

Aug 29, 2019

System Scaling through Heterogeneous Integration



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ABSTRACT:

A combination of "Moore" (IC) and "More than Moore" (package) scaling has led to the shrinking of electronic systems over the last several decades. As scaling continues beyond CMOS to include advanced devices, scaling of the package needs to continue to enable system scaling, leading to the integration and miniaturization of systems. This requires new technologies for package integration which when connected to assembled ICs leads to System on Package (SoP) solutions that have superior performance and size as compared to current technologies. This presentation will discuss advanced SoP platforms for integration with a focus on heterogeneity for a variety of applications that include AI, HPC, Power Electronics, mmWave to name a few. The inter-disciplinary nature of the research will be highlighted based on faculty interactions between four different schools at GT.

BIOGRAPHY:

Madhavan Swaminathan is the John Pippin Chair in Microsystems Packaging & Electromagnetics in the School of Electrical and Computer Engineering (ECE) with a joint appointment in the School of Materials Science and Engineering (MSE), and Director of the 3D Systems Packaging Research Center (PRC), GT. He also serves as the Site Director for the NSF Center for Advanced Electronics through Machine Learning (CAEML). He formerly held the position of Founding Director, Center for Co-Design of Chip, Package, System (C3PS), Joseph M. Pettit Professor in Electronics in ECE and Deputy Director of the Packaging Research Center (NSF ERC), GT. Prior to joining GT, he was with IBM working on packaging for supercomputers. He is the author of 500+ refereed technical publications, holds 30 patents, primary author and co-editor of 3 books, founder and co-founder of two start-up companies, and founder of the IEEE Conference Electrical Design of Advanced Packaging and Systems (EDAPS), a premier conference sponsored by the EPS society. He is an IEEE Fellow and has served as the Distinguished Lecturer for the IEEE EMC society. He received his MS/PhD degrees in Electrical Engineering from Syracuse University in 1989 and 1991, respectively.