DataFlow SuperComputing

Veljko Milutinovic
Adjunct Professor
Contact Information
vmilutin@iu.edu
http://home.etf.rs/~vm/

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Abstract: Current supercomputer-on-a-chip efforts aim at 100 Billion-Transistor chips (or even a lot larger chips)) that contain 4 CPUs, 4000 GPUs, a fixed Systolic Array ASIC for Tensor Calculus for Machine Learning, and a flexible Reconfigurable Reprogrammable FPGA for NonTensor Operations in Machine Learning. Such a structure supports Data Flow on the Software Level, and its most novel component is Data Flow on the Hardware Level. This presentation concentrates on the essence and applications of Data Flow Computing in general.

Biography

Prof. Veljko Milutinovic (1951) received his PhD from the University of Belgrade in Serbia, spent about a decade on various faculty positions in the USA (mostly at Purdue University and more recently at the University of Indiana in Bloomington), and was a co-designer of the DARPAs pioneering GaAs RISC microprocessor on 200MHz (about a decade before the first commercial effort on that same speed) and was a co-designer also of the related GaAs Systolic Array (with 4096 GaAs microprocessors). Later, for almost three decades, he taught and conducted research at the University of Belgrade in Serbia, for departments of EE, MATH, BA, and PHYS/CHEM. His research is mostly in datamining algorithms and dataflow computing, with the emphasis on mapping of data analytics algorithms onto fast energy efficient architectures. Most of his research was done in cooperation with industry (Intel, Fairchild, Honeywell, Maxeler, HP, IBM, NCR, RCA, etc...). For his books, forewords were written by 12 different Nobel Laureates with whom he cooperated on his past industry sponsored projects. He published over 40 books (mostly in the USA), he has over 100 papers in SCI journals (mostly in IEEE and ACM journals), and he presented invited talks at over 400 destinations worldwide. He has well over 1000 Thomson-Reuters WoS citations, well over 1000 Elsevier SCOPUS citations, and well over 4000 Google Scholar citations. His Google Scholar h index is equal to 36 and his index i10 is equal to 100. He is a Life Fellow of the IEEE since 2003 and a Member of The Academy of Europe since 2011. He is a Founding Member of the Serbian National Academy of Engineering and a Foreign Member of the Montenegro National Academy of Sciences and Arts. He conducts all his teaching in cooperation with Mr. Milos Kotlar, a Ph.D. student at University of Belgrade.