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APPOINTMENTS

Senior Research Scientist, Deutsche Telekom Laboratories and the Technical University of Berlin, October 2008 –.
Research Intern, Telefónica Research, Barcelona, January-May 2008.

EDUCATION

Ph.D. in Computer Science, Boston University, 2008.
Dissertation Title: “*Overlay Network Creation and Maintenance with Selfish Users*”.
Dissertation Committee: Azer Bestavros, Nikolaos Laoutaris, John W. Byers.
Diploma in Electronic and Computer Engineering, Technical University of Crete, 2002.

RESEARCH INTERESTS & ACCOMPLISHMENTS

My research interests include the design and analysis of computer networks and content distribution systems with main applications in overlay network creation and maintenance, service deployment, content routing, bulk data transfers, distributed caching, and network security.

Research Projects:

- *ISP-P2P Collaboration*: We design and evaluate a service, provided by an ISP, to improve the connectivity of P2P users based on the network information available to the ISP. Our results show that the performance gain for P2P users is significant and so is the reduction of transit cost for ISPs that deploy such a service (2008-today).
- *Delay Tolerant Bulk Transfers on the Internet* [6]: We design and evaluate scheduling algorithms, some assisted by network-attached storage, to transfer delay tolerant bulk data over the Internet with the most cost effective way (2008-today).
- *Selfish Neighbor Selection*: We re-examine the problem of overlay network creation, taking into consideration the existence of selfish overlay nodes. We develop a general game-theoretic framework that provides a unified approach to modeling neighbor selection procedures on behalf of selfish nodes [9]. To capitalize on the substantial performance improvement of best response wirings for overlay nodes, we design, deploy and evaluate, EGOIST, a selfish neighbor selection inspired prototype [7]. We also show the benefits selfish neighbor selection may offer to applications, e.g. swarming applications [2, 8] (2006-today, see also: <http://csr.bu.edu/sns>).
- *Distributed Facility Location* [1, 10]: We design and evaluate distributed algorithms for scalable and efficient service deployment and migration (2006-today, see also: <http://csr.bu.edu/df1>).
- *Distributed Selfish Caching*: We studied resource allocation and sharing issues where the exposed resource is the storage of each (selfish) node, and the nodes cooperate using on-line caching algorithms. We identified the causes and implications of mistreatment in distributed caching groups [4, 11], and we designed a novel framework to mitigating mistreatment in such groups [5, 12] (2005-2007, see also: <http://csr.bu.edu/dsc>).
- *A Stable Election Protocol for clustered heterogeneous wireless sensor networks* [15]: We designed and evaluated distributed leader election protocols to prolong the lifetime of heterogeneous wireless networks (2003-2004, see also: <http://csr.bu.edu/sep>)

- *The effect of router buffer size on the transport protocols performance* [14]: We studied the robustness of memory-reduced routers in the presence of aggressive high speed transport protocols for bulk data transfers (2003-2005).
- *A Large Deviations approach to Statistical Traffic Anomaly Detection* [3, 13]: We developed a Large Deviations framework to rigorously identify, in real-time, Network Anomalies by assessing deviations of empirical measures in computer networks (2004-2008).

HONORS AND AWARDS

Boston University Graduate Fellow, 2003–2008
 Honorable Mention Award from the Center for Information and Systems Engineering - Best Posters presented at the Boston University Science and Engineering Research Symposium, 2007.
 2nd Place Award - Best Posters for Boston University/Computer Science Research Day, 2007.
 Author of a conference paper [12] that was invited for fast track journal publication, 2006.
 Honorable Mention Award from the Center for Information and Systems Engineering - Best Posters presented at the Boston University Science and Engineering Research Symposium, 2006.
 2nd Place Award - Best Posters for Boston University/Computer Science Research Day, 2006.
 1st ERICSSON Award of Excellence in Telecommunications, 2003.
 Graduating ranking second, Class of 2002, Technical University of Crete, 2002.
 Annual Scholarship of the Technical Chamber of Greece , 1999-2000.
 Annual Scholarship of the Greek National Fellowship Foundation, 1998-2000.
 Academic Excellence Award, Greek Ministry of Labor and Social Affairs, 1998-2000.
 Annual Scholarship of the Paidia Foundation, 1999-2000.
 Honorary Diploma of the municipality of Piraeus for the Social, Environmental and Economic analysis of the City of Piraeus, 1996.
 1st Awards of Excellent Studies from Greek Ministry of Education, 1990-1996.

