

## Microprocessor Design for GaAs Technology

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Guest Speaker in the ECE 606 Recitation

**Abstract**

This presentation is oriented to students of both, sciences (mathematical, natural) and engineering (computer, interdisciplinary). It does not require any background on circuits or systems - only the basic understanding of issues in computer science and engineering.

This presentation describes two complex projects sponsored by DARPA, one related to the design of the World's first GaAs Microprocessor on a chip, and the other one related to a GaAs Systolic Array with 4096 processors. Issues are covered from initial ideas to final deployment.

The full blown course on microprocessor design for GaAs technology, or parts of that course, were presented at a number of US, European, Asian and Australian universities, including: Harvard, MIT, Purdue, and U. of Indiana, as well as Belgrade, Ljubljana, Dortmund and Frankfurt, plus Tokyo, Tsinghua, Bogazici, and Technion, as well as Sydney University, Sydney University of Technology, University of Queensland in Brisbane, and University of Tasmania in Hobart..

**Bio**

Prof. Veljko Milutinovic 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 DARPA's 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 10 of his books, forewords were written by 10 different Nobel Laureates with whom he cooperated on his past industry sponsored projects. He published 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 is a Life Fellow of the IEEE since 2003 and a Member of The Academy of Europe since 2011. He is a member of the Serbian National Academy of Engineering and a Foreign Member of the Montenegro National Academy of Sciences and Arts.

**Host**Gerhard Klimeck, [gekco@purdue.edu](mailto:gekco@purdue.edu)