

LOPAMUDRA ROYCHOUDHURI
Associate Professor of Computer Science
Angelo State University
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Curriculum Vitae

HIGHLIGHTS

- Associate Professor, Computer Science, Angelo State University. Responsibilities include teaching programming, computer organization, modeling & animation, networking and security, and mentoring undergraduate research.
- Leadership role in computer networking and cyber security curriculum development. Responsible for (a) designing a certificate of Cybersecurity Technologies, (b) configuration and operation of the Computer Science Network/Security lab, and (c) conducting a summer workshop for Goodfellow Air Force Base personnel.
- Recipient of two internal grants at ASU – (i) a Faculty Research Enhancement grant in FY 2013 worth \$11,000 to set up a Networking and Security lab, (ii) a Faculty Research Enhancement grant in FY 2014 worth \$10,000 for research using PlanetLab, a global research testbed network.
- Active in the area of scholarship of teaching and learning. Designer of a QM (Quality Matters)-certified online course. Presenter at the Lilly Conference Austin, TX, January 4-8, 2018, and Lilly Conference on College Teaching, Oxford, OH, Nov 19-22, 2015.
- Author, “Towards an Engaging Hands-on Environment for a Beginning Networking and Security Undergraduate Class”, published and presented at IMSCI-EISTA 2018 (The 12th International Multi-Conference on Society, Cybernetics and Informatics - Education and Information Systems, Technologies and Applications), July 8 - 11, 2018, Orlando, Florida, USA.
- Mentor of multiple undergraduate research projects. Conducted research on Internet measurement with a student under a Faculty-Mentored Research grant in FY 2014. His poster won the Best Poster award at the Undergraduate Research Expo, UT Dallas, April 11, 2015. Advised multiple students for their Honors research projects in Fall 2018 and Spring 2019.
- Visiting Assistant Professor, Computer Science, Dominican University, River Forest, IL, September 2011 - June 2012. Responsible for the set-up of a state-of-the-art multi-platform laboratory classroom.
- Visiting Assistant Professor, Computer Science, Carroll University, Waukesha, WI, July 2009 - June 2011.

- Nine years of adjunct teaching at DePaul University, Chicago, and two years at Loyola University, Chicago, covering a wide spectrum of topics in computer science and telecommunications at both undergraduate and graduate levels. Consistent high evaluation scores. High competence in teaching online classes.
- PhD, Computer Science, DePaul University, Chicago, in the area of multimedia communications over the Internet. Degree received: Fall 2008.
- Outstanding Paper Award for "Real Time Analysis of Delay Variation for Packet Loss Prediction", *IEEE MMNS (Management of Multimedia Networks and Services) 2004*. Co-author of three journal and ten conference publications. Presented at national and international academic and industry conferences.
- Fourteen years of expertise in system design, data distribution, database administration, security and fault tolerance. Led and participated in the delivery of many highly visible projects for Fortune 500 customers. Certified Cisco, Oracle and Sybase Professional.

EDUCATION

- Ph.D., Computer Science, DePaul University, Chicago. Dissertation: Proactive Rate and Error Control for Packet Multimedia Transmissions based on Loss Prediction. Advisor: Dr. Ehab Al-Shaer.
- Master of Technology, Computer Science, Indian Statistical Institute, Calcutta, India, July 1988.
- Master of Science, Applied Math, University of Calcutta, India, July 1986. University-wide top position.
- Bachelor of Science, Mathematics, Presidency College, Calcutta, India, July 1982. University-wide top position.

RESEARCH EXPERIENCE

Doctoral Research, DePaul University (2000-2008). Projects include:

- *End-to-end Adaptive Quality Control Framework (2005-2008)* - A proactive error and rate control framework based on *packet loss prediction* and *on-line multimedia quality assessment* that achieves an optimal quality using multi-bitrate transmission and Forward Error Correction. The framework is applicable to IP multimedia, such as VoIP and IPTV.
- *Packet Loss Predictor (2004-2005)* - A probabilistic framework to predict packet loss and congestion, based on evidences of one-way delay and inter-packet gap variation and trends.
- *Audio Genome (2002-2003)* - A passive statistical measurement framework for on-line audio quality assessment for a multi-codec transmission.
- *Audio transmission experiment over the Internet (2000-2001)* - A large-scale audio transmission experiment over the Internet for a 12-month period in order to evaluate

the effects of delay variation, packet loss rate, type of encoder, and the correlation of such parameters on IP audio.

- *American Sign Language Project (2000)* - An automated synthesizer for ASL that allows the deaf to participate in the exchanges among a hearing audience in classrooms, meetings, and other venues. Areas covered: computer graphics, data storage and retrieval, and language processing.

