

16. Current and Future Challenges and Solutions in AI & HPC System and Thermal Management

Course Leader: Gamal Refai-Ahmed - AMD

Course Description:

Are you ready to dive into the forefront of AI and HPC system thermal management? This dynamic and interactive course is designed to equip you with cutting-edge knowledge and practical skills to tackle the current and future challenges in thermal management and packaging. Dr. Refai Ahmed, a distinguished technical executive with over two decades of industry experience at giants like AMD, GE, and Cisco, brings unparalleled expertise to this course. His groundbreaking work in thermal management, silicon and power architecture, and advanced packaging technologies, supported by numerous patents and publications, sets the foundation for this comprehensive learning experience.

Key Takeaways:

- A comprehensive understanding of current and future challenges in thermal management and packaging.
- Exposure to innovative solutions and state-of-the-art technologies.
- Practical insights that enhance daily engineering practices and drive industry advancements.

Course Outline:

1. Introduction
2. Thermal & Packaging Roadmap and Challenges
3. Next-Generation Thermal Management Architecture
4. First-Line and Second-Line Cooling Solutions
5. Advanced Cooling Techniques
6. Dynamic Discussions and Hands-On Experience

Why Should Attend: This course promises to be highly interactive and practical, drawing on industrial developments from the first principles of engineering and showcasing advanced thermal-mechanical solutions. Join us to explore the forefront of AI and HPC system thermal management and gain knowledge that will propel your career forward. Whether you're looking to deepen your expertise or stay ahead.

BIO: Gamal Refai Ahmed, Ph.D., FIEEE, LFASEM, Fellow Canadian Academy of Engineering, Fellow Engineering Institute of Canada, AE, and a member of the National Academy of Engineering, is a distinguished technical executive renowned for his groundbreaking work in thermal management, silicon and power architecture, and advanced packaging technologies. With over two decades of experience at industry giants like AMD, GE, and Cisco, Dr. Refai-Ahmed has led high-impact projects, including pioneering new silicon and thermo-mechanical architectures for advanced technology nodes and enabling innovative packaging technologies for ASIC and embedded FPGA. His tenure at AMD as Senior Fellow and Chief Architect saw him spearheading thermal management solutions for Xilinx products and fostering research collaborations to expand HPC, NIC, AI, and ML ecosystems in data centers. He enhanced thermal management at GE for intelligent platform control systems and healthcare mobile systems, contributing significantly to GE's patent portfolio. Gamal has also defined technology

directions and led projects that improved thermo-mechanical solutions for LED printing and UV LED products. Dr. Refai-Ahmed's academic background includes a Ph.D. in Mechanical Engineering from the University of Waterloo, Canada, with numerous publications and over 160 US and international granted and pending to his name, as well as more than 120.