

Ricardo V. Oliveira

Ph.D. Candidate
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Education

Ph.D. Computer Science, University of California, Los Angeles, 2005-2009.

Advisor: Dr. Lixia Zhang.

Ph.D. Thesis: "Understanding the Internet AS-level Structure"

M.Sc. Computer Science, University of California, Los Angeles, 2005.

B.E. Electrical Engineering, Engineering Faculty of University of Porto, Portugal, 2001,
with summa cum laude honors.

Experience

Summer Intern. *Juniper Networks.*

Fast and scalable application identification in traffic flows. Supervisor: Dr. Qingming Ma.

June 2008-September 2008.

Summer Intern. *Thomson Research Labs-Paris.*

Automatic inference of root cause of routing induced traffic anomalies. Supervisors: Dr. Christophe Diot and Dr. Renata Teixeira.

September 2007-December 2007.

Summer Intern. *AT&T Labs-Research.*

Completeness of the AS-level topology as captured from inter-domain routing paths. Supervisors: Dr. Walter Willinger and Dr. Dan Pei.

June 2007-September 2007.

Telecommunications Engineer. *TMN-National Mobile Telecommunications-Portugal.*

Design of monitoring systems for GSM radio and switching networks.
2002-2003.

Software Engineer. *Oberonsis-Portugal.*

Design of a stock exchange simulator for market transactions.
2001-2002.

Software Engineer. *Atractor-Portugal.*

Design of a math educational game using an ultrasonic motion detector.
2000-2001.

Projects

Cyclops (<http://cyclops.cs.ucla.edu>)

Designed and developed Cyclops, a system to detect prefix hijacks and network misconfigurations. The system relies on hundreds of sensors across the Internet that monitor routing messages, and will trigger alerts when observed data differs from expected behavior. I was responsible for developing the front-end (php) and the back-end (mysql, perl, c++). The site has 350+ registered companies and 2000+ unique visits/month and was widely presented in technical conferences as the North American Network Operators Group.

Internet topology collection (<http://irl.cs.ucla.edu/topology>)

Developed a topology collection engine that periodically crawls routing information and infers network connectivity at the level of Autonomous Systems. First hit when googling for “Internet topology data”, 2000+ unique visits/month.

Teaching

CS118 – Computer Networks.

Teaching assistant. Undergraduate level course on computer networks fundamentals. Taught in Spring 2008.

Awards and Fellowships

Edward K. Rice Outstanding Doctoral Student Award

2009.

Cisco Outstanding Graduate Student Research Award

2009.

UCLA Dissertation Fellowship Award.

2008-2009.

UCLA Internet Research Lab Outstanding Achievement Award

2007-2008.

***Fundacao para a Ciencia e Tecnologia* Ph.D. Scholarship**

2005-2008.

***Fundacao para a Ciencia e Tecnologia* M.Sc. Scholarship**

2004-2005.

Professional Activities

Reviewer

ACM/IEEE Transactions on Networking
IEEE Infocom 2008
IEEE ICC 2007
IEEE Globecom 2006
IEEE ICC 2004
IEEE CCNC 2004

Membership

IEEE Member (Communications Society)
ACM Member (SIGCOMM)
Portuguese American Post-Graduate Society (PAPS)
Co-founder of the UCLA Portuguese Student Association

IETF

Active participant in IETF Routing Research Group (RRG)

Publications

2010

Ricardo Oliveira, Dan Pei, Walter Willinger, Beichuan Zhang, Lixia Zhang, "The (in)Completeness of the Observed Internet AS-level Structure", to appear in IEEE/ACM Transactions on Networking, 2010.

2009

Ricardo Oliveira, Mohit Lad, Lixia Zhang, "Understanding the Challenges in Securing Internet Routing", to appear in IEEE FIST Workshop, July 2009.

Ricardo Oliveira, Beichuan Zhang, Dan Pei, Lixia Zhang, "Quantifying Path Exploration in the Internet", in IEEE/ACM Transactions on Networking, 2009. An earlier version appeared in ACM IMC 2006.

Italo Cunha, Fernando Silveira, **Ricardo Oliveira**, Renata Teixeira, Christophe Diot, "Uncovering Artifacts of Flow Measurement Tools", in Passive and Active Measurement Conference, April 2009.

He Yan, **Ricardo Oliveira**, Kevin Burnett, Dave Matthews, Lixia Zhang, Dan Massey, "BGPmon: A real-time, scalable, extensible monitoring system", in Cybersecurity Applications and Technologies Conference for Homeland Security (CATCH), March 2009.

2008

Ying-Ju Chi, **Ricardo Oliveira**, Lixia Zhang, “Cyclops: The AS-level Connectivity Observatory”, in ACM SIGCOMM Computer Communications Review (CCR), October 2008.

