

Alain J. Roy

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EDUCATION

- Ph.D. University of Chicago, Computer Science. August, 2001.
Dissertation: *End-to-End Quality of Service for High-End Applications*.
Advisor: Ian Foster
- M.S. University of Chicago, Computer Science, March 1997
- B.S. University of Chicago, Mathematics, June 1994

RESEARCH AND DEVELOPMENT EXPERIENCE

Researcher, 2008-present

Associate Researcher, 2001-2008

Condor Project, Department of Computer Sciences, University of Wisconsin-Madison

• Currently I am the Software Coordinator for the Open Science Grid, a national collaboration funded by DOE and NSF to provide a distributed computing infrastructure that includes many universities and national laboratories across the US. I lead OSG Software Team, and have done so since 2002 (originally under different funding). Our goal is to provide an easy-to-use software distribution for distributed computing software. Initially I was the sole person developing the software stack: I did design, implementation, debugging, documentation, and user support. As the project became successful, we received more funding. Today, I lead a team with three other local people and about five people at other institutions. My activities include:

- Managing a team of developers
 - Understanding, building, configuring, and debugging a wide variety of software
 - Interacting with software developers and users
 - Coordinating a complex software release to meet needs of a wide variety of users
 - Implementing many tools and installation procedures, using Perl, Python, Bourne shell, Subversion, and more
- I am a Co-Principal Investigator on two National Science Foundation grants:
- a) CRI: CRD Collaborative Research: Archer - Seeding a Community-based Computing Infrastructure for Computer Architecture Research and Education
<http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=0750884>
 - b) Reconciling gene trees: Deciphering the source and extent of genealogical discordance
<http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=0949121>

Other duties at this position have included:

- Maintenance of the C++ ClassAd library, used for job matchmaking
<http://research.cs.wisc.edu/condor/classad/>
- Providing guidance to students doing a variety of research
- Writing code in C++ and Perl for the Condor high throughput computing software
- Miscellaneous programming in C++ and Perl

- Design and development of an alert system in C++ for finding problems in clusters
 - Writing technical papers and documentation. Used LaTeX and HTML
 - Development and presentation of numerous tutorials both nationally and internationally.
- Three examples:

a) Co-organizer and presenter at the first two OSG Summer Schools on Grid Computing

<https://twiki.grid.iu.edu/bin/view/Education/OSGSummerSchool2010>

<https://twiki.grid.iu.edu/bin/view/Education/OSGSummerSchool2011>

b) Program committee member and presenter at the International School on Grid Computing, 2005-2009

c) A tutorial about Condor that eschewed the use of PowerPoint in favor of a thoughtful handout. I find that not using presentation software can lead to a more interesting and useful presentation.

http://www.cs.wisc.edu/~roy/effective_condorg/

- Organizing the yearly Condor Week conference
http://research.cs.wisc.edu/condor/past_condor_weeks.html
- Reviewing papers for various conferences
- Hiring of new staff

Graduate Student, 1994-2001

Department of Computer Science, University of Chicago

- Developed and implemented system in C on Linux for providing Quality of Service
- Developed Quality of Service mechanisms, particularly for IP networks. Used C on Linux, Differentiated Services, RSVP, and Cisco 7505 routers
- Investigated natural language communication with robots
- Implemented simulator for robot-human interactions in C++ on the Macintosh.

TEACHING EXPERIENCE

Instructor, Spring 2001

Department of Computer Science, University of Chicago

- Taught “Computer Networking”, March-June 2001 for Masters degree program
- Developed lectures, homework, and exams

Teaching Assistant, Fall 1997-1999

Departments of Computer Science, Northwestern University and University of Chicago

- Developed and graded homework and exams
- Tutored students individually and in groups

RELATED WORK EXPERIENCE

Personal Programming

To keep my skills fresh, I've been programming during my personal time. One exemplar project is a program that plays an online video game and achieves scores ten times better than me:
<http://pages.cs.wisc.edu/~roy/projects/bejeweled/>

Programmer, Studio Aslag, 1999

Developed innovative program to create doctors' on-call schedules in C++ for the Macintosh

Programmer, Paranoid Productions, 1996-1997

Assisted development of a commercial video game, *Damage Inc*, in C for the Macintosh

Consultant to Bungie Software, 1996

Developed graphic utility for development of a video game, *Myth*, in C++ for the Macintosh

Programmer, University of Chicago, Linguistics Department, 1995-1996

Sole programmer for interactive teaching program for Mayan Language in C++ for the Macintosh

Programmer, Bungie Software, 1994

Assisted development of a commercial video game, *Marathon*, in C for the Macintosh

JOURNAL PUBLICATIONS

End-to-End Quality of Service for High-end Applications. I. Foster, M. Fidler, A. Roy, V. Sander, L. Winkler. *Computer Communications*, 27(14):1375-1388, 2004.

A Differentiated Services Implementation for High-Performance TCP Flows. V. Sander, I. Foster, A. Roy, L. Winkler. *The International Journal of Computer and Telecommunications Networking*, 34, 915-929, 2000

BOOK CHAPTERS

Condor and Preemptive Resume Scheduling. A. Roy and M. Livny. Published in *Grid Resource Management: State of the Art and Future Trends*, pages 135-144, Fall 2003. Edited by Jarek Nabrzyski, Jennifer M. Schopf and Jan Weglarz, published by Kluwer Academic Publishers.

GARA: A Uniform Quality of Service Architecture. A. Roy and V. Sander. Published in *Grid Resource Management: State of the Art and Future Trends*, pages 377-394, Fall 2003. Edited by Jarek Nabrzyski, Jennifer M. Schopf and Jan Weglarz, published by Kluwer Academic Publishers.

CONFERENCE PAPERS

Building and Testing a Production Quality Grid Software Distribution for Open Science Grid, Alain Roy, et. al. in *Journal of Physics: Conference Series*, SciDAC 2009, Volume 180, 012052, 2009. Edited by Horst Simon.

Workflow Management in Condor, Peter Couvares, Tevik Kosar, Alain Roy, Jeff Weber and Kent Wenger in *In Workflows for e-Science*, Editors: I.Taylor, E.Deelman, D.Gannon, M.Shields, Springer Press, January 2007 (ISBN: 1-84628-519-4)

Management of Grid Jobs and Data within SAMGrid. A. Baranovski, G. Garzoglio, A. Roy, T. Tannenbaum, and I. Terekhov. Cluster 2004, September, 2004.

MPICH-GQ: Quality of Service for Message Passing Programs. A. Roy, I. Foster, W. Gropp, N. Karonis, V. Sander, B. Toonen. Supercomputing 2000, November, 2000. (Nominated for Best Paper)

A Quality of Service Architecture that Combines Resource Reservation and Application Adaptation. I. Foster, A. Roy, V. Sander, Proceedings of the 8th International Workshop on Quality of Service, June 2000.

A Distributed Resource Management Architecture that Supports Advance Reservations and Co-Allocation. I. Foster, C. Kesselman, C. Lee, R. Lindell, K. Nahrstedt, A. Roy. Proceedings of the 8th International Workshop on Quality of Service, June 1999.

The Quality of Service Component for the Globus Metacomputing System. C. Lee, C. Kesselman, J. Stepanek, R. Lindell, S. Hwang, B. Scott Michel, J. Bannister, I. Foster, A. Roy. Proceedings of the 8th International Workshop on Quality of Service, June 1998.

REFERENCES

Available on request