engage in discussions and stay in touch with our growing community. One exciting opportunity currently available is our **Student Competition: Trends in Training**, open to both undergraduate and graduate students. Participants will explore an emerging trend, evaluate its current and potential future impact on training practices, and submit a detailed write-up showcasing their findings and insights. The deadline for submissions is **August 15, 2025**. Full submission details can be found under the Contests section of the TTG website. We're excited about what's ahead, including new learning opportunities and ways to showcase the incredible work happening within our group. If you have achievements, projects, or stories worth sharing, don't hesitate to nominate yourself, a colleague, or your lab for a **Member Spotlight**. Your work deserves recognition! Thank you again for your continued support of the TTG.

A Message from the Student Engagement Chair

Ms. Angel Wang
Embry-Riddle Aeronautical University

Over the past few months, the TTG has made meaningful progress in enhancing student engagement. We've continued to support students through interactive, student-centered webinars and by encouraging student-led research via competitive awards that include monetary recognition.

The submission period for the Best Student Paper and Best Student Poster awards has now closed. I was encouraged by the enthusiastic feedback from students, many of whom expressed appreciation for the opportunity to share their work. These efforts from the TTG reaffirm the value of creating platforms for students to showcase their research, expand their networks, and build momentum toward their professional goals in human factors.

The Early Career Webinar on April 4th was another highlight. It gave students a chance to hear from peers with similar experiences, fostering a sense of community while inspiring participants to pursue impactful research. As future leaders and innovators, students deserve recognition for their dedication and contributions. Celebrating their achievements and supporting their growth is important. Hosting webinars like this reflects our ongoing commitment to student engagement and the advancement of the human factors community.

A Message from the Student Engagement Co-Chair

Ms. Ashley Warren
Rice University

As the summer comes along, students can use this time to engage with the broader HFES community. The Training Technical Group, along with other TGs, is encouraging students to participate and attend webinars. These webinars are a great opportunity to learn a new field, gain details about new technology, or connect with the community. If your local HFES student chapter is not currently on our mailing list, feel free to email me to sign up. I will send out emails and reminders about the current events we hold.

Additionally, HFES ASPIRE is another opportunity to engage with the HFES community. As students are busy reading and conducting research this summer, I would remind you to see who you are citing the most, which field they are in, and do they attend the annual conference. I would encourage you to create a list of researchers and professionals you want to get coffee with or attend their talks in Phoenix. We look forward to seeing everyone in Phoenix for HFES ASPIRE 2025!

A Message from the Secretary/Treasurer

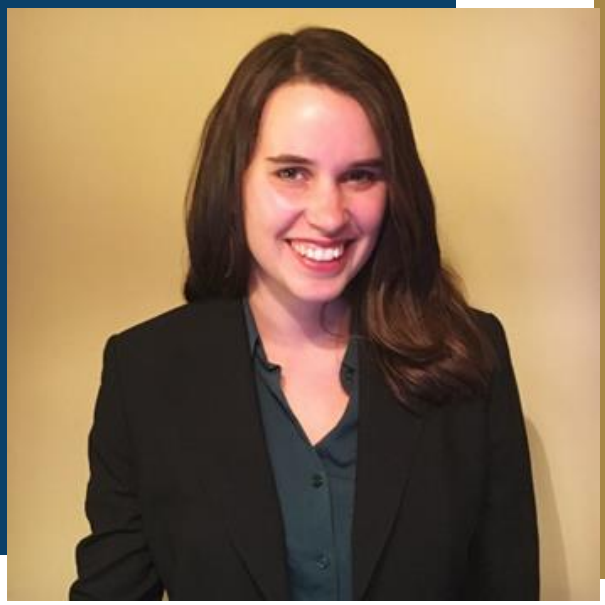
Mr. Xiang Yang
Virginia Tech

Greetings, HFES Training Technical Group Members!

I hope you're all doing well! As we gear up for our next series of events, I'd like to share my recent experience from the current summer, during which I have had the valuable opportunity to instruct a course—an experience that has essentially been professional training for me.

This instructional role has not only strengthened my teaching skills but also posed intriguing challenges, particularly in navigating the effective and appropriate use of AI tools within the course design. One of the most significant hurdles has been the continuous, meticulous dialogue with my supervisors, who are very cautious about incorporating AI tools into student learning processes. This back-and-forth has been both challenging and enlightening, highlighting critical considerations in balancing innovative technologies with academic integrity and educational standards.

