

Encoding Methods in VLSI

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Abstract

Encoding methods have long been used in digital system design, but as we push the limits of CMOS technology, encoding has become an increasingly important tool. This talk will describe two uses of encoding methods in the design of VLSI systems. First, in work with my student Tiehan Lv and Joerg Henkel and Haris Lekatsas of NEC, we developed an adaptive bus encoding method. This method can be applied to both data and address busses and averaged 28% power reduction in our experiments. Second, in work with my student Changhong Lin and Yuan Xie of Penn State, we developed a method to use LZW compression for VLIW code compression. LZW, while powerful, requires larger blocks than have been used for compressed code. We define variable-sized blocks at the boundaries of branches. This method provides good compression ratios and high performance decompression.

Biography

Wayne Wolf is Professor of Electrical Engineering and Associated Faculty in the Department of Computer Science at [Princeton University](http://www.princeton.edu). He received his B.S., M.S., and Ph.D. degrees in electrical engineering from [Stanford University](http://www.stanford.edu) in 1980, 1981, and 1984, respectively. Between 1984 and 1989, he was with AT&T Bell Laboratories, Murray Hill, New Jersey. His research interests include embedded computing, multimedia systems, VLSI and computer-aided design. He is the author of [Computers as Components: Principles of Embedded Computer System Design](#) and [Modern VLSI Design, third edition](#). He is a Fellow of the [IEEE](http://www.ieee.org) and [ACM](http://www.acm.org). He received the ASEE/EED and HP [Frederick E. Terman Award](#) in 2003. He is an IEEE Computer Society Golden Core member and a member of Phi Beta Kappa and Tau Beta Pi.

Coffee and cookie will be served. For more information about the UT-Austin VLSI Seminar Series, please visit the web. <http://www.cerc.utexas.edu/vlsi-seminar/>