

Memory, Storage and Processing in Future Parallel and Distributed Processing Systems

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Abstract:

This is perhaps the most exciting time in the short yet eventful 71 year history of Turing-complete computing. We are in the early but visible stage of an exponential explosion of data and analyses thereof. We simultaneously have witnessed the cessation of several exponential scaling-related trends and a slowdown of technology scaling itself. Technology scaling will be discussed in this talk. We will zero in on the salient features of a new epoch in the operation of processing systems. We will discuss the new balance in algorithms, architectures, technology selection, components and their usage. New technologies will be presented, showing the potential of some new concepts. Considerations for memory and storage scale-up and scale-out will be examined. Finally we will conclude with a view of our challenges and opportunities for research and collaboration.

Brief Biography:

J. Thomas Pawlowski is a Fellow and Chief Technologist with Micron's Architecture Development Group. His responsibilities include advising on new technologies, investments and system/memory/storage architectures. For the past twenty-five years at Micron Mr. Pawlowski has had the pleasure of making key technical contributions to many new memory and system architectures such as synchronous burst pipelined SRAM; hierarchical cache systems; Zero Bus Turnaround SRAM; abstracted memory; double data rate memory; Pseudo-Static RAM; high-speed NAND; double address rate memory; quad data rate SRAM; multi-channel memory; memories on SERDES buses; Reduced Latency DRAM; new refresh schemes; 3D memory; the Non-Deterministic Finite Automata Processor; abstraction protocols; new ECC concepts; processing near memory concepts; 3D Xpoint system architecture and others yet to be announced. Mr. Pawlowski earned a bachelor of applied science degree in electrical engineering, summa cum laude, from the University of Waterloo in Canada. He has well over 100 U.S. and in-flight patents and serves on several advisory boards and conference program committees.