Through this experience, I have gained insights into best practices for integrating AI responsibly, aligning technological benefits with educational objectives, and managing productive supervisor collaborations. If you're exploring similar terrain or anticipate doing so, I'm happy to share further details or discuss strategies to effectively navigate these complexities.



A Message from the Newsletter Editor

Dr. Lillian Asiala
Sonalysts, Inc.

Hello HFES Training Technical Group Members!

As the current newsletter editor for the TTG, I am particularly excited about this edition for our biannual newsletter. Earlier this year I reached out to TTG members in an effort to learn more about the ongoing research you are conducting in your labs. Your responses did not disappoint! We are thrilled to be able to feature research not only from our webinar in April, but both industry and academic research lab reports. We also had the chance to feature an article on the modernization of training through the incorporation of AI.

We are greatly looking forward to the ASPIRE event in Chicago this October. Keep in mind that the Student Competition: Trends in Training is open to both undergraduate and graduate students. The deadline for submission to that competition is just around the corner, on August 15th.

And of course, if you know of work that you want to have featured as a part of the next newsletter, or as a member spotlight, please do not hesitate to contact myself or John Kleber to nominate yourself or a colleague.

Webinar Highlight:

Enhancing Peri-personal Navigation: A Haptic Feedback Design Approach for Vertical and Horizontal Target Search

Mahdis Tajdari

On April 4th, 2025, the Technical Training Group hosted a webinar featuring research conducted by Mahdis Tajdari and Sakshi Taori. Ms. Tajdari presented her work, “Enhancing Peri-personal Navigation: A Haptic Feedback Design Approach for Vertical and Horizontal Target Search”. Co-authors for this work included Jason Forsyth and Sol Lim.

This research addresses the common challenge of locating items in cluttered or hazardous environments, which can impact safety and efficiency. While augmented reality and audio instructions offer potential solutions, this study focused on haptic feedback – vibrotactile sensations – as an aid for locating items when visual clarity is limited. Haptic feedback is often non-intrusive and accessible, making it a valuable information delivery method for many users.

The study utilized a custom haptic glove. A camera tracked the position of both the hand and the target, and vibration motors (tactors) provided corresponding feedback to the glove. Researchers tested the system in both vertical (using a board) and horizontal (using a table) spaces, experimenting with different types of haptic feedback guidance strategies for peri-personal navigation . This research could have significant applications in telelearning, where haptic feedback could assist students in training to reach for specific items and avoid obstacles, even without a tutor present. This offers a valuable opportunity to enhance remote training effectiveness and accessibility.

Webinar Highlight:

Enhancing Peri-personal Navigation: A Haptic Feedback Design Approach for Vertical and Horizontal Target Search

Sakshi Taori

Ms. Sakshi Taori presented work entitled "Evaluating Cognitive Workload in Collaborative Manufacturing Scenarios: Human-Human and Teleoperator-Robot-Human," co-authored by Dr. Sunwook Kim and Dr. Sol Lim.
There's been an increasing adoption of collaborative robots in manufacturing.

This research focuses on multi-faceted collaborative work between robot teleoperators – remote operators controlling robots – and local, onsite workers.

Understanding the cognitive demands of both onsite and teleoperator is essential for dynamically adjusting task allocations and providing timely interventions to ensure optimal workloads in such collaborative environments. Despite its importance, research on cognitive workload in teleoperators working with onsite workers remains underexplored. An experiment was conducted with 32 participants (16 onsite and 16 teleoperators; sex-balanced), who performed wire assembly tasks under two different collaboration conditions, with and without a teleoperated robot arm. Participants were randomly paired and assigned to either an onsite or a teleoperator role in a between-subjects design. The task involved simulated wire assembly, where teleoperators verbally guided onsite workers through step-by-step repair instructions. Communication was facilitated via headsets.

Webinar Highlight:

Enhancing Peri-personal Navigation: A Haptic Feedback Design Approach for Vertical and Horizontal Target Search (cont.)

Sakshi Taori

Ms. Taori and her colleagues evaluated cognitive workload of both onsite workers and teleoperators using subjective and objective measures, across both the conditions. Subjective measures, like the NASA Task Load Index (TLX), rely on self-reporting, while objective measures included physiological data like heart rate, electrodermal activity, and skin temperature.

