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Research Interests

Bio Sketch

- B. Tech Electrical Engg. (IIT, Kharagpur, India) 1980
- PhD Computer Science (univ. of Utah) 1986
- Assistant Prof. CS (University of Oregon) 1986-91
- Assistant Prof. ECE (Oregon State U.) 1991-92
- Senior Researcher (CNRS), Irisa, Rennes, France, 1992-2001
- Associate Prof. CS (Colorado State) 2001-present

The buzzwords

- **Research Areas:** High Performance Computing, VLSI, Architecture.

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- **Research Areas:** High Performance Computing, VLSI, Architecture.
- **Application Domains:** Streaming Multimedia, Signal & Image Processing, Embedded Systems.
- **Target Technology:** Modern Microprocessors, FPGA Coprocessors, Application-Specific Processors, Supercomputers.

What is High Performance

- Speed
- Power and/or Energy Consumption
- Cost (per unit, in large volume)
- Weight, size, . . .

The Price for the Performance

- Design Time (time to market)
- Design Complexity
- Moving Technology

Moving Technology: Trends

- **Increasing integration:** density/frequency (Moore's law, SIA roadmap, etc.)
 - Billion Transistor Chips
 - Memory Wall
- **Embedded Systems on a Chip.**
- **Reconfigurability**

Our Position

- **Codesign:** software & hardware—two sides of the same coin
- Focus on **compute-intensive** parts (loops)
- **Foundations:** parallelism, discrete optimization, formal methods:

Foundation

- Polyhedral Model
- Tiling
- Algorithms

Previous Funding Experience

- National Science Foundation
- Oregon Advanced Computing Institute
- Brittany Region, France (with local companies)
- European Commission (with Philips (NL), Thomson Multimedia (FR), ...)
- French Ministry of Industry (with STMicroelectronics, FR)