ISTeC (Information Science and Technology Center) Research Advisory Committee
Retreat on the Scientific and Engineering Foundations of Information Science and Technology
Saturday, May 8, 8:15am to 3:00pm, Lory Student Center

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Research Interests (one paragraph):

I am interested in the foundations of parallel computation. Two manifestations of this are: "silicon compilation" i.e., compiling a program directly to silicon (producing a circuit specific to the program) rather than to machine code that will be executed, often inefficiently, by an instruction-set processor; and transformations of programs to exploit data locality on general-purpose processors. I have recently explored the use of field programmable gate arrays (FPGAs) for accelerating compute- and data-intensive parts of application programs. I am also interested in algorithms, programming languages, and nanocomputing.

Titles of current research projects (funded or not):

HiPHiPECS: High Level Programming for High Performance Embedded Computing Systems (NSF).

Switched Memory Architectures

COGrid

Energy-aware computing

Current collaborations inside and outside your department:

Wim Böhm

Edwin Chong & Pat Burns

Breakout sessions you would like to attend at the retreat (please rank order from 1 to 3):

1	Alternative models of computing
2	Computing and information processing in support of basic science and engineering
	Dense sensor networks

	Imaging and tracking
	Automatic image, text, and speech recognition for multimodal interfaces and search engines
	Other (Please suggest a title.)

Faculty at CSU whom you would like to see included into your preferred breakout group:

One optional paragraph you would like other participants to read before the retreat:

Moore's Law has been the bane as well as the boon of computing. To computer architecture researchers and system developer, it poses the challenge to continually deliver exponentially increasing "performance" without radically altering the users' and programmers' abstraction. Silicon technology is approaching physical limits, and it is expected that alternative technologies must be developed in the future. In any such "nano-scale" technology, one challenge is that it will be impossible for an external agent to enforce the assembly of devices: there is thus a need for ***intelligent self-assembly.*** I am interested to see how the methods found in nature – crystal growth, biological phenomena like protein and gene expression, emergence of intelligent behavior from distributed knowledge (e.g., ant colonies) can be used for building the comuting devices of tomorrow.