

Ruibiao Qiu

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Summary

Doctoral candidate in Computer Science and Engineering, graduating December 2005, is seeking a challenging research and development position in industry. Offers over 10 years of research and development experience in original algorithm analysis and development, especially in networking. Green card holder, willing to relocate.

Education

- D.Sc.** Computer Science
Washington University, St. Louis, MO (December 2005)
Dissertation title: *Design Issues of Reserved Delivery Subnetworks*
Advisor: Dr. Jonathan S. Turner
GPA: 4.00/4.00
- M.S.** Computer Science
Florida International University, Miami, FL (December 1997)
GPA: 3.92/4.00
- M.S.** Computer Engineering
Beijing University of Posts and Telecommunications, Beijing, China (April 1995)
- B.S.** Computer Engineering
Beijing University of Posts and Telecommunications, Beijing, China (July 1992)

Technical Skills

Research and Development: Algorithm development and analysis, system modeling and simulations, switching technology, network design and engineering, network management, Unix development, NetBSD/Linux kernel development

Languages: Java, C/C++, Perl, Tcl/Tk, Visual Basic, Prolog, Pascal, Fortran

Networks: ATM, Ethernet, FDDI, Wi-Fi, MPLS, X.25, ad hoc networks

Protocols: TCP, IPv4, IPv6, UDP, RIP, OSPF, BGP, EIGRP, PNNI, RSVP, SNMP

Operating Systems: NetBSD, FreeBSD, Solaris, MS Windows, Linux, OpenBSD

Software Packages: Qt, GTK+/Gnome, Mathematica, GSL, LaTeX, GLPK, Network Simulator (ns-2), MS Office, Photoshop

Research Experience

Washington University, St. Louis, MO May 1998 - present
Research Assistant, Applied Research Lab, Department of Computer Science and Engineering

PhD dissertation related research:

- Propose reserved delivery subnetworks (RDSs) to achieve consistent quality of service.
- Formulate the configuration for a single-server RDS as a minimum concave cost network flow problem, and develop an efficient approximation algorithm.
- Study efficient algorithms for the configuration of an RDS with multiple servers to improve performance and reliability.
- Develop source traffic regulation algorithms for end hosts in an RDS environment for higher end-to-end performance.

Other research projects and activities:

- Developed and implemented a high quality video-conferencing system for remote scientific collaboration over broadband wide area networks. The system has been used among institutes over the Internet2.
- Investigated and experimented with the use of the Human Vision System (HVS) in JPEG2000 and

its applications in medical images.

- Developed a quality scalable video transmission scheme for Motion-JPEG2000 video streams over active networks.
- Studied and evaluated the advantages of Motion-JPEG2000 in video processing applications.
- Contributed to the ACE (Adaptive Communication Environment) project by developing the ATM connection-oriented interfaces on the Windows and Solaris platforms.
- Upgraded **kernel device driver** of the Matrox Meteor frame grabber for **NetBSD**.

Florida International University, Miami, FL

Aug. 1995 - Dec. 1997

Research Assistant, High Performance Database Research Center, School of Computer Science

- Designed and implemented an animated Ozone image display application for NASA.
- Designed and implemented a form generation tool for Oracle database.
- Implemented a pipelined distributed join algorithm for distributed databases.

Beijing University of Posts and Telecommunications, Beijing, China

Jan. 1991- May 1995

Research Assistant, Department of Computer Engineering

- Developed and implemented a remote bridge system over X.25 wide area networks.
- Developed and implemented a distributed relational database query system for NetBIOS networks.
- Designed and implemented a software X.25/HDLC protocol analyzer.