The presence of the teleoperated robot arm did not appear to increase cognitive load for either worker and effectively reduced effort and frustration for the onsite worker. However, teleoperators, particularly females, showed higher cognitive workload in that condition, as indicated by elevated skin conductance levels.

For future work, they will explore multi-human–robot teams, where multiple teleoperators coordinate with multiple onsite workers and robots under varying physical and cognitive task demands, supporting the advancement of future distributed manufacturing.

Industry Lab Highlight: Sonalysts, Inc.

Jim McCarthy

Large agencies within the U.S. Federal Government fund the Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) programs. These programs award three-tiered research and development efforts to small businesses, and in the case of STTR awards, small businesses working with research institutions.

The goal of the first phase is for award winners to demonstrate the feasibility of their proposed concept. In Phase II, one of the awardees is selected to develop a proof-of-concept prototype. In Phase III, that awardee works with interested end-users to mature the prototype and transition it for operational use. In the last year, researchers from Sonalysts, Inc. teamed with researchers from CUBRC, Canisius University, and Drexel University to explore ways to improve the knowledge and skills of cybersecurity professionals who protect domestic Information Technology (IT) systems. One component of this project involved testing the success of closed-loop adaptive training to teach relevant knowledge and skills to cybersecurity professionals.

It is unusual to include human subjects research in a Phase I STTR, as the resources and timeline during Phase I make conducting such research impractical. However, for this project the program sponsor got permission to require human subjects research during Phase I, so that we could evaluate a sample course for prospective IT professionals.

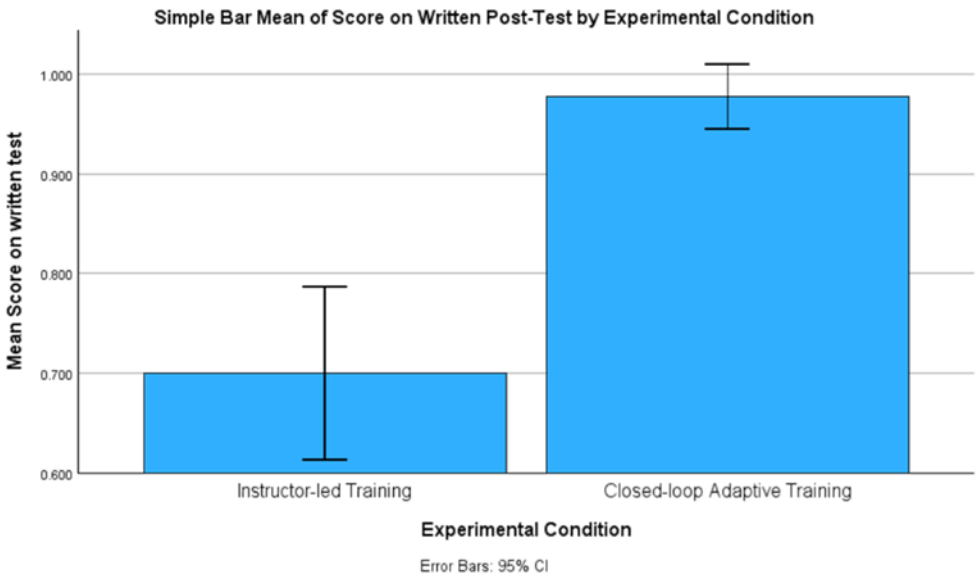
Industry Lab Highlight: Sonalysts, Inc. (cont.)

Dr. Jim McCarthy

We delivered it to learners using conventional classroom instruction as a control condition, or closed-loop adaptive training that assembles media- and simulation-based instruction and assessment items in real time to meet learners' needs. The scope of the Phase I effort limited the size of this course to a single unit with two knowledge-based learning objectives (LOs) and one skill-based LO. This meant that the written post-test was only six items (three per knowledge-based LO), and the practical post-test had only two test scenarios. Given the small size of these tests, we were skeptical that we would be able to demonstrate any differences in learning between the two groups.

We were wrong. The figures below show the results of the written and practical post-test comparisons. In the six-question written post-test, the closed-loop adaptive training group of participants showed much less variability than those in the instructor-led group and were all clustered at the very top of the scale. Even when adjusting for this unequal variance between the two groups, the difference between the scores was statistically significant using a very stringent standard.

