Cristian Lumezanu

Georgia Institute of Technology
School of Computer Science
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Atlanta, GA 30332

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Current Position

Postdoctoral Fellow, School of Computer Science, Georgia Institute of Technology

Research Interests

Designing, building, and measuring networked systems and protocols that are efficient and robust to misbehavior, abuse, and failures.

Education

Ph.D., Computer Science, University of Maryland, College Park   09/2009

    Advisors: Neil Spring, Bobby Bhattacharjee

M.S., Computer Science, University of Maryland, College Park   06/2006

B.S., Computer Science, Politehnica University, Bucharest, Romania   07/2002

Research Grants

Computing Innovation Postdoctoral Fellowship   2009-2011

    Sponsor: National Science Foundation

    Investigators: Cristian Lumezanu, Nick Feamster

    Amount: $267,500 for 2 years

Awards

Computer Science Department Fellowship, *University of Maryland*   2003-2005

Diploma of Excellency for Outstanding Professional Results, *Politehnica University, Bucharest*   2002

Merit-based Fellowship, *Politehnica University, Bucharest*   1997-2002

Professional Experience

Georgia Institute of Technology, Atlanta, GA

Postdoctoral fellow   11/2009 - present

    Working in the Network Operations and Internet Security Lab (NOISE) with Nick Feamster; current projects include anomalous network event detection using social media, application-specific traffic control for cloud providers, autonomous and flexible traffic engineering, and designing fine-grained contracts for Internet connectivity.

University of Maryland, College Park, MD

Research assistant 06/2004 - 10/2009

I designed and built networked systems and protocols that improve the efficiency and robustness of the Internet: PeerWise mutual-advantageous routing overlays, Sherpa location framework, OverSeq message ordering protocol, Pistachio static analysis tool for detecting bugs in network protocol implementations; I also performed measurement studies on triangle inequality violations in the Internet latency space.

Teaching assistant, Computer Networks (CMSC 711) Spring 2007

Teaching assistant, Computer Science II (CMSC 214) Fall 2003, Spring 2004

Alcatel-Lucent Bell Laboratories, Murray Hill, NJ

Researcher/Intern Summer 2009

I designed and built a system to eliminate redundant traffic and increase available bandwidth in cellular wireless networks; I studied the effect of packet loss on redundancy elimination.

IBM T.J. Watson Research Center, Hawthorne, NY

Researcher/Intern Summer 2005, Summer 2006

I designed optimization-based resource allocation protocols for distributed information dissemination applications.

Politehnica University, Bucharest, Romania

Instructor, Cisco Networking Academy Program 03/2001 - 07/2002

Teaching Assistant, Communication Protocols Spring 2002

Netappi Software, Bucharest, Romania

Software engineer 04/2002 - 06/2003

Publications

Journal Publications

1. PeerWise: Symbiotic Relationships in Internet Routing Overlays
   Cristian Lumezanu, Randy Baden, Dave Levin, Neil Spring, Bobby Bhattacharjee
   ACM/IEEE Transactions on Networking, to appear

2. Rule-Based Static Analysis of Network Protocol Implementations
   Octavian Udrea, **Cristian Lumezanu**, Jeffrey S. Foster
   Journal of Information and Computation, Special Issue on Foundations and Automated Reasoning, volume 206, issues 2-4, 2008

Conference Publications

3. The Effect of Packet Loss on Redundancy Elimination in Cellular Wireless Networks
   Cristian Lumezanu, Katherine Guo, Neil Spring, Bobby Bhattacharjee
   ACM Sigcomm Internet Measurement Conference (IMC), 2010

4. Triangle Inequality Variations in the Internet
   Cristian Lumezanu, Randy Baden, Neil Spring, Bobby Bhattacharjee
   ACM Sigcomm Internet Measurement Conference (IMC), 2009

