Generative AI for Analog/RF IC Design Automation

Abstract: Analog/RF IC design has long been a heavily manual process, from circuit topology generation, to sizing, and to layout. In the entire design process, extensive circuit simulations will be performed to check if various design constraints/objectives can be met and optimized. However, this design process is very tedious and not scalable. In this talk, I will present some recent efforts toward agile and intelligent analog/RF IC design and automation, leveraged by generative AI, from topology generation to device sizing and layout, and from surrogate modeling to inverse design, leveraging the recent AI advancement and optimizations. Our overarching goal is to build an end-to-end analog/RF IC design and optimization flow, like that for digital IC from RTL to GDS.

Biography: David Pan is a professor and holder of Silicon Laboratories Endowed Chair at the Chandra Department of Electrical and Computer Engineering, The University of Texas at Austin. His research interests include design automation for digital/analog/mixed-signal/RF ICs and emerging technologies, synergistic AI/IC co-optimizations, design and technology/system co-optimizations, etc. He has published over 520 refereed journal/conference papers and 10 US patents. He has served in many journal editorial boards and conference committees, e.g., as DAC 2024 TPC Chair and ICCAD 2019 General Chair. He has received many awards, including SRC Technical Excellence Award, 21 Best Paper Awards from premier EDA/chips venues, DAC Top 10 Author Award in Fifth Decade, among others. He has graduated 55 PhD students and postdocs who are now holding key academic and industry positions. He is a Fellow of ACM, IEEE, and SPIE.