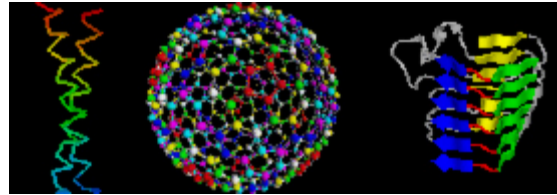


MIT
Department of Mathematics
& The Theory of
Computation Group
At CSAIL



Bioinformatics Seminar

Speaker: Tandy Warnow, Department of Computer Sciences,
University of Texas at Austin

Title: The CIPRES Project: Inferring the Tree of Life

Date: MONDAY, 29 March 2004

Time & Location:

Refreshments: 11:00 am in the Applied Mathematics Common Room
at MIT's Building 2, Room 349

Talk: 11:30 am The Applied Mathematics Conference Room Building 2,
Room 338

URL: <http://www-math.mit.edu/compbiosem/>

Abstract:

The Tree of Life initiative -- to reconstruct the evolutionary history of all organisms -- is the computational grand challenge of evolutionary biology. Current methods are limited to problems several orders of magnitude smaller and also fail to provide sufficient accuracy at the high end of their range.

The Cyberinfrastructure for Phylogenetic Research (CIPRES) project, recently funded by a \$11.6M Information Technology Grant from the NSF, funds 33 investigators from 13 institutions, to help develop the computational infrastructure for evolutionary biologists so that they can analyze large datasets. The group contains biologists, mathematicians, statisticians, and computer scientists, working together to formulate more meaningful stochastic models of sequence and genome evolution, to develop novel algorithms to analyze large datasets, and to develop novel database technology appropriate for phylogeny reconstruction.

In this talk, I will describe the activity in the CIPRES project, and show progress my group is making towards enabling highly accurate phylogenetic analyses of large datasets under the major NP-hard optimization problems, Maximum Parsimony and Maximum Likelihood. Our current techniques are able to analyze datasets contains thousands of taxa much faster than the current best methods available.

The seminar is co-hosted by Professor Peter Clote of Boston College's Biology and Computer Science Departments and MIT Professor of Applied Math Bonnie Berger. Professor Berger is also affiliated with CSAIL & HST.

Massachusetts Institute
of Technology
77 Massachusetts Avenue
Cambridge, MA 02139

For General Questions, please contact kvdickey@mit.edu