



The Center for Control, Dynamical Systems, and Computation
University of California at Santa Barbara
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Presents

Ruminations on High Performance Computing

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Abstract:

After fifteen years of stasis, high performance computing is entering an era of disruptive change. Several trends are driving this change. Traditional applications are evolving rapidly, and new applications with different computational needs are emerging. At the same time, computer architects are facing new design constraints, yet the continued march of Moore's Law creates opportunities for radical innovation. Meanwhile, the field is in urgent need of new abstractions and programming models. The combination of these forces will raise enormous challenges in the coming years. But in addressing these challenges, high performance computing will be enriched and rejuvenated, and will contribute in unprecedented ways to science and society.

About the Speaker:

My research interests include scientific computing, parallel algorithms and combinatorics. Much of my work has been in Combinatorial Scientific Computing - the development, analysis and application of discrete algorithms for applications in scientific computing. Some of my recent (and not so recent) projects include the interplay between graph algorithms and computer architectures, support theory - an algebraic approach to analyzing preconditioners, the Chaco graph partitioning tool and the related Zoltan dynamic load balancer, and a range of algorithmic activities in scientific and high performance computing.
