IEEE EMC – Society 2026

Distinguished Lecturer

In-person meeting



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Lecture

11.00 – 12.30 **Empowering Engineers, Enabling Innovation: The AI Journey**

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Abstract

Empowering Engineers, Enabling Innovation: The AI Journey

As we enter a new era of accelerated innovation, AI is no longer simply augmenting engineering—it is reshaping how engineers solve complex problems, make decisions, and create breakthroughs. This keynote explores how AI is transforming engineering workflows and unlocking new levels of speed, scale, and creativity.

In high-speed nonlinear signal integrity analysis, for example, traditional methods struggle with the complexity of modern interconnects. Standalone AI techniques such as Bayesian optimization can reduce simulation time from weeks to days, but human-AI collaboration has shown the potential to compress this work to mere hours, bringing practical, real-time solutions within reach.

AI's impact extends beyond efficiency: it is also a catalyst for engineering creativity. Once engineers begin solving problems with AI, they uncover new pathways for innovation. In thermal and power analysis for advanced SoC design, the AI tool SuperGrid reduced analysis time from two weeks to seconds. That breakthrough expanded analysis coverage by orders of magnitude and enabled faster, better-informed design decisions across the engineering process.

Looking ahead, agentic AI—autonomous systems capable of planning, reasoning, and acting across devices and platforms—will further redefine engineering. While today's enterprise AI is often cloud-centric, hybrid AI agent systems intelligently distribute work across cloud and edge environments: cloud AI handles reasoning, planning, and orchestration, while local AI enables secure, low-latency execution near private data. This model delivers AI solution that is more secure, responsive, cost-effective, and sustainable. An IEEE editorial assistant provides a practical example. Running locally on an AI PC, it helps address parts of the technical-paper review workflow without sending confidential manuscript content to external cloud services

Through these examples, this keynote examines a practical shift already underway: AI is becoming part of the engineering workflow. The real opportunity is not automation for its own sake, but giving engineers more time and better tools to apply the judgment, curiosity, and creativity that innovation demands.



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Biography

Dr. Olena Zhu received her Ph.D. in Electrical and Computer Engineering from Purdue University and her B.S. in Electronic Engineering from the University of Science and Technology of China. Dr. Zhu is the Head of AI Solutions & Ecosystem in Intel's Client Computing Group, where she leads Intel's strategy for AI-enabled client and edge computing platforms. She drives the development of multi-agent, hybrid on-device/cloud AI solutions, including the Intel AI Assistant Builder, and builds strategic AI ecosystems with partners such as Microsoft, Mistral, and Perplexity. Her work focuses on transforming PCs and edge devices into agentic, intelligent platforms, accelerating practical AI adoption across consumer and enterprise environments through tightly integrated hardware–software–AI co-design.

Previously, Dr. Zhu served as Chief AI Technologist for Intel's Client Computing Group, where she initiated and led Intel's corporate-level Augmented Intelligence (AuI) strategy—combining domain expertise with machine intelligence to transform end-to-end design methodologies. She led the development of AI-driven optimization solutions spanning silicon, package, board, and system design, achieving over 90% reduction in design cycle time with corporate-wide adoption. Her technical contributions include AI-assisted auto-overclocking for Intel's 14th Generation CPUs, personalized PC optimization for performance and power efficiency, and high-dimensional global optimization algorithms achieving 2× speedup over prior approaches. Earlier roles at Intel include Principal Engineer for the Intel Evo™ platform, System Architect, and Technical Lead.

She has authored 50+ journal and conference publications in computational electromagnetics, signal and power integrity, and AI-driven system optimization, and holds 40+ granted or pending U.S. patents. Her work includes foundational contributions to full-wave electromagnetic solvers, nonlinear signaling analysis, and EMC/SI modeling, published in leading IEEE journals. She is a recipient of the Intel Achievement Award and the SWE Emerging Leader Award, has served as Industry Chair for an IEEE MTT-S conference, and is an active mentor and leader within the global engineering and research community.