- UNEQUAL VARIANCE BETWEEN GROUPS
  - THE CLOSED-LOOP GROUP WAS MORE TIGHTLY CLUSTERED
- STATISTICALLY SIGNIFICANT DIFFERENCE IN MEAN PERFORMANCE
  - 70% VS. 98%
  - ADJUSTED TO ACCOUNT FOR UNEQUAL VARIANCE
  - T(17.840) = 6.423, P < .001
- LARGE EFFECT SIZE
  - d = 2.34
  - INDICATING A VERY MINIMAL OVERLAP IN THE DISTRIBUTIONS



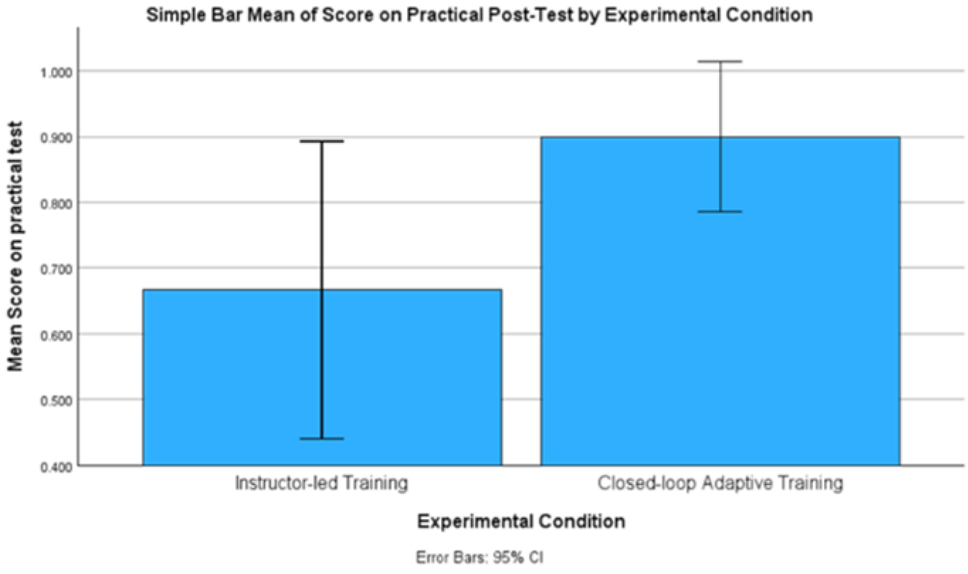
Industry Lab Highlight: Sonalysts, Inc. (cont.)

Dr. Jim McCarthy

Further, we assessed effect size using Cohen's d, and the observed effect size was 2.3, indicating very, very little overlap between the distribution of scores we would expect from instructor-led and closed-loop participants.

A very similar pattern was shown in the practical exam. Again, closed-loop participants had less spread in their scores because they were largely clustered near the top of the scale. Because there were only two items on this test and we had that unequal variance, the best we could do was marginal statistical significance and a medium-to-large effect size that indicated that the "average" learner in the closed-loop group would perform better than about 75 percent of the learners in the instructor-led group.

- UNEQUAL VARIANCE BETWEEN GROUPS
  - THE CLOSED-LOOP GROUP WAS MORE TIGHTLY CLUSTERED
- STATISTICALLY SIGNIFICANT DIFFERENCE IN MEAN PERFORMANCE
  - 67% VS. 90%
  - ADJUSTED TO ACCOUNT FOR UNEQUAL VARIANCE
  - T(20.753) = 1.974, P < .062
- LARGE EFFECT SIZE
  - d = .72
  - INDICATING THAT AN AVERAGE SCORE FOR THE CLOSED-LOOP ADAPTIVE TRAINING GROUP WOULD BE WHAT WE WOULD EXPECT AT ROUGHLY THE 75TH PERCENTILE OF THE INSTRUCTOR-LED GROUP



We were thrilled with this finding. Seeing differences this big and consistent across only two items was a huge surprise and gratifying. I want to thank the entire COPE team and our sponsors at DARPA. The summary I provided is my own and does not necessarily reflect the position or the policy of DARPA and the Government as a whole, and no official endorsement should be inferred.

