

# KONSTANTINOS PELECHRINIS

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RESEARCH INTERESTS My research interests include wireless networking. I am involved in: **(a)** protocol design, **(b)** real world experimentation, and **(c)** performance analysis for:

- Security and trust issues of wireless networks
  - Coping with jamming attacks at the PHY and MAC layer.
  - Building trust models for devices in wireless networks.
  - Thwarting higher layer DoS attacks.
- Exploitation of MIMO technology
  - Understanding diversity through experimentation.
  - Design of higher layer protocols to exploit MIMO for successive interference cancelation.

Other research interests:

- Mathematical foundations of communication networks.
- Graph mining of the internet.
  - Design of a realistic graph generator for the internet at the AS level topology

More details about my research work can be found at:

<http://www.cs.ucr.edu/~kpele/projects.html>

PHD THESIS Security and Performance Considerations in Wireless Networks - Supervisor: Prof. S. V. Krishnamurthy  
(Summer 2010)

MASTER THESIS Design of a measurement driven anti - jamming system - Supervisor: Prof. S. V. Krishnamurthy  
(Spring 2008)

UNDERGRAD DIPLOMA THESIS Analysis of Intrusion Detection Systems - theoretical aspects and statistical modeling of data fusion algorithms - Supervisor: Prof. V. Maglaris  
(February 2006 – June 2006)

## EDUCATION

- University of California Riverside, USA  
PhD in Computer Science, Spring 2008 - Summer 2010 (current GPA: 4.0/4.0)
- University of California Riverside, USA  
M.S. in Computer Science, September 2006 - Spring 2008 (GPA: 4.0/4.0)
- National Technical University of Athens, Greece  
Diploma in Electrical and Computer Engineering, June. 2006 (9.42/10)

## PUBLICATIONS

### Journals and Magazines

- **K.Pelechrinis**, C.Koufogiannakis and S.V.Krishnamurthy, "On the Efficacy of Frequency Hopping in Coping with Jamming Attacks in 802.11 Networks", under revision for IEEE Transactions on Wireless Communications.
- **K.Pelechrinis**, M.Iliofotou and S.V.Krishnamurthy, "Denial of Service Attacks in Wireless Networks: The case of Jammers", to appear in IEEE Communications Surveys and Tutorials.
- L.K.Law, **K.Pelechrinis**, S.V.Krishnamurthy and M.Faloutsos, "Downlink Capacity of Hybrid Cellular - Ad hoc Networks", to appear in IEEE/ACM Transactions on Networking.

### Conferences

- **K.Pelechrinis**, T.Salonidis, H.Lundgren and N.Vaidya, "Experimental Characterization of 802.11n Link Quality at High Rates", to appear in the 5<sup>th</sup> ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation and Characterization (WiNTECH 2010) in conjunction with ACM MobiCom 2010, Chicago, Illinois, USA, September, 2010.
- E.Gelal, **K.Pelechrinis**, I.Broustis, S.V.Krishnamurthy, S.Mohammed, A.Chockalingam and S.Kasera, "On the Impact of MIMO Diversity on Higher Layer Performance", in the 30<sup>th</sup> IEEE International Conference on Distributed Computing Systems (ICDCS '10), Genoa, Italy, June, 2010.
- T.Lappas, **K. Pelechrinis**, M.Faloutsos, S.V.Krishnamurthy, "A Simple Conceptual Generator for the Internet Graph", in the IEEE Workshop on Local and Metropolitan Area Networks (LANMAN '10), Long Branch, New Jersey, USA, May, 2010 (invited paper).
- I.Broustis, **K.Pelechrinis**, D.Syrivelis, S.V.Krishnamurthy, L.Tassioulas, "Quantifying the Overhead due to Routing Probes in Multi-Rate WMNs", in the IEEE Wireless Communications & Networking Conference 2010 (WCNC 2010), Sydney, Australia, April, 2010.
- E. Gelal, **K.Pelechrinis**, T.S.Kim, I.Broustis, S.V.Krishnamurthy and B.Rao, "Topology Control for Effective Interference Cancellation in Multi-User MIMO Networks", in the 29th IEEE Conference on Computer Communications (INFOCOM '10), San Diego, California, USA, March 2010.
- **K.Pelechrinis**, I.Broustis, S.V.Krishnamurthy and C.Gkantsidis, "ARES: an Anti-jamming REinforcement System for 802.11 Networks", in the 5th ACM International Conference on emerging Networking EXperiments and Technologies (CoNEXT '09), Rome, Italy, December 2009.

- **K. Pelechrinis**, I. Koutsopoulos, I. Broustis and S.V. Krishnamurthy, "Lightweight Jammer Localization in Wireless Networks: System Design and Implementation", in the *IEEE Global Communications Conference Communications and Information Security Symposium (Globecom '09 CISS)*, Honolulu, Hawaii, USA, November 2009.
- **K. Pelechrinis**, T. Salonidis, H. Lundgren and N. Vaidya, "Analyzing 802.11n Performance gains", to appear in the *15th ACM International Conference on Mobile Computing and Networking (MobiCom '09 - poster session)*, Beijing, China, September 2009.
- I. Broustis, **K. Pelechrinis**, D. Syrivelis, S.V. Krishnamurthy and L. Tassiulas, "FIJI: Fighting Implicit Jamming In 802.11 WLANs", to appear in the *5th International Conference on Security and Privacy in Communication Networks (SecureComm '09)*, Athens, Greece, September 2009.
- **K. Pelechrinis**, C. Koufogiannakis and S.V. Krishnamurthy, "Gamming the Jammer: Is Frequency Hopping Effective?", in the *7th International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt '09)*, Seoul, Korea, June 2009.
- **K. Pelechrinis**, G. Yan, S. Eidenbenz and S.V. Krishnamurthy, "Detecting Selfish Exploitation of Carrier Sensing in 802.11 Networks", in the *28th IEEE Conference on Computer Communications (INFOCOM '09)*, Rio de Janeiro, Brazil, April 2009.
- **K. Pelechrinis**, I. Broustis, T. Salonidis, S.V. Krishnamurthy and P. Mohapatra, "Design and Deployment Considerations for High Performance MIMO Testbeds", in the *4th Wireless Internet Conference (WICON '08)*, Maui, Hawaii, USA, November 2008 (invited paper).
- V. Chatzigiannakis, G. Androulidakis, **K. Pelechrinis**, S. Papavassiliou and V. Maglaris, "Data fusion algorithms for network anomaly detection: classification and evaluation", in the *3rd IEEE International Conference on Networking and Services (ICNS'07)*, Athens, Greece, June 2007.

