

Alexander Russell Perlis

Department of Mathematics

The University of Arizona

Tucson, Arizona 85721

aprl@math.arizona.edu

(520) 621-6892

Objective:

- I am seeking a research/engineering position in academia/industry that requires mathematical and computer-related skills. I prefer working on problems in an environment where a blend of analysis and computation is preferred (as opposed to throwing all available hardware at a situation without thinking about it, or coming up with purely abstract theoretical results).

Research interests:

- Mathematis-related interests: number theory, algebraic geometry, cryptology, coding theory, computability, complexity, and algorithms.
- Computer-related interests: communications protocols, distributed computing, operating system design, generic programming, automata theory, programming languages, compiler/interpreter design, and web security.

Citizenship:

- United States of America

Education:

- 8/2004 • Ph.D., Mathematics, The University of Arizona.
Dissertation: *On the projective geometry of curves of genus one, and an algorithm for the jacobian of such a curve.*
- 5/1994 • M.S., Mathematics, Louisiana State University.
GPA: Overall 3.923, Mathematics 3.923 (both out of 4).
- 5/1994 • B.S., Computer Science, Louisiana State University.
GPA: Overall 3.923, Computer Science 3.7 (both out of 4).
- 8/1992 • B.S., Mathematics, Louisiana State University.
GPA: Overall 3.837, Mathematics 3.9 (both out of 4).
- 1976–1980 • Attended German elementary school, Bonn, Germany.

Foreign experience:

- Summer 1994 • National Science Foundation's "Summer Institute in Japan".
I studied mathematics and japanese at Tsukuba University, Tsukuba, Japan.
- 9/1990–8/1991 • Louisiana State University's "Year Abroad".
I studied mathematics at Universität Bonn, Bonn, Germany.
- Summer 1990 • Louisiana State University's "LSU Summer in Paris".
I studied french and art history in Paris, France.
- 8/1972–8/1980 • Lived in Regensburg, Germany, and Bonn, Germany.

Language skills:

- Fluent in English and German. Capable in French. Familiar with Japanese.

Computer skills:

- Significant skills in Unix/Linux system administration, networking, web security, website development, HTML, PHP, Perl, MySQL, JavaScript, C/C++, assembly, TeX/LaTeX, Mathematica, MATLAB.

Publications:

- 2004 • *Roots appear in quanta.*
American Mathematical Monthly **111** (2004), pages 61–63.

- 2001 • *Axis alignment in Xy -pic diagrams.*
TUGboat **22** (2001), pages 330–334.
- 2001 • *A complement to smash, llap, and rlap.*
TUGboat **22** (2001), pages 350–352.
- 2001 • *Jacobians of genus one curves*, with An, Kim, Marshall, Marshall, McCallum.
Journal of Number Theory **90** (2001), pages 304–315.

Awards and distinctions:

- 1993? • LSU College of Basic Sciences *Outstanding Senior Award*.
- 4/1990 • LSU Mathematics Department *Senior Mathematics Award*.
- 3/1987 • LSU Alumni Scholar (annual stipend).
- 1/1987 • LSU Honor Scholarship (tuition exemption).
- 8/1987 • Eagle Scout, Boy Scouts of America.

Employment history:

- 1/2003–present • Senior Support Systems Analyst, Department of Mathematics, The University of Arizona.
Responsible for all aspects of behind-the-scenes system administration, from networking, mail servers, web servers, file servers, account management, to website development, documentation, end-user support.
- 1/2001–12/2002 • Research assistant, Department of Mathematics, The University of Arizona.
- 1/1999–12/2000 • Senior software engineer, UpShot Corporation, Mountain View, California.
Responsible for improving performance of web-based sales automation product, as well as adding new features. Member of the server team; responsible for server-side design, implementation, and maintenance. Areas of specialty included HTTP protocol implementation, web security, efficient string manipulation, eliminating bottlenecks and synchronization issues in order to efficiently handle simultaneous client requests.
- Summer 1996, 1997 • Unix System Administrator Assistant, Department of Mathematics, Louisiana State University.
- 8/1994–12/1998 • Teaching assistant, Department of Mathematics, The University of Arizona.
- 8/1992–6/1994 • Teaching assistant, Department of Mathematics, Louisiana State University.
- 1992? • Contractor for The Dow Chemical Company, Plaquemine, Louisiana.
Rewrote Macintosh software system used to prototype designs for chemical process control. Significant improvements were made to the system’s compiler; the speedup was so great that the system responded “instantaneously” for all projects being prototyped.
- 1989? • Self-employed software developer, Baton Rouge, Louisiana.
Independently developed emulation software “ProcessTerm” for Macintosh to emulate Intecolor 8001G terminals. Many copies were subsequently sold to The Dow Chemical Corporation.
- 1987? • Software developer, Communications Research Group, Inc. Baton Rouge, Louisiana.
Part of team that ported the BLAST communications product to the Macintosh.

