



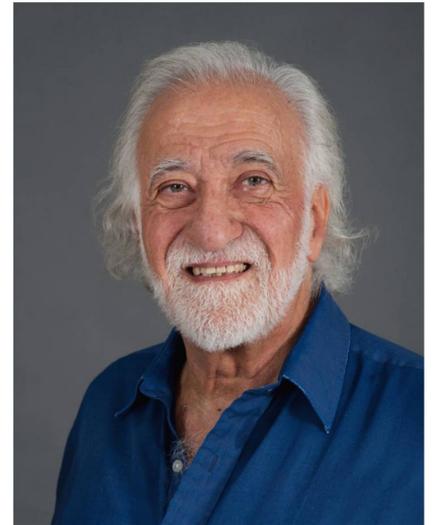
# Center for Embedded and Cyber-Physical Systems Distinguished Lecture

Friday, March 31, 2017  
Donald Bren Hall 4011 at 3:30p.m.

## YALE N. PATT

Ernest Cockrell, Jr. Centennial Chair in Engineering and Professor of  
Electrical and Computer Engineering,  
The University of Texas at Austin

*“Processor Paradigms:  
Evolution or Disruption and the importance of the  
Transformation Hierarchy Moving Forward”*



### ABSTRACT

At the 23rd IEEE Symposium on High Performance Computer Architecture (HPCA 2017) in February, a workshop titled “Pioneering Processor Paradigms” was held (the first one), focused on taking a look at key paradigms of the past to see what we could learn from them. I was asked to give the keynote at HPCA. The result was my awareness that paradigms are proposed to solve problems, do not quite make it, and are replaced by newer paradigms that purport to solve the problems. ...which in turn are replaced by newer paradigms, etc. That is, for the most part our field has grown by evolving one paradigm into the next. What is also clear is that we have also needed to, and will need to even more so as Moore’s Law comes to an end, lean on researchers working in other levels of the Transformation Hierarchy if we are to continue to ride the crest of continued improved performance. In this talk, I will look at some examples of evolved processor paradigms, particularly recent ones that require support from the entire transformation hierarchy. Finally, I will note what must be done if we are to succeed in getting that support.

### BIO

Yale Patt ([www.ece.utexas.edu/~patt](http://www.ece.utexas.edu/~patt)) is Professor of Electrical and Computer Engineering and the Ernest Cockrell, Jr. Centennial Chair in Engineering at The University of Texas at Austin. In 1965, Patt introduced the WOS module, the first complex logic gate implemented on a single piece of silicon. He has spent much of his career pursuing aggressive ILP, out-of-order, and speculative computer architectures, such as HPSm. Patt is a Fellow of both the IEEE and the ACM, and a member of the National Academy of Engineering. He received his master’s and Ph.D. degrees in electrical engineering from Stanford University.