Academic Lab Highlight: REACH Lab, Embry-Riddle Aeronautical University

Dr. Elizabeth Lazzra

The Research, Engineering, and Applied Collaborations in Healthcare (REACH) Laboratory at Embry-Riddle Aeronautical University under the direction of Dr. Elizabeth Lazzara collaborates closely with the Small Teams Analog Research (STAR) laboratory under the direction of Dr. Joseph Keebler.

REACH laboratory has conducted training-related research in applied healthcare and military settings to improve outcomes across the medical education continuum, and the STAR laboratory examines team training and performance utilizing high-tech systems. Both labs include students ranging from undergraduates to PhD, who are involved in theoretical and applied work aimed at improving training systems in a myriad of contexts. Students gain experience in creating training curriculums, leveraging cutting-edge technologies, designing performance metrics, conducting advanced analyses, and disseminating findings to key stakeholders as well as broader communities.

Recent trainings in our laboratories have employed innovative methods for creating engaging and meaningful training experiences. For instance, one project leveraged an escape room and artificial intelligence as a training tool to strengthen psychological safety (i.e., willingness to speak up and take interpersonal risks) within emergency medicine residents. Students were able to get hands-on experiences with the development of the curriculum, the escape room, and the assessment tools

Academic Lab Highlight: REACH Lab, Embry-Riddle Aeronautical University

Dr. Elizabeth Lazzra

Another project utilized a diverse toolkit of information-, demonstration, and practice-based methodologies to enhance team competencies of thousands of medical students as well as other allied health professionals. Within this project, students worked on multidisciplinary teams to ensure that the training curriculum and performance metrics were practical yet rigorous.

Other work has focused on utilizing simulation-based training to improve pilot knowledge, skill, and attitude acquisition. This work included pilot survival training utilizing an ejection seat simulation, improving psychometric testing of pilots through the development of validated observational tools for real time flight assessment, and leveraging advanced statistical approaches to build predictive models of pilot training and flight performance. Finally, other efforts have examined team training and performance by conducting studies that rely on games (i.e., Artemis - a spaceship bridge simulator and “Don’t Stop Talking or You’ll Explode” - a bomb defusal task) to create immersive testbeds. Relying on such technological tools allow students to gain skills in experimental design in addition to training, which is fundamental for careers in academia, government, and industry.

For more information please reach out to either Dr. Elizabeth Lazzara (lazzarae@erau.edu) or Dr. Joseph Keebler (keeblerj@erau.edu).

Academic Lab Highlight: Virtual Environments & Cognitive Training Research, Arizona State University

Dr. Heather Lum

The Arizona State University Virtual Environments & Cognitive Training Research (VECToR) Lab is led by Dr. Heather C. Lum and focuses on the intersection of technology and human performance. The lab has been conducting a study to understand how users perceive and interact with Generative AI tools (GenAI), what motivates their adoption, and the challenges they encounter. The most recent study focused on how participants utilize GenAI tools like OpenAI's ChatGPT, Google's Bard, and image-generation tools like DALL·E.

Participants were asked how frequently they used GenAI, why, what for, and whether they'd use it with VR for learning purposes. It also included a short personality test, the Mini-IPIP Test and questions on how comfortable participants are with adopting new tech from the Technology Readiness Index. Additionally, participants shared their origins and first languages to explore potential differences in GenAI use.

Academic Lab Highlight: Virtual Environments & Cognitive Training Research, Arizona State University

Dr. Heather Lum

Our study found there were clear links between personality traits and how they influenced the way participants engage with AI technology. With a total of 54 participants, people high in Openness used AI more for creative tasks r(5) =.62, p=.03. Those high in Conscientiousness were more cautious and had ethical concerns r(5) =-.68, p< .05. Agreeable people were more open to AI recommendations r(5) =.78, p <. 05), while those high in Neuroticism tend to avoid AI, r(5) =-.68, p < .05.

No link was found with Extraversion in this study. Most participants (X = 36) preferred human support over AI, but many (X = 41) did not verify AI content. Positive tech traits like optimism were linked to more AI use (r = .65, p = .02), while negative traits like discomfort were linked to less AI use (r = –.65, p < .05). These findings highlight how different personality traits affect the ways in which people are willing to work with AI tools and how they will use (or misuse) them.