Ricardo Oliveira, Dan Pei, Walter Willinger, Beichuan Zhang, Lixia Zhang, “In Search of the elusive Ground Truth: The Internet's AS-level Connectivity Structure”, in ACM SIGMETRICS, Annapolis, USA, June 2008.

2007

Ricardo Oliveira, Mohit Lad, Beichuan Zhang, Lixia Zhang, “Geographically Informed Inter-Domain Routing”, IEEE ICNP, Beijing, China, October 2007.

Mohit Lad, **Ricardo Oliveira**, Dan Massey, Lixia Zhang, “Inferring the Origin of Routing Changes using Link Weights”, IEEE ICNP, Beijing, China, October 2007.

Ricardo Oliveira, Beichuan Zhang, Lixia Zhang, “Observing the Evolution of Internet AS Topology”, in ACM SIGCOMM, Kyoto, Japan, August 2007.

Ricardo Oliveira, Ying-Ju Chi, Ioannis Pefkianakis, Mohit Lad, Lixia Zhang, “Visualizing Internet Topology Dynamics with Cyclops”, in ACM SIGCOMM (poster session), Kyoto, Japan, August 2007.

Mohit Lad, **Ricardo Oliveira**, Beichuan Zhang, Lixia Zhang, “Understanding the Resiliency of Internet Topology Against False Origin Attacks”, in IEEE/IFIP DSN, Edinburgh, UK, June 2007.

2006

Ricardo Oliveira, Beichuan Zhang, Dan Pei, Rafit Izhak-Ratzin, Lixia Zhang, “Quantifying Path Exploration in the Internet”, in ACM SIGCOMM/USENIX Internet Measurement Conference(IMC), Rio de Janeiro, Brazil, October 2006.

Mohit Lad, **Ricardo Oliveira**, Beichuan Zhang, Lixia Zhang, “Understanding the Impact of BGP Prefix Hijacks”, ACM SIGCOMM (poster session), Pisa, Italy, September 2006.

Beichuan Zhang, Vamsi Kambhampati, Daniel Massey, **Ricardo Oliveira**, Dan Pei, Lan Wang, Lixia Zhang “A Secure and Scalable Internet Routing Architecture (SIRA)”, ACM SIGCOMM (poster session), Pisa, Italy, September 2006.

Vidyut Samanta, **Ricardo Oliveira**, Advait Dixit, Parixit Aghera, Petros Zerfos, Songwu Lu, “Impact of Video Encoding Parameters on Dynamic Video Transcoding”, in IEEE COMSWARE, Delhi, India, January 2006.

2005

Ricardo Oliveira, Rafit Izhak-Ratzin, Beichuan Zhang, Lixia Zhang, “Measurement of Highly Active Prefixes in BGP”, in IEEE GLOBECOM, St. Louis, USA, November 2005.

Other Publications

Ricardo Oliveira, Dan Pei , Walter Willinger, Beichuan Zhang, Lixia Zhang, "Quantifying the Completeness of the Observed Internet AS-level Structure", Technical Report, UCLA CS Department, TR 080026, September 2008.

Italo Cunha, Fernando Silveira, **Ricardo Oliveira**, Renata Teixeira, Christophe Diot, "Do you trust what flow measurement tools tell you?", Technical Report, Thomson, CR-PRL-2008-07-0002

Ricardo Oliveira, Fernando Silveira, Renata Teixeira, Christophe Diot, "The elusive Effect of Routing Dynamics on Traffic Anomalies", Technical Report, Thomson, CR-PRL-2008-02-0001

Ricardo Oliveira, Mohit Lad, Beichuan Zhang, Dan Pei, Daniel Massey, Lixia Zhang, "Placing BGP Monitors in the Internet", Technical Report, UCLA CS Department, TR 060017, May 2006.

Patents

"f-DFA: Fast and scalable application identification using signature fingerprints", with Qingming Ma and Bryan Burns (U.S. patent pending).

"Methods to quantify the completeness of the observed Internet AS-level structure", with Dan Pei, Walter Willinger, Beichuan Zhang and Lixia Zhang (U.S. patent pending).

"Methods to infer the status of a BGP session", with Dan Pei, Walter Willinger, Beichuan Zhang and Lixia Zhang (U.S. patent pending).

Talks

"In Search of the elusive Ground Truth: The Internet's AS-level Connectivity Structure", SIAM Annual Meeting, July 2008.

"Cyclops: the Internet AS-level Observatory", NANOG 43, June 2008.

"Geographically Informed Inter-Domain Routing", Electrical Engineering Department, University of Porto, Portugal, December 2007.

"Observing the Evolution of Internet AS Topology", Computer Science Department, Princeton University, New Jersey, August 2007.

“Visualizing Internet Topology Dynamics with Cyclops”, NANOG 40, June 2007.

Programming Skills

Perl, Shell scripting, C, C++, SQL, PHP, Javascript.

Languages

Fluent in Portuguese, Spanish and English.
Understands French and Italian.