PUBLICATIONS

REFEREED JOURNALS

- [1] G. Smaragdakis, N. Laoutaris, K. Oikonomou, I. Stavrakakis, and A. Bestavros, “Distributed Server Migration for Scalable Internet Service Deployment,” *IEEE/ACM Transactions on Networking*, [conditionally accepted].
- [2] G. Smaragdakis, N. Laoutaris, P. Michiardi, A. Bestavros, J. W. Byers, and M. Roussopoulos, “Distributed Network Formation for n-way Broadcast Applications,” *IEEE Transactions on Parallel and Distributed Systems*, [conditionally accepted].
- [3] I. C. Paschalidis and G. Smaragdakis, “Spatio-Temporal Network Anomaly Detection by Assessing Deviations of Empirical Measures,” *IEEE/ACM Transactions on Networking*, vol. 17, no. 3, pp. 685–697, June 2009.
- [4] N. Laoutaris, G. Smaragdakis, A. Bestavros, I. Matta, and I. Stavrakakis, “Distributed Selfish Caching,” *IEEE Transactions on Parallel and Distributed Systems*, vol. 18, no. 10, pp. 1361–1376, October 2007.
- [5] G. Smaragdakis, N. Laoutaris, A. Bestavros, I. Matta, and I. Stavrakakis, “Mistreatment-Resilient Distributed Caching,” *Computer Networks*, vol. 51, no. 11, pp. 2917–2937, August 2007.

REFEREED CONFERENCES

- [6] N. Laoutaris, G. Smaragdakis, P. Rodriguez, and R. Sundaram, “Delay-Tolerant Bulk Data Transfer on the Internet,” in *Proceedings of ACM SIGMETRICS/Performance 2009*, Seattle, WA, June 2009.
- [7] G. Smaragdakis, V. Lekakis, N. Laoutaris, A. Bestavros, J. W. Byers, and M. Roussopoulos, “EGOIST: Overlay Routing using Selfish Neighbor Selection,” in *Proceedings of ACM CoNEXT 2008*, Madrid, Spain, December 2008.
- [8] G. Smaragdakis, N. Laoutaris, P. Michiardi, A. Bestavros, J. W. Byers, and M. Roussopoulos, “Swarming on optimized graphs for n-way broadcast,” in *Proceedings of IEEE INFOCOM 2008*, Phoenix, AZ, April 2008.
- [9] N. Laoutaris, G. Smaragdakis, A. Bestavros, and J. W. Byers, “Implications of Selfish Neighbor Selection in Overlay Networks,” in *Proceedings of IEEE INFOCOM 2007*, Anchorage, AK, May 2007.

- [10] N. Laoutaris, G. Smaragdakis, K. Oikonomou, I. Stavrakakis, and A. Bestavros, "Distributed Placement of Service Facilities in Large-Scale Networks," in *Proceedings of IEEE INFOCOM 2007*, Anchorage, AK, May 2007.
- [11] N. Laoutaris, G. Smaragdakis, A. Bestavros, and I. Stavrakakis, "Mistreatment in Distributed Caching Groups: Causes and Implications," in *Proceedings of IEEE INFOCOM 2006*, Barcelona, Spain, April 2006.
- [12] G. Smaragdakis, N. Laoutaris, I. Matta, A. Bestavros, and I. Stavrakakis, "A Feedback Control Approach to Mitigating Mistreatment in Distributed Caching Groups," in *Proceedings of IFIP Networking 2006*, Coimbra, Portugal, May 2006.
- [13] I. C. Paschalidis and G. Smaragdakis, "A Large Deviations Approach to Statistical Traffic Anomaly Detection," in *Proceedings of IEEE CDC 2006*, San Diego, CA, December 2006.
- [14] D. Barman, G. Smaragdakis, and I. Matta, "The Effect of Router Buffer Size on HighSpeed TCP Performance," in *Proceedings of IEEE Globecom 2004 - Global Internet and Next Generation Networks*, Dallas, TX, December 2004.
- [15] G. Smaragdakis, I. Matta, and A. Bestavros, "SEP: A Stable Election Protocol for clustered heterogeneous wireless sensor networks," in *Proceedings of Second International Workshop on Sensor and Actor Network Protocols and Applications (SANPA 2004)*, Boston, MA, August 2004.