RESEARCH INTERESTS

- *Anomaly detection in Real-time Streams using Data Mining* – Mining data streams is a comparatively new area, where anomalies in data streams are detected real time by applying data mining methods. Research interests include designing outlier sensors at receivers in distributed systems, such as multimedia rate and error control, overlay and P2P systems.

TEACHING EXPERIENCE

Assistant Professor, Computer Science, Angelo State University (*August 2012-Present*)

- Primary responsibility is teaching programming, computer organization, modeling & animation, networking and security classes.
- Responsible for introducing new classes on security and UNIX/LINUX operating systems.
- Responsible for configuration and operation of the CS Network/Security lab.
- Responsible for designing a certificate of Cyber Security Technologies.

Visiting Assistant Professor, Computer Science, Dominican University (*September 2011-June 2012*)

- Responsible for a multi-platform laboratory setup using state-of-the-art equipment and simulators. This included Linux desktops and servers that coexisted with MS Windows in a Virtual Machine environment.

Visiting Assistant Professor, Computer Science, Carroll University (*July 2009-June 2011*)

- Leadership role in designing course contents for four networking classes, and a new laboratory.
- Teaching topics included network security and protocols, database management, web applications, software engineering, and programming languages, at both undergraduate and graduate levels.
- Faculty advisor of 20 students. Led Capstone for 12 CS and IT majors in Spring 2011.

Lecturer, DePaul University (*2002-2012*) and Loyola University (*2007-2008*)

- Taught 30 sections of 3 graduate and 13 undergraduate/graduate pre-requisite classes.
- Topics (selected) - networking, Internet technologies, computer architecture, algorithms. Consistently obtained high evaluation scores. High competency in teaching large US and international online sections.

INDUSTRY EXPERIENCE

Systems Consultant & Database Professional (1988-2001)

- Expert in architecture design, programming, performance tuning, database administration and support across various platforms. Led and participated in high-visibility projects for Fortune 500 customers.
- Designed and delivered connectivity, data distribution and replication, security and fault tolerance solutions for real-time large systems. Provided professional services for a renowned database company.
- Certified Cisco, Oracle and Sybase Professional.

RESEARCH PUBLICATIONS

Journal publications

- Lopamudra Roychoudhuri and Ehab Al-Shaer, "Autonomic QoS Optimization of Real-time Internet Audio using Loss Prediction and Stochastic Control", *International Journal of Adaptive, Resilient and Autonomic Systems (IJARAS)*, July-September, 2010.
- Lopamudra Roychoudhuri, Ehab Al-Shaer and Gregory B. Brewster, "On the Impact of Loss and Delay Variation on Internet Packet Audio Transmission", *Journal of Computer Communication (JComCom)*, Volume 29, Issue 10, June 2006.
- Lopamudra Roychoudhuri and Ehab Al-Shaer, "Real-Time Packet Loss Prediction based on End-to-end Delay Variation", *IEEE Transactions on Network and Service Management (TNSM)*, Volume 2, Number 1, November 2005.

Conference publications (selected)

- Lopamudra Roychoudhuri and Ehab Al-Shaer, "Autonomic QoS Optimization of Real-time Internet Audio using Loss Prediction and Stochastic Control", *IFIP/IEEE Network Operations and Management Symposium (NOMS)*, Salvador, Brazil, April 2008.
- Lopamudra Roychoudhuri, Ehab Al-Shaer and Raffaella Settini, "Statistical Measurement Approach for On-line Audio Quality Assessment", *PAM (Passive and Active Measurement) Conference 2006*, March 30-31, 2006.
- Lopamudra Roychoudhuri and Ehab Al-Shaer, "Real-time Audio Quality Evaluation for Adaptive Multimedia Protocols", *IEEE MMNS (Management of Multimedia Networks and Services) 2005*, October 24-26, 2005.
- Lopamudra Roychoudhuri and Ehab Al-Shaer, "On Loss Prediction for Real-time Packet Audio", Poster Paper, *IEEE INFOCOM 2005*, March 14-17, 2005.
- Lopamudra Roychoudhuri and Ehab Al-Shaer, "Adaptive Rate Control for Real-time Packet Audio Based on Loss Prediction", *IEEE Globecom 2004*, November 30-December 2, 2004.
- Lopamudra Roychoudhuri and Ehab Al-Shaer, "Real Time Analysis of Delay Variation for Packet Loss Prediction", *IEEE MMNS (Management of Multimedia Networks and Services) 2004*, October 3-6, 2004. (Won Outstanding Student Paper Award).
- Lopamudra Roychoudhuri, Ehab Al-Shaer, "On Packet Loss Prediction for Real-time Packet Audio", *DePaul CTI PhD Symposium*, November 8, 2003.
- Lopamudra Roychoudhuri, Ehab Al-Shaer, Hazem Hamed, Gregory B. Brewster, "Audio Transmission over the Internet: Experiments and Observations", *IEEE ICC 2003*, May 11-15, 2003.

