Electrical & Computer Engineering
S E M I N A R
Louisiana State University

System-level Design and Automation for Process-aware Efficient and Reliable Monolithic 3D Integration

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Abstract—The rapid growth of computational demand, together with increasing automation in integrated circuit design, is reshaping how next-generation computing systems are built. Monolithic 3D (M3D) integration offers a promising path forward by enabling ultra-dense integration and improved system performance, but its success critically depends on process-aware design methodologies that address reliability, thermal constraints, and form factor from the outset. In this talk, I will discuss the key challenges and unique opportunities of M3D integration and present a vision for efficient and reliable system-level M3D design which requires a fundamental rethinking of today's electronic design automation (EDA) flows. I will then highlight ongoing works at the intersection of machine learning and emerging accelerator architectures. Finally, I will conclude with a forward-looking perspective on automating the M3D EDA flow to enable intelligent co-optimization of technology, architecture, and ASIC design.

Bio—Umamaheswara Rao Tida is currently working as an assistant professor in Electrical and Computer Engineering Department at North Dakota State University. He obtained his Ph.D. in Electrical Engineering from the University of Notre Dame in 2019. He received his M.S. degree in Electrical and Computer Engineering from Missouri University of Science and Technology in 2014. He also worked in Intel labs on characterization of magnetic inductors for on-chip regulators. His current research interests include device- and system-level modeling and design of Monolithic 3-D integrated systems, machine learning for IC design, and Application-specific machine learning framework development. He serves as the associate editor of Elsvier Integration, The VLSI Journal. He also serves on the program committees of many reputed international conferences. He is also the recipient of NDSU Early Career Research Award, NSF CRII Award, and NSF CAREER Award.

When: Tuesday, **3 March 2026**, 9:00 - 10:00
Where: Room 3316E Patrick F. Taylor Hall
Info: https://www.lsu.edu/eng/ece/seminar
Food: *Refreshments will be served.*