Selected Publications

- **Ruibiao Qiu**, Jonathan S. Turner, "Source Traffic Regulation in Reserved Delivery Subnetworks". *Proceedings of 25th IEEE International Performance Computing and Communications Conference (IPCCC)*, Phoenix, AZ, April, 2006.
- **Ruibiao Qiu**, Jonathan S. Turner, "Local Search Algorithms for Reserved Delivery Subnetwork Configuration Problems with Cycle and Bicycle Reduction". *Proceedings of Advances for Networks & Internet Symposium, IEEE Globecom 2005*, St. Louis, MO, November, 2005.
- **Ruibiao Qiu**, "Cost Efficient Routing in Ad Hoc Mobile Wireless Networks". *Proceedings of SPIE APOC 2003*, Wuhan, China, November 2003.
- **Ruibiao Qiu** "Reserved Delivery Subnetwork Configuration Algorithm with Maximum Sharing Shortest Path Trees". *Proceedings of SPIE ITCOM 2003*, Orlando, FL, September 2003.
- **Ruibiao Qiu** and Jonathan S. Turner, "Configuration of Reserved Delivery Subnetworks". *Proceedings of Service Infrastructure for Virtual Enterprises Symposium, IEEE Globecom 2002*, Taipei, Taiwan, November 2002.
- **Ruibiao Qiu**, Jerome R. Cox, and Fred Kuhns, "A Conference Control Protocol for Highly Interactive Video-conferencing". *Proceedings of IEEE Globecom 2002*, Taipei, Taiwan, November 2002.
- **Ruibiao Qiu**, Fred Kuhns, Jerome R. Cox, Jr. and Craig Horn, "Bringing Studio Quality Video-conferencing to Wide Area IP Networks with an Adaptation Layer Translator (ALX)". *Proceedings of IEEE International Conference on Multimedia and Expo (ICME 2002)*, Lausanne, Switzerland, August 2002.
- Wei Yu, **Ruibiao Qiu**, Jason Fritts, "Motion-JPEG2000 Video Transmission over Active Networks". *Proceedings of Image and Video Communications and Processing Conference at IS&T/SPIE Electronic Imaging 2003*, Santa Clara, CA, January 2003.
- **Ruibiao Qiu**, Fred Kuhns, Jerome Cox, Craig Horn, "High Quality Videoconferencing System for Wide Area IP Networks". *Proceedings of SPIE ITCOM 2002*, Boston, MA, 07/02.
- Wei Yu, **Ruibiao Qiu** and Jason Fritts, "Advantages of Motion-JPEG2000 in Video Processing". *Proceeding of SPIE Visual Communications and Image Processing (VCIP02)*, San Jose, CA, January 2002.
- **Ruibiao Qiu**, Jonathan S. Turner, "Improved Local Search Algorithm with Multi-Cycle Reduction for Minimum Concave Cost Network Flow Problems". Washington University, Department of Computer Science and Engineering, *Technical Report WUCS-04-74*, December 2004.
- **Ruibiao Qiu**, "Design Issues of Reserved Delivery Subnetworks". Washington University,

- Department of Computer Science and Engineering, *Technical Report WUCS-04-20*, March 2004.
- **Ruibiao Qiu**, Fred Kuhns, Jerome R. Cox Jr., and Craig Horn, “Adaptation Layer Translator (ALX) Design and Application”. Washington University, Department of Computer Science, *Technical Report WUCS-02-11*, March 2002.
- **Ruibiao Qiu** and Wei Yu, “An Efficient Quality Scalable Motion-JPEG2000 Transmission Scheme”. Washington University, Department of Computer Science, *Technical Report WUCS-01-37*, November 2001.

Presentations

- “Improving Fault Tolerance and End-to-end Performance in Reserved Delivery Subnetworks”, IEEE InfoCom, Miami, FL, March 2005.
- “Design Issues of Reserved Delivery Subnetworks”, Doctoral Dissertation Proposal, Department of Computer Science and Engineering, Washington University, March, 2004.
- “Sink Ordering Configuration Algorithms for Reserved Delivery Subnetworks”, Doctoral Research Seminar, Department of Computer Science and Engineering, Washington University, February, 2003.
- “Reserved Delivery Graph Construction”, Doctoral Research Seminar, Department of Computer Science, Washington University, February, 2002.
- “ALX Conference Control Protocol”, Doctoral Research Seminar, Department of Computer Science, Washington University, April, 2000.

Honors and Awards

- Google Summer of Code Grant 2005
- Student Travel Grant, IEEE InfoCom 2005
- Graduate Assistantship, Washington University in St. Louis (1998 - present)
- Phi Kappa Phi Honor Society
- Graduate Assistantship, Florida International University (1995 - 1997)
- Outstanding Undergraduate Scholarship of Beijing University of Posts and Telecommunications

Professional Affiliations

- Member, NetBSD Developer Team (ruibiao@netbsd.org)
- IEEE Computer Society (CS), Communication Society (ComSoc)
- ACM Data Communications Special Interest Group (SIGCOMM)
- Communication Society, Institute of Electronics, Information and Communication Engineers (IEICE)
- International Society for Optical Engineering (SPIE)

References

Dr. Jonathan S. Turner
 Henry Edwin Sever Professor
 Department of Computer Science
 and Engineering
 Washington University
 Bryan Hall 522
 St. Louis, MO 63130
 (314)935-8552
 jon.turner@wustl.edu
 Professor Turner is my academic
 advisor and is supervising my
 dissertation research.

Dr. Jerome R. Cox, Jr.
 Senior Professor
 Department of Computer Science
 and Engineering
 Washington University
 Jolly Hall 536
 St. Louis, MO 63130
 (314)935-4621
 jrc@cse.wustl.edu
 I worked with Dr. Cox in the ALX
 project to design and implement a
 studio quality video conference system
 over the Internet2 for scientific
 collaboration.

Dr. Jason E. Fritts
 Assistant Professor
 Department of Computer Science
 and Engineering
 Washington University
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 I worked with Dr. Fritts on the studies
 of Motion JPEG2000 for video
 applications, and JPEG2000 for
 medical image processing.