- Lopamudra Roychoudhuri, Ehab Al-Shaer, Hazem Hamed, Gregory B. Brewster, "On Studying the Impact of the Internet Delays on Audio Transmission " *IEEE IPOM 2002*, October 29-31, 2002.
- Jacob Furst et al, "Database Design for American Sign Language", *ISCA 15th International Conference on Computers and Their Applications (CATA-2000)*. 427-430.

RESEARCH PRESENTATIONS (Selected)

- "Autonomic QoS Optimization of Real-time Internet Audio using Loss Prediction and Stochastic Control", Technical Session, *Network Operations and Management (NOMS)*, Salvador, Brazil, April 8, 2008.
- "Statistical Measurement Approach for On-line Audio Quality Assessment", Technical Session, *Passive and Active Measurement Conference*, Adelaide, Australia, March 31, 2006.
- "On Loss Prediction for Real-time Packet Audio", Poster, *IEEE Infocom*, Miami, FL, USA, March 15, 2005.
- "Adaptive Rate Control for Real-time Packet Audio Based on Loss Prediction", Technical Session, *IEEE Globecom, 2004*, Dallas, TX, USA, November 30, 2004.
- "Legacy Wrapping with Replication: An Effective and Reliable Interfacing Architecture", Technical Sessions, *Sybase European and North American Users' Conferences*, Barcelona, Spain, October 1996, Orlando, FL, April 1997.

SCHOLARSHIP OF TEACHING AND LEARNING (Selected)

- Lopamudra Roychoudhuri, "Towards an Engaging Hands-on Environment for a Beginning Networking and Security Undergraduate Class", paper published and presented at IMSCI-EISTA 2018 (The 12th International Multi-Conference on Society, Cybernetics and Informatics - Education and Information Systems, Technologies and Applications), Orlando, Florida, July 8 - 11, 2018.
- Lopamudra Roychoudhuri, "Towards an Engaging Hands-on Environment for a Beginning Networking and Security Undergraduate Class", *JSCI (Journal of Systemics, Cybernetics and Informatics)*, September 2018.
- Presenter, "Learning Networking and Security in an Engaging Hands-on Environment", Lilly Conference, Austin, TX, January 4-8, 2018.
- Presenter, "Flipping a Highly Interactive Class—A Goal-Based Approach That Works", 35th Original Lilly Conference on College Teaching, Miami University, Oxford, OH, Nov 19-22, 2015.
- Presenter, "Module-based Course Design using a Learning Management System", at the ACCA (Associated Colleges of the Chicago Area) Scholarship of Pedagogy Symposium, October 15, 2011.
- Attendee, "Integrated Course Design", Workshop by Dee Fink, Center for Teaching and Learning Excellence, Dominican University, August 18 & 19, 2011.

INDUSTRY POSITIONS (Selected)

- *System Administrator, Stonewater Control Systems, Evanston, IL (2001 – 2002)*: Provided data distribution, security and fault tolerance solutions for a startup energy management

company. This involved administration of Linux, web servers, DB2 database, CISCO firewalls, and site redundancy.

- *System Administrator, CNA Insurance, Chicago (1998 – 2001):* Administrator of a large (~200 Gigabyte) claim administration system, providing 24x7 support and performance monitoring of the Oracle database and web servers. Designed and implemented solutions for successful Y2K migrations.
- *Senior Consultant, Professional Services, Sybase Inc., Chicago (1995 – 1998):* Led and participated in system architecture design, programming, performance tuning, database administration, data distribution and replication solutions for various Fortune 500 clients.

ACADEMIC SERVICES AND PROFESSIONAL ACTIVITIES (Selected)

- Member, Faculty Senate.
- Member, Faculty Research Enhancement Program Committee.
- Member, Academic Excellence Committee.
- Member, University Disciplinary Committee.
- Article Editor, SAGE Open Publications.
- Peer reviewer of many scholarly articles. A selected list of reviews:
 - *Conferences:* International Multi-Conference on Society, Cybernetics and Informatics: (IMSCI) 2018.
 - *Magazines:* IEEE Communications, May 2012.
 - *Journals:* Journal of Computer Communications (JComCom)