SORS: The end of Von Neumann, the end of Moore's Law, and the end of Dennard Scaling. The new mantras are dark silicon, quantum computing, and approximate computing. What does it all mean for the microprocessor of 2025?

Speaker: Yale N. Patt (Ernest Cockrell, Jr. Centennial Chair, The University of Texas at Austin)

Abstract: The end of Moore's Law we have been hearing about for more than 30 years. Another ten years and it will probably happen. What will that mean? More recently, we have been hearing that the days of the Von Neumann machine are numbered. In fact, we debated that notion at Micro in Cambridge last December, only to realize that most people predicting the demise of Von Neumann don't even know what a Von Neumann machine is. Finally, we have already seen the end of Dennard Scaling and its influence on microprocessor design. But there is no vacuum when it comes to microprocessor hype. Dark silicon, quantum computers, approximate computing have all rushed in to fill the void. What I will try to do in this talk is examine each of these items from the standpoint of what they will mean for the microprocessor of the year 2025, and why the transformation hierarchy remains more critical than ever.

Short Bio: Yale Patt is a teacher at the local public university in Austin, Texas. He enjoys teaching the

intensive required intro to computing course to 400 freshmen every other Fall, the advanced graduate course in microarchitecture every other Spring, and the senior-level computer architecture course whenever they let him. Most of all he enjoys his time each year in Barcelona, teaching the fundamentals of computer architecture to UPC graduate students and learning lessons of life from Mateo, the founding Director of BSC. Dr. Patt has earned apropriate degrees from reputable universities and received more than enough awards for his research and teaching. More detail is available on his website:http://www.ece.utexas.edu/~patt

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