

Microprocessor Development: Retrospective and Future Challenges

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In this talk a retrospective of modern microprocessor development is presented. It addresses advances in enabling technology that brought an unprecedented growth and a perspective for the future development. The features which enabled development of modern microprocessors and the guiding principles and contributions made by modern micro-processor architecture are discussed. The move into super-scalars is explained with respect to performance and implementation difficulties. One billion transistor challenge and the impact of the computer entry into consumer market representing new potentials and new challenges are addressed.

Prof. Vojin G. Oklobdzija, is an IEEE Fellow, Distinguished Lecturer of the IEEE Solid-State Circuits Society and Vice-President for Technical Activities of IEEE Circuits and Systems Society. He received Dipl. Ing. degree from the Electrical Engineering Department of the University of Belgrade in 1971, and MSc and Ph.D. from the University of California at Los Angeles in 1982.

From 1982 to 1991 he was at the IBM Thomas J. Watson Research Center, where he made contributions to the development of RISC processors and supercomputer design. In the course of this work, he obtained several patents, the most notable one on register renaming, which enabled a new generation of computers.

From 1988 to 1990 he was an IBM visiting faculty member at the University of California at Berkeley teaching courses in computer architecture and computer design. Since 1991, he was professor at the University of California Davis and consultant to many companies, including: Sun Microsystems, Bell Laboratories, Hitachi, Fujitsu, SONY, Intel, Samsung and Siemens Corp. where he was a principal architect for the Infineon TriCore processor. He is Preseident and CEO of Integration Corporation - the company he founded in 1996. He holds 15 U.S., 7 international and 5 other patents pending.

After retiring from the University of California in 2006, Prof. Oklobdzija has had several visiting academic positions including: Computer Engineering Chair at Sydney University, Visiting Professor at University of Texas at Dallas and current, Distinguished Klipsch Professor at NMSU.

Prof. Oklobdzija is serving on the Editorial Board of IEEE MICRO and publishing board of Taylor-Francis, IEEE Fellow Committee, and numerous other IEEE committees. He served as the Associate Editor of IEEE Transaction on Computers from 2000-2006, IEEE Transactions on VLSI from 1995-2003, IEEE Transaction on Circuits and Systems II and Journal of VLSI Signal Processing, the ISSCC program committee from 1996 to 2003 and again in 2007, First Asian ASSCC, International Symposium on Low-Power Design, Computer Arithmetic, ICCD, PATMOS and numerous other conference committees. He is actively involved in IEEE as organizer, OEB Chair of Solid-State Circuits Society (1998-2002), Member of the Board of Governors IEEE Circuits and Systems Society and Vice President for Technical Activities. He was the the Technical Program Chair (2008) and General Chair for the International Symposium on Low-Power Design (2010). Twice the General Chair for the International Symposium on Computer Arithmetic: ARITH-20 (2011) and ARITH-13 (1997). He also served as the General Chair for DCAS-2008 and IASTED Conference on Circuits, Signals and Systems (2006).

Prof. Oklobdzija has published more than 190 papers, 6 books and dozens of book chapters in the areas of circuits and technology, computer arithmetic and computer architecture. His book "*Computer Engineering*" won Outstanding Academic Title award, out of 22,000 titles considered and is currently in second edition. He has given over 200 invited talks and short courses in the USA, Europe, Latin America, Australia, China and Japan. (for more information please visit: www.acsel-lab.com)