Building on these insights, the findings from this survey will help guide the team in designing an in-person research design to test what influences responsible or irresponsible GenAI use particularly in high-stakes settings. Such results can help determine which contexts of GenAI use pose the most ethical risks (academic, professional, personal) and what factors (type of tasks, type of decision required, prompt verbiage, safety settings) facilitate the use and misuse of GenAI. Understanding these dynamics is vital as we adapt to a new world where GenAI use is increasingly widespread.

Special Interest Topic: Team Training in the Age of AI

Dr. Lillian Asiala &
Dr. Jim McCarthy
Sonalysts, Inc.

As Artificial Intelligence (AI) becomes increasingly integrated into modern life, the concept of Human/AI Hybrid Teaming has moved from a niche research area to a crucial component of how we work and live. We already team with AI daily – from using GPS navigation and online shopping to conducting simple web searches. This widespread integration highlights the need to understand and optimize how humans and AI interact effectively.

The Growing Importance of Human-AI Team Training

Recognizing this need, organizations are prioritizing training programs focused on human-AI collaboration. In 2021, the Air Force Research Laboratory (AFRL) Human Performance Wing tasked the National Academies of Sciences, Engineering, and Medicine (NASEM) with examining the role of AI in human-AI teams. AFRL was particularly interested in identifying research gaps to guide the development of future systems that maximize human performance when AI is involved. The NASEM report pinpointed training human-AI teams as a primary focus area. Several research sub-areas were identified as critical to advancing our understanding of this field:

- Developing Training Content
- Evaluating Traditional Methods
- Calibrating Expectations
- Designing Training Platforms
- Adaptive Training
- Building Trust

Special Interest Topic: Team Training in the Age of AI

Dr. Lillian Asiala &
Dr. Jim McCarthy
Sonalysts, Inc.

With these priorities in mind, it is important to consider how Human/AI hybrid teams might differ from the traditional all-human team, and the ways that this impacts team training.

Understanding the Differences: Human vs. AI Teammates

AI agents possess virtually unlimited computational power, excelling in data analysis and processing. However, they lack a grounded understanding of real-world situations– the common-sense knowledge general context that humans possess. This difference can lead to communication challenges and hinder effective collaboration, which impacts team performance. These communication and collaboration challenges tend to increase with the complexity of the team workflow and team composition.

Team Workflows & AI Integration

The way AI integrates into a team is heavily influenced by the team's workflow. Saavedra, Early, and Van Dyne (1993) identified several workflow types with varying degrees of interdependence:

- Pooled Workflow: Individuals work independently, and the team's output is the sum of individual contributions.
- Sequential Workflow: Tasks flow in a monodirectional linear fashion, like an assembly line.
- Reciprocal Workflow: Tasks flow bi-directionally, with teammates exchanging information and assistance.
- Team Workflow: All members actively interact and collaborate to achieve a common goal.

Special Interest Topic: Team Training in the Age of AI

Dr. Lillian Asiala &
Dr. Jim McCarthy
Sonalysts, Inc.

As you move down this list towards more interactive workflows, the need for clear communication and collaboration increases (qualities that many modern AI-based agents do not possess). As the number of agents and situation complexity increase, the attentional demands on human teammates grow, and more sophisticated communication is required. This has significant implications for both AI development and team training.

Conceptual Models for Hybrid Team Dynamics

A common approach to research in human/AI hybrid teaming is to assume AI teammates require the same skills as humans. However, this "all-human team" model may not be entirely appropriate (and in fact does not have universal support). An alternative is to draw parallels with human-animal teams, where a supervisory control structure is often present. Groom and Nass (2007) highlighted this connection with dog-handling teams. Still others reject the teammate metaphor in favor of a tool metaphor.

Ultimately, the field needs to develop new theoretical models that explicitly account for the unique characteristics of autonomous agents and their human teammates to maximize team effectiveness. This requires fundamental research to understand the various factors that affect hybrid teams.

Special Interest Topic: Team Training in the Age of AI

Dr. Lillian Asiala &
Dr. Jim McCarthy
Sonalysts, Inc.

Considerations for Training Hybrid Teams

What does all this mean for training? Several factors need to be addressed:

- Technical Infrastructure: Ensuring the necessary hardware and software are in place.
- Instructional Design: Developing effective training programs that address the specific challenges of human-AI collaboration.
- Instructor Expertise: Providing instructors with the knowledge and skills to facilitate effective training.

