

Ross A. Lippert

Current Address: 386 Washington Street. #1A,, Somerville, MA 02143
lippert@math.mit.edu,

Objective A full-time position in a research and development department focusing on high performance computing issues and novel algorithm development.

Experience **MIT Department of Mathematics** *Instructor*
Cambridge, MA **January 2004 – Present**
Classes taught: Introduction to Computational Biology (18.417), a graduate class covering the algorithms and techniques currently used on modern bioinformatics, Introduction to Numerical Analysis (18.330), an undergraduate class covering the basic techniques of scientific computing.

Research includes high performance algorithms for exact string matching problems, density functional theory with LDA and OEP formulations in solid state physics, and various eigenvalue perturbation problems.

Applied Biosystems/Celera Genomics Group *Research Scientist*
Rockville, MD. **October 2000 – December 2003**

Involved in numerous algorithmic projects in bioinformatics including: a high-performance string matching based on word counting, a similar molecule matching problem based on feature counting, a high-performance peptide database search algorithm deployed by Celera's proteomics group for mass spectrometry identification (see CV), a flexible inexact pattern matching tool for general strings based on suffix trees/arrays, an algorithm for classifying DNA assembly fragments into long range haplotype groups based on SNP content (see CV), an efficient graph isomorphism implementation capable of determining both topologically and geometrically similar small molecule substructures.

Sandia National Laboratories *Mathematician*
Albuquerque, NM. **July. 1998 – Sept. 2000**

Held a position first as a fellow and then as full time staff in the Applied Mathematics and Numerical Methods Department (Org. 9222). I incorporated several results in iterative eigenvalue computation to improve the existing routines for calculating electronic structures in the Materials Research Lab. In collaboration with Sandia's material scientists, I produced a thorough study of the available methods for approaching this problem, and their liabilities (see CV). Later this work lead to my refactoring of an existing MPI-based parallel ES code into one in which the improvements suggested my research could be shown.

Also performed original research on algorithms in constrained optimization problems and numerical linear algebra, as well as some small work in discrete algorithms.

Qualifications *Programming Languages:* MATLAB, C, C++, Perl, scheme

Parallel Environments: MPI and PVM

Operating Systems: Solaris, Irix, Linux, FreeBSD, Tru64, AIX

Specific Interests: high performance computing

Citizenship: USA

Education CV attached.

References Available on request.