



Friday, April 4, 2008
1:10pm-2:15pm

Rauch Business Center Room 91

Lehigh Library and Technology Services invites you to a public lecture as part of
Third Annual High Performance Computing Day at Lehigh

Petascale Phylogenetic Reconstruction of Evolutionary Histories

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"Computational science enables us to investigate phenomena where economics or constraints preclude experimentation, evaluate complex models and manage massive data volumes, model processes across interdisciplinary boundaries, and transform business and engineering practices. Increasingly, cyberinfrastructure including petascale computers is required to address our national and global priorities. Several of our most fundamental intellectual questions also require computation, such as the formation of the universe, the evolution of life, and the properties of matter."

In this talk, we focus on the grand challenge to reconstruct the tree of life. Phylogenies derived from gene order data may prove crucial in answering some fundamental questions in biomolecular evolution. Yet very few techniques are available for phylogenetic reconstruction based upon gene order and content, and these are (for the most part) computationally expensive. High-performance algorithm engineering offers a battery of tools that can reduce, sometimes spectacularly, the running time of existing approaches. The phylogeny reconstruction now can be performed in parallel and attain a linear speedup with the number of processors. We show how these techniques are directly applicable to a large variety of problems in computational biology.

For more information, please go to:

<http://www.lehigh.edu/computing/hpc/hpckeynote.html>