One specific challenge to emerge from various teaming considerations is that of calibrating the expectations of human team members. Zhang and her colleagues (2021) found that humans often have high expectations for their AI teammates, expecting flawless performance and seamless communication. This implies that a key aspect of training is helping human teammates understand the capabilities and limitations of their AI counterparts.

Another challenge is the strategy selected for creating and incorporating AI agents within team training scenarios. Traditional instructional design models, like Merrill's Pebble-in-a-Pond, emphasize scaffolding – providing learners with increasing levels of support as they develop mastery. In the context of hybrid teaming, AI agent design could facilitate scaffolding by adjusting their capabilities over time. However, determining what constitutes appropriate “part solutions” with AI agents remains an open question. Should the AI-agents be more helpful in the beginning, or less helpful? Finding the “sweet spot” for fostering trust without overreliance on the technology poses a challenge for human/AI hybrid teaming researchers and instructors alike.

Special Interest Topic: Team Training in the Age of AI

Dr. Lillian Asiala &
Dr. Jim McCarthy
Sonalysts, Inc.

Sonalysts is currently conducting internal research in this area. For more information, please contact Dr. Lillian Asiala at lasiala@sonalysts.com.

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Training Technical Group and Extended Reality Technical Group Webinar: Innovative Training Approaches to Evaluate and Enhance Human Performance

Jointly sponsored by TTG and XRTG
August 13 2025 5:00 PM - 6:00 PM ET

Join us for a joint webinar organized by the TTG and XRTG. The insightful session will explore cutting-edge training methodologies in human performance assessment and enhancement. This webinar delves into the integration of Galvanic Vestibular Stimulation (GVS) within Virtual Reality (VR) environments to mitigate simulator-induced motion sickness and improve user performance, as well as the research to evaluate human performance and predict behavior, utilizing advanced algorithms and mathematical models.

To register, use the QR code below:

Dr. Stephanie G. Fussel, Aptima

Dr. Ziho Kang, University of Oklahoma

Dr. Sandro Scielzo, CAE

Moderator: Dr. Oleksandra Molloy, UNSW

HFES TTG Member Spotlight

Dr Oleksandra Molloy

The TTG Chair, Dr Oleksandra Molloy, won a prestigious award "Academic of the Year" by the 2025 Australian Defence Industry Awards, organised by Defence Connect, recognising her achievements in education, research and leadership that goes well beyond the national level.

"Winning this award is an incredible honour – it recognises my commitment to education, research, and supporting Defence capability through academic leadership and real-world impact" – said Dr Molloy.
Read Media release here: Academic of The Year Winner from UNSW Canberra.
Listen to the Podcast audio here: PODCAST: Australian Defence Industry Awards' Academic of the Year, Dr Oleksandra Molloy - Defence Connect;
Watch video here: Australian Defence Industry Awards' Academic of the Year, Dr Oleksandra Molloy.

Dr Shafiqul Islam

TTG Awards Chair Md Shafiqul Islam completed his Ph.D. from the Industrial and Systems Engineering Department at Virginia Tech (Advisor: Dr. Sol Lim). Since his graduation, Shafiqul has joined the University of Illinois at Urbana-Champaign as a Post Doctoral Research Associate.

HFES TTG Officers

- Chair: Dr. Oleksandra Molloy
- Program Chair: Dr. Megan Morris
- Vice Program Chair: Dr. Jayde King
- Secretary/Treasurer: Mr. Xiang Yang
- Awards Chair: Dr. Shafiqul Islam
- Communications Chair: Dr. John Kleber
- Student Engagement Chair: Ms. Hui (Angel) Wang
- Student Engagement Co-Chair: Ms. Ashely Warren
- Newsletter Editor Chair: Dr. Lillian Asiala

HFES TTG Announcements

- Register for the TTG's upcoming webinar August 13th (for more details see page 27).
- The deadline for the student competition "Trends in Training" is August 15th. Check out the Contests section of the TTG website for more details.

Connect With Us!

LinkedIn: Follow us for event announcements, member highlights, etc.

TTG Website: Explore resources, learn how to get involved, and discover new ways to connect with the TTG.

HFES Connect: Engage in discussions and stay in touch with our growing community.