### Technical Reports

- T. Lappas, **K. Pelechrinis** and M. Faloutsos, "A Simple Conceptual Generator for the Internet Graph", *arXiv:0911.0465*.
- **K. Pelechrinis**, I. Broustis, S.V. Krishnamurthy and C. Gkantsidis, "A measurement driven, 802.11 anti-jamming system", *arXiv:0906.3038*.

### AWARDS AND SCHOLARSHIPS

- Invited to join the Golden Key Honors Society - chapter of UC Riverside - due to my academic excellence (October 2009).
- Gerondelis Foundation Graduate Scholarship, Academic year 2007-2008
- Dean's Distinguished Fellowship, Department of Computer Science, College of Engineering, University of California, Riverside (2006-2008).
- Granted Scholarship of academic merit by the National Organization of Scholarships of Greece for the academic year 2001-2002.

- Award by the Municipality of Peristeri for my performance at the National wide university entrance examinations and my mien (2001).
- Certificates of Excellence at high school from the Greek Ministry of Education for the years: 1995-1996, 1996-1997, 1997-1998, 1999-2000, 2000-2001.

WORK  
EXPERIENCE

**Research Assistant**

University of California, Riverside, USA **September, 2006 - July, 2010**  
Participate in research projects of the Networking Laboratory at the Computer Science department of UC Riverside.  
Supervised by Prof. Srikanth V. Krishnamurthy.

**Research Intern**

Microsoft Research, Cambridge, UK **September, 2009 - December, 2009**  
Design and implementation of wireless hybrid network architectures (3G/802.11), with focus on multihoming architectures.  
Supervised by Dr. Christos Gkantsidis.

**Research Intern**

Thomson Corporate Research, Paris **March, 2009 - August, 2009**  
Understanding the performance and utilizing 802.11n for wireless home networks.  
Supervised by Dr. Theodoros Salonidis and Dr. Henrik Lundgren.

**Research Intern**

University of Thessaly, Volos, Greece **September, 2008 - October, 2008**  
Localization of jamming nodes in a wireless ad-hoc network.  
Supervised by Dr. Iordanis Koutsopoulos.

**Research Intern**

Los Alamos National Labs, NM, USA **May, 2008 - August, 2008**  
Detection of misbehaving users exploiting the carrier sensign functionality in WLANs.  
Supervised by Dr. Stephan Eidenbenz.

**Teaching Assistant**

University of California, Riverside, USA **Winter 2007**  
Teaching assistant for the CS 164 ("Computer Networks") at the Computer Science department of UC Riverside.  
Instructor: Prof. Srikanth V. Krishnamurthy.

**Network management - Electrical engineer**

Public Power Corporations S.A, Haidari, Greece **August 22nd, 2005 - September 21st, 2005**  
Responsible for the optimal operation of the company's LAN.  
Supervised several studies of sufficiency of operation of the low and middle voltage electrical network.

**Electronic Engineer**

Semicon ltd., Warsaw, Poland **July 11th - August 19th, 2005**

Training and working at the PCB assembly line of the company.

### **Telecommunication Services**

Hellenic Telecommunication Organization,  
Athens, Greece  
Phone center support.

**August 2003 – October 2003**

### **Teaching position**

Athens, Greece

**September 2002 – June 2006**

Private tutor for mathematics and physics at high school.

### PROFESSIONAL ACTIVITIES

1. TPC member: TPC member for SIMUtools 2011, Shadow TPC member for ACM SIGMETRICS 2010.
2. Paper Reviewing  
Journals: IEEE Transactions on Mobile Computing, IEEE/ACM Transactions on Networking, IEEE Transactions on Wireless Communications, IEEE Communication Surveys and Tutorials, Wiley Wireless Communications and Mobile Computing  
Conferences: IEEE WoWMoM 2010, IEEE WCNC 2010, IEEE ICNP 2009, MobiQuitous 2009, WinNMee 2009, IEEE Globecom 2009, IEEE SECON 2009, IEEE SECON 2008, IEEE Globecom 2008, M-POMC 2008
3. Student IEEE member since December 2007

### COMPUTER - RELATED SKILLS

- Administrator of the wireless testbed of UC Riverside (Fall 2008 - Summer 2010)  
Experience with simple wireless NIC's Linux driver modifications and Windows kernel programming.
- Operating systems  
Linux, MAC OS, Windows
- Programming Languages  
C, Matlab  
Experience with Perl, Prolog, UML

### SCIENTIFIC OR GANIZATIONS

- Founding member of local committee of EESTEC (Electrical Engineer Students European association) of Athens, October 2004.
- Chairman of EESTEC LC Athens, September 2005 - June 2006.
- Alumni member of EESTEC LC Athens since June 2006

### REFERENCES

- Srikanth Krishnamurthy  
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