5. Symbiotic Relationships in Internet Routing Overlays
   Cristian Lumezanu, Randy Baden, Dave Levin, Neil Spring, Bobby Bhattacharjee
   Usenix Symposium on Networked Systems Design and Implementation (NSDI), 2009

6. Triangle Inequality and Routing Policy Violations in the Internet
   Cristian Lumezanu, Randy Baden, Neil Spring, Bobby Bhattacharjee
   Lecture Notes in Computer Science, vol. 5448 (Sue B. Moon, Renata Texeira and Steve Uhlig, Editors), pages 45-56, Springer-Verlag, 2009
   also in *Passive and Active Measurement Conference (PAM), 2009*

7. Online Optimization for Latency Assignment in Distributed Real-Time Systems
   Cristian Lumezanu, Sumeer Bhola, Mark Astley
   IEEE International Conference on Distributed Computing Systems (ICDCS), 2008

8. Measurement Manipulation and Space Selection in Network Coordinates
   Cristian Lumezanu, Neil Spring
   IEEE International Conference on Distributed Computing Systems (ICDCS), 2008

9. Decentralized Message Ordering for Publish/Subscribe Systems
   Cristian Lumezanu, Neil Spring, Bobby Bhattacharjee
   Lecture Notes in Computer Science, vol. 4290 (Marteen van Steen and Michi Henning, Editors), pages 162-179, Springer-Verlag, 2006
   also in *ACM/IFIP/Usenix International Middleware Conference, 2006*

10. Rule-Based Static Analysis of Network Protocol Implementations
    Octavian Udrea, **Cristian Lumezanu**, Jeffrey S. Foster
    Usenix Security Symposium, 2006

11. Utility Optimization for Event-Driven Distributed Infrastructures
    Cristian Lumezanu, Sumeer Bhola, Mark Astley
    IEEE International Conference on Distributed Computing Systems (ICDCS), 2006

Workshop Publications

12. Don't Love Thy Nearest Neighbor
    Cristian Lumezanu, Dave Levin, Bo Han, Neil Spring, Bobby Bhattacharjee
    International Workshop on Peer-to-Peer Systems (IPTPS), 2010

13. Motivating Participation in Internet Routing Overlays
    Dave Levin, Randy Baden, **Cristian Lumezanu**, Neil Spring, Bobby Bhattacharjee
    ACM Sigcomm Workshop on the Economics of Networks, Systems, and Computation (NetEcon), 2008

14. PeerWise Discovery and Negotiation of Faster Paths
    Cristian Lumezanu, Dave Levin, Neil Spring
    ACM Sigcomm Workshop on Hot Topics in Networking (HotNets), 2007

15. Boycotting and Extorting Nodes in an Internetwork
    Dave Levin, Adam Bender, **Cristian Lumezanu**, Neil Spring, Bobby Bhattacharjee
    Workshop on the Economics of Networked Systems and Incentive-Based Computing (NetEcon+IBC), 2007

Posters and Technical Reports

16. Microcontracts for Internet Connectivity
    Vytautas Valancius, **Cristian Lumezanu**, Nick Feamster, Ramesh Johari, Vijay Vazirani
    GT-CS-10-17, Georgia Institute of Technology, 2010

17. Autonomous Traffic Engineering with Self-Configuring Topologies
    Srikanth Sundaresan, **Cristian Lumezanu**, Nick Feamster, Pierre François
    ACM Sigcomm, 2010

18. Online Optimization for Latency Assignment in Distributed Real-Time Systems
    Cristian Lumezanu, Sumeer Bhola, Mark Astley
    IBM Research Report 24503, IBM TJ Watson Research Center, 2008

19. Playing Vivaldi in Hyperbolic Space
    Cristian Lumezanu, Neil Spring
    CS-TR-4843, University of Maryland, College Park, 2006

Theses and Scholarly Papers

20. Using Internet Geometry to Improve End-to-end Communication Performance
    Cristian Lumezanu
    Ph.D. Thesis, University of Maryland, College Park, 2009

