

Resilience Engineering (RE) and Artificial Intelligence (AI)

Webinar series on Resilience Engineering

July 3rd, 2025 Time: 14:30 UTC Duration: 90 mins

Brief summary of content:

This webinar will explore the intersection of Artificial Intelligence (AI) and Resilience Engineering (RE), showcasing how safety-critical industries are applying systems-based disciplines to guide the integration of AI into mission-critical functions. The webinar will highlight applications in healthcare, defense, and aviation, focusing on the challenges and opportunities of designing, developing, and assuring resilient performance in AI-infused systems.

Webinars Chair:



Riccardo Patriarca, Ph.D. Associate Professor in Industrial Systems Engineering Department of Mechanical and Aerospace Engineering at Sapienza University of Rome Chair of the IEA Resilience Engineering Technical Committee e-mail: <u>riccardo.patriarca@uniroma1.it</u>

If you are interested in being a presenter for our webinar series, please email <u>antonio.nakhal@unimercatorum.it</u>



🕅 @IEA_Ergonomics 🛛 🧗 @InternationalErgonomicsAssociation 🛛 in International Ergonomics Association (IEA) 👘 iea.co

IEA is a global federation of Human factors/Ergonomics societies, registered as a nonprofit organization in Geneva, Switzerland. c/o Nils Ashlyn, 96 rue de Genève, 1226 Thônex, Switzerland



Resilience Engineering (RE) and Artificial Intelligence (AI)

Artificial Intelligence (AI), Machine Learning (ML), and other forms of increasingly competent computation-based machine agents are being deployed to support mission-critical functions in safety-critical industries. The resilience engineering (RE) community has a wealth of foundational knowledge, including laws, theories and other patterns, that support and inhibit resilient performance. Even though the majority of the AI community in this second AI Gold Rush is either unaware or uninterested in applying that knowledge to their technology-based solutions, a number of safety-critical industries are actively exploring how to incorporate resilience engineering, cognitive systems engineering, human factors engineering, and other systems-based scientific disciplines for guidance on how to sustain system performance and realize the promised benefits of AI.

In this seminar, we will connect the RE foundational topics discussed in previous seminars with the current work in healthcare, defense, commercial aviation, and other safety-critical industries that highlights potential pitfalls and promising breakthroughs for resilient performance in Al-infused safety-critical systems. We will focus on the relevance of a number of RE patterns related to the design, development, deployment, and continuous assurance of these Al-infused systems. We will also discuss the most recent Al trends and technologies, making it more explicit how these likely new directions for Al will both support and degrade systems' capabilities to continue running effectively and safely.

Dr. Mike Rayo, Ph.D.

Associate Professor in the Department of Integrated Systems Engineering The Ohio State University, USA. E-mail: rayo.3@osu.edu

Dr. Rayo works on equipping complex systems with the resilience needed to operate effectively amid both known and unforeseen challenges. His research focuses on enabling adaptive, joint human-machine performance across a range of settings, from small teams to large organizations, while promoting proactive safety practices that engage all organizational members in maintaining safe and efficient operations. He also advances the concept of societal-scale resilience by reimagining community collaborations as inclusive and balanced forms of teamwork.

Dr. Rayo is an Associate Professor in the Department of Integrated Systems Engineering at The Ohio State University. He also serves as Core Faculty at the Translational Data Analytics Institute and directs both the Cognitive Systems Engineering Laboratory and the CoEngage Laboratory. In addition, he is a scientific advisor on patient safety at OSU's Wexner Medical Center.

His work has received support from prominent organizations such as the Air Force Research Laboratory, FAA, AHRQ, Eurocontrol, and others, and he has authored numerous publications on human-machine systems and patient safety. Dr. Rayo plays active roles in professional societies, currently serving as Chair-Elect of the Cognitive Engineering and Decision-Making Technical Group, Outreach Chair for the BIPOC Affinity Group of HFES, and Secretary of the Resilience Engineering Association. He is also a former Case Western Reserve University Dance Champion.

Zoom Registration: https://us02web.zoom.us/webinar/register/WN_z-BxpUcdQ32zw0EfzTS01A

Registration is free and includes live Q&A with presenters. The webinar will be recorded and posted on YouTube. Participants who complete the post-webinar survey correctly will receive a certificate of attendance.



