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Jenq Kuen Lee received the B.S. degree in computer science from National Taiwan University in 1984. He received a Ph.D. in computer science from Indiana University in 1992, where he also received a M.S. (1991) in computer science. He was a key member of the team who developed the first version of the pC++ language and SIGMA system while at Indiana University. He was also a recipient of the most original paper award in ICPP '97 with the paper entitled "Data Distribution Analysis and Optimization for Pointer-Based Distributed Programs". In 2005, he received Taiwan MOEA funding to lead a research team to develop compilers for PAC VLIW DSP processors with distributed register files by collaborating with ITRI STC. The efforts were currently renewed for another three years focusing on embedded multi-core compilers and applications. He is also a recipient of Google Research Award (Mountain View), 2009. He has also been a director for Taiwan MOE ESW (embedded system software) consortium since 2008. In 2010, he received a Taiwan MOEA economic contribution award (Deep Plow Award) for his contribution in embedded compiler research. His research interests are in optimizing compilers, embedded compilers, and computer architectures.

Compiler Optimizations for Embedded Systems

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Abstract

In this work, we present our experiences on compiler optimization for embedded processors. The main topics include compiler for low-power, DSP compiler optimizations, and compilers optimization for embedded multi-core systems. Case studies and key research results will be presented. We will also present the power simulators developed during our MOEA research projects and hardware/software co-design issues for system optimizations. Our teams have participated 3 terms of MOA projects (2005-2008, 2008-2011, and 2012-2015). Experiences learnt during the MOEA projects will also be reported. In addition, we will also describe some on-going research activities ahead.