Teaching experience:

- 1989?–1991? • High school classes: I was an occasional day substitute teacher in a variety of subjects, and a long-term substitute teacher in geometry, calculus, and computer science.
- 1997–1998 • High school workshops: Together with fellow graduate students, we prepared and ran weekend workshops for high school students in cryptology, signal processing, integer factorization, and primality testing.
- 1993–1998 • Undergraduate: I was the teacher for undergraduate courses in college algebra, finite mathematics (for business majors), calculus, vector calculus, business calculus, linear algebra.
- Fall 1996 • Senior/Graduate: I was an assistant to the graduate course in linear algebra.
- 1996–1997 • Graduate: I led qualifying exam preparation sessions for first-year graduate students.

Talks:

- 7/2004 • *On computing jacobians of curves of genus one.*
10th International Conference on Applications of Computer Algebra, Beaumont, Texas.
- 10/2001 • *How to construct explicit jacobians of genus 1 curves.*
Institute for Defense Analyses, Center for Communications Research, Princeton, New Jersey.
- 1/1999 • *Touchtone recognition with Fourier series*, with Aaron Ekstrom.
Joint AMS/MAA Meetings, San Antonio, Texas.

- 12/1998 • *Explicit Jacobians of genus one curves.*
West Coast Number Theory Conference, San Francisco State University.
- 10/1998 • *Workshops for high school students*, with Aaron Ekstrom.
New Mexico State University, Las Cruces, New Mexico.
- 4/1998 • *Languages, regular expressions, grammars, automata, Turing machines.*
Graduate Colloquium, The University of Arizona.
- 4/1998 • *Running workshops for high school students*, with Jennifer Smith.
Regional MAA meeting, Pima Community College, Tucson, Arizona.
- 3/1998 • *Bounds on the order of the Tate–Shafarevich group*, with David Marshall and Susan Marshall.
Arizona Winter School, Tucson, Arizona.
- 10/1997 • *What are elliptic curves, and what are they good for?*
Graduate Colloquium, The University of Arizona.
- 10/1997 • *Fourier Series for high school students*, with Aaron Ekstrom.
SWRIMS Calculus Day Workshop, The University of Arizona.
- 7/1997 • *The Weil conjectures.*
REU Program at Louisiana State University.
- 3/1997 • *Public-key cryptography and digital signature verification.*
Graduate Colloquium, The University of Arizona.
- 11/1996 • *Sums of squares and the Waring problem.*
Graduate Colloquium, The University of Arizona.
- 1/1996 • *Continued fractions.*
Graduate Colloquium, The University of Arizona.
- Fall 1995 • *The platonic solids: uniqueness and construction.*
Graduate Colloquium, The University of Arizona.

Workshops/Schools:

- 1/2000 • Quantum Computing Course.
Joint AMS/MAA Meeting, Washington DC.
- Summer 2000 • IAS/PCMI Summer Institute on Computational Complexity.
Institute for Advanced Study, Princeton, New Jersey.
- 3/1999 • Local-to-Global Principles in Arithmetical Algebraic Geometry.
Arizona Winter School, Southwestern Center for Arithmetic Algebraic Geometry, Tucson, Arizona.
- 4/1998 • Mountain West Workshop in Algebraic Geometry.
Oklahoma State University, Stillwater, Oklahoma.
- 3/1998 • Workshop on Diophantine Geometry Related to the ABC Conjecture.
Arizona Winter School, Southwestern Center for Arithmetic Algebraic Geometry, Tucson, Arizona.

Departmental activities:

- 1/1997–5/1998 • Participant in SWRIMS (Southwest Regional Institute in the Mathematical Sciences). Programs included weekend workshops for high school students, weekly visits to high school classrooms, and development of website.
- 9/1996–5/1998 • Organized the Graduate Colloquium.
- Spring 1998 • Organized the Graduate Elliptic Curves Seminar.
- 9/1996–5/1997 • Held position of Graduate Student Representative. Brought issues to the attention of the faculty and served on various departmental committees.

Community service:

- 3/1997 • Judge at Southern Arizona Regional Science and Engineering Fair, Tucson, Arizona.
- 5/1996 • Judge at 47th International Science and Engineering Fair, Tucson, Arizona.
- 1985–1993 • Ran non-profit Louisiana Hiking Trails, Inc., an organization that encourages youth groups to become more familiar with Baton Rouge and its history, via walking tours of the downtown and university areas.