21. Decentralized Message Ordering
    Cristian Lumezanu
    Masters Scholarly Paper, University of Maryland, College Park, 2006

22. ePetitioner: Electronic Petitioning System
    Cristian Lumezanu
    B.S. Thesis, Politehnica University, Bucharest, 2002

Talks and Presentations

1. Don't Love Thy Nearest Neighbor
   International Peer-to-Peer Symposium, San Jose, CA, April 2010

2. Triangle Inequality Variations in the Internet
   Internet Measurement Conference, Chicago, IL, November 2009

3. Redundancy Elimination in Cellular Wireless Networks
   Alcatel-Lucent Bell Laboratories, Murray Hill, NJ, August 2009

4. Using Internet Geometry to Improve End-to-End Communication
   Georgia Tech, Atlanta, GA, June 2009

5. Symbiotic Relationships in Internet Routing Overlays
   Networked Systems Design and Implementation Symposium, Boston, MA, April 2009

6. Don't Love Thy Nearest Neighbor
   Graduate Research Interaction Day, College Park, MD, April 2009

7. Triangle Inequality and Routing Policy Violations in the Internet
   Passive and Active Measurement Conference, Seoul, Korea, April 2009

8. Measurement Manipulation and Node Selection in Network Coordinates
   International Conference on Distributed Computing Systems, Beijing, China, June 2008

9. PeerWise Discovery and Negotiation of Faster Paths
   Graduate Research Interaction Day, College Park, MD, April 2008

10. PeerWise Discovery and Negotiation of Faster Paths
    Workshop on Hot Topics in Networking, Atlanta, GA, November 2007

11. Decentralized Message Ordering for Publish/Subscribe Systems
    International Middleware Conference, Melbourne, Australia, December 2006

12. Online Optimization for Latency Assignment in Distributed Real-Time Systems
    IBM T.J. Watson Research Center, Hawthorne, NY, August 2006

13. Utility Optimization for Event-Driven Distributed Infrastructures
    International Conference on Distributed Computing Systems, Lisbon, Portugal, July 2006

14. Utility Optimization for Event-Driven Distributed Infrastructures
    IBM T.J. Watson Research Center, Hawthorne, NY, August 2005

Professional Service

Member in Professional Societies

Association for Computing Machinery (ACM)

Sigma XI

Committee member

ACM Sigcomm, Poster and demo session   2010

Reviewer

Transactions on Multimedia   2010

Transactions on Parallel and Distributed Systems   2010

International Conference of Measurement and Modeling of Computer Systems (SIGMETRICS)   2006, 2007, 2008, 2009

International Conference on Computer Communications (Infocom)   2005, 2009

Internet Measurement Conference (IMC)   2006, 2008

International Conference on Network Protocols (ICNP)   2007

Workshop on Real Large Distributed Systems (WORLDS)   2006

International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSS-DAV)   2006

International Conference on High Performance Computing (HiPC)   2006

Symposium on Networked Systems Design and Implementation (NSDI)   2006

International Peer-to-Peer Symposium (IPTPS)   2005

International Workshop on Hot Topics in Peer-to-Peer Systems (HotP2P)   2004

Patents

System and method for distributed utility optimization in a messaging infrastructure
United States Patent 7,689,695

Distributed online optimization for latency assignment and slicing
United States Patent Application 20090178047

Method and apparatus for reducing redundant traffic in communication networks
Patent filed 01/15/2010, serial no. 12/688,307 (docket no. ALU/805939)

Method and apparatus for reducing effects of lost packets on redundancy reduction in communication networks

Continuation of patent "Method and apparatus for reducing redundant traffic in communication networks" (docket no. 807009-US-CIP)

Method and apparatus for reducing application update traffic in cellular networks
Patent filed 06/30/2010, serial no. 12/826,955 (docket no. 805938-US-NP)