

APARM Special Session VIII

Special Session Basic Information:

Session Title	AI-Enabled Reliability, Maintainability, and Safety Engineering
Introduction and topics	
<p>With the rapid advancement of artificial intelligence (AI) technologies, our society has entered a new AI-driven era. AI has been widely adopted across many aspects of human life, industrial production, and scientific research, reshaping traditional scientific research paradigms and enabling new methodologies. In particular, AI-enabled approaches are opening new opportunities in reliability, maintainability, and safety engineering.</p> <p>This special session aims to bring together researchers and practitioners to present and discuss cutting-edge AI-based methods and models, and their applications in reliability, maintainability, and safety engineering. This session will highlight novel ideas, emerging techniques, and practical solutions that leverage AI to address complex engineering challenges. The scope of the special session includes, but is not limited to, the following topics:</p> <ul style="list-style-type: none">• System reliability modeling and solution added by AI tools• Reliability data collection, processing, and modeling powered by AI• Big data analytics combined with AI• System optimization driven by AI techniques• Predictive AI for fault diagnosis, prognosis, and remaining useful life estimation• Generative AI for failure scenario generation and degradation modeling• AI-assisted hazard analysis and safety assessment• Hybrid physics-informed and data-driven AI approaches• AI-enabled maintenance planning and decision support• Case studies in energy systems, transportation, manufacturing, and infrastructure• Ideas and experience about Generative AI applications	

Special Session Chair(s):

	Name	Tieling Zhang
	Prefix	Professor
	Department	Faculty of Engineering and Information Sciences
	Organization	University of Wollongong
	City/Region	Australia

Organizer's Brief Biography

Tieling Zhang is Director of Engineering Asset Management and Systems Engineering Research Group, at Faculty of Engineering and Information Sciences, the University of Wollongong, to conduct teaching and research in systems and reliability engineering. He has extensive industrial and academic experience in reliability and maintenance engineering, and system and process optimization. He has published over 120 peer-reviewed research articles in the related fields, 10 book chapters, and 2 books. He has been granted six patents (the U.S., China, and the EU). He is the recipient of three best paper awards from international conferences. As a team leader and/or project leader, his team has secured research funding exceeding AUD 7.0 million.

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