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KEYNOTE
SPEAKER

Thomas McDermott

Stevens Institute & SERC

Systems Engineering in the Era of Human/Machine Teaming

Biography. Tom McDermott is the Deputy Director and Chief Technology Officer of the Systems Engineering Research Center (SERC) at Stevens Institute of Technology in Hoboken, NJ. With the SERC he develops new research strategies and is leading research on digital transformation, education, security, and artificial intelligence applications. Mr. McDermott also teaches system architecture concepts, systems thinking and decision making, and engineering leadership. He is a lecturer for Stevens as well as Georgia Tech and Agnes Scott College, both in Atlanta, GA. He provides executive level consulting as a futurist and organizational strategy expert, applying systems approaches to enterprise planning. He currently serves on the INCOSE Board of Directors as Director of Strategic Integration.

Abstract. Our discipline is entering an era where humans and machines learn together at multiple scales. Systems Engineering (SE) is also entering a digital transformation where advanced modeling tools, data integration, and resulting "digital twins" will make the boundaries between human, machine, and engineering design model much more permeable. Like many other domains, engineering related disciplines will see transformational advances in the use of artificial intelligence (AI) and machine learning (ML) to automate many routine tasks. At the same time applying AI, ML, and autonomation to complex and critical systems needs holistic, system oriented, and human centered approaches. One can foresee transformative change to traditional systems engineering methods, processes, and tools. It is imperative that our SE community deeply understand emerging AI and ML technologies and applications, incorporate them into methods and tools, and ensure that appropriate SE approaches are used to make AI systems ethical, reliable, safe, and secure. Recently the Systems Engineering Research Center (SERC) completed a road-mapping activity broadly addressing the opportunities for digital engineering and AI/ML technology to evolve to the human/machine co-learning era. This talk will discuss the technology and process evolution leading to co-learning, opportunities and risks that might appear as the evolution proceeds, and a framework to guide further research in both SE and AI/ML.