UNDER SUBMISSION

- [16] G. Smaragdakis, N. Laoutaris, A. Bestavros, and J. W. Byers, "Selfish Overlay Network Formation," Under Submission, 2009.

THESES

- [17] G. Smaragdakis, "Overlay Network Creation and Maintenance with Selfish Users," *Computer Science Department, Boston University*, September 2008.
- [18] —, "TCP Performance over UMTS Network," *Diploma Thesis, Electronic and Computer Engineering Department, Technical University of Crete*, October 2002.

PROFESSIONAL SERVICE

IEEE AOC 2010 (Publicity Chair), IEEE HotWeb 2006 (Publication Chair), IEEE ICNP 2005 (Web Administrator), PAM 2005 (Local Arrangements), IEEE ASWN 2004 (Publication Chair).

Technical Program Committee Member for: ACM CoNEXT 2009 student workshop, IEEE Globecom 2009, ACM Simplex 2009, SSS 2009, ACM CoNEXT 2008 (Shadow).

Reviewer for IEEE/ACM Transactions on Networking, IEEE Transactions on Parallel and Distributed Systems, ACM SIGCOMM Computer Communication Review, Elsevier Journal of Computer Networks, Elsevier Journal of Computer Communications, Telecommunication Systems Journal, IEEE INFOCOM (2010, 2009, 2007, 2006, 2005), ACM SIGMETRICS (2008, 2007), ACM IMC 2009, ACM CoNEXT 2009, ACM PODC 2008, IEEE ICNP (2005, 2004), IEEE IPDPS 2010, IEEE Global Internet Symposium 2007, IEEE ICDCS (2003), IEEE ICC (2005, 2004), IEEE RTSS 2004, ACM Multimedia 2004, IEEE PIMRC 2005.

INVITED TALKS

- "ORACLE: an ISP-P2P collaboration system", University of Athens (03/2009).
- "Selfish Overlay Network Formation: Resource Allocation Strategies and Implications to Protocol Design", Technische Universität München (12/2009), Centre Tecnològic de Telecomunicacions de Catalunya (04/2008); Deutsche Telekom Laboratories Berlin (03/2008); Telefónica Research Barcelona (03/2008); Boston University (12/2007).
- "Resource Allocation Strategies for Scalable Content Delivery on the Internet", Boston University (10/2007).
- "The Selfish Neighbor Selection Problem In Overlay Networks", University of Athens (07/2007).
- "A Large Deviations Approach to statistical Traffic Anomaly Detection", Boston University (02/2006).

RESEARCH EXPERIENCE

Research and Teaching Fellow September 2003 – September 2008
Boston University, Computer Science Department, Web and Internetworking Group.

Affiliated Researcher July - August 2006
University of Athens, Department of Informatics and Telecommunications.

Affiliated Researcher April - August 2003
Greek National Center for Scientific Research, Institute of Informatics and Telecommunications.

Undergraduate Affiliated Student September 2001 - August 2002
Technical University of Crete, Electronic and Computer Engineering Department, Information and Computer Networks Laboratory.

TEACHING EXPERIENCE

Teaching Fellow for: *Fundamentals of Computing Systems* (CS 350; Spring 2007), *Introduction to Data Structures* (CS 112; Spring 2005), *Quantitative Methods for Information Systems* (MET CS 546; Summer 2005), *Introduction to Computers* (CS 101; Spring 2006, Fall 2005, Spring 2004).

PROFESSIONAL EXPERIENCE

Telecommunications Engineer August - September 2002
Value Added Services, NOKIA Networks, NOKIA Hellas.

Software Developer September 2001 - February 2002
Technical University of Crete, Electronic and Computer Engineering Department, Laboratory of Distributed Multimedia, Information Systems and Applications.

Programmer August - September 1999, August 2001
Social Security Institute, Greece.

PROGRAMMING SKILLS

Programming: C/C++, Java, Perl, Python, Tcl, SQL, HTML.
Operating Systems: UNIX, Linux, Windows, CISCO IOS.
Tools: ns-2 Network Simulator, Matlab, Tomlab/Cplex, VHDL.

ACTIVITIES

Member of ACM, IEEE, Technical Chamber of Greece. Elective Member of department assembly of Electronic and Computer Engineering Department and University Senate, Technical University of Crete, 2000-2001.

last update: November 17th, 2009.