

# Paul H. Pătraș

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## CONTACT INFORMATION

**Address:** Hamilton Institute, NUI Maynooth  
Maynooth, Co. Kildare, Ireland  
**Tel:** +353 1 708 6788  
**E-mail:** patras@ieee.org

## RESEARCH INTERESTS

Performance Optimization in IEEE 802.11 WLANs, Adaptive MAC Mechanisms, QoS Provisioning in Wireless Mesh Networks, Dynamic Spectrum Access, Prototype Implementation

## EDUCATION

**University Carlos III of Madrid, Spain** **October 2007 - March 2011**

Ph.D., Telematics Engineering (2011)

- Thesis Topic: “Control-Theoretic Adaptive Mechanisms for Performance Optimization of IEEE 802.11 WLANs: Design, Implementation and Experimental Evaluation”
- Advisor: Prof. Albert Banchs.
- Funded by the Spanish Ministry of Science and Innovation through an FPU research grant (acc. rate  $\leq 20\%$ ). Dissertation passed with honors.

M.Sc., Telematics Engineering (2008)

- Thesis Topic: “A Control Theoretic Approach for Throughput Optimisation in IEEE 802.11e EDCA WLANs”
- Advisors: Prof. Albert Banchs, Dr. Pablo Serrano.
- Dissertation passed with honors (only one thesis received this distinction in 2008).

**Technical University of Cluj-Napoca, Romania** **October 2001 - July 2006**

Dipl.Eng., Telecommunications (2006)

- Thesis Topic: “Distributed Agents for a Network Measurement System”.
- Advisors: Prof. Virgil Dobrota (UTCN), Prof. Jordi Domingo Pascual (UPC).
- Dissertation passed with honors

**Polytechnic University of Catalonia, Barcelona, Spain** **March - May 2006**

SOCRATES/ERASMUS Student Programme

- Advanced Broadband Communications Research Group.
- Advisor: Prof. Jordi Domingo-Pascual
- Area of Study: Performance Evaluation of Gigabit Ethernet Cards for QoS Measurements.

## PROFESSIONAL EXPERIENCE

**Hamilton Institute, National University of Ireland Maynooth, Ireland**  
*Research Fellow* **April 2011 - Present**

Working on fairness problems, node policing, power control and virtualization in WLANs.

Involved in the FLAVIA (FLexible Architecture for Virtualizable future wireless Internet Access) research project funded by the EU’s Seventh Framework Programme, which seeks to expose flexible programmable interfaces enabling service customization and performance optimization through software-based exploitation of low-level operations and control primitives.

**Institute IMDEA Networks**, Leganés, Madrid, Spain

*Research Assistant*

**October 2007 - Marc 2011**

Design of adaptive algorithms for performance optimization of IEEE 802.11 WLANs.

Involved in the CARMEN (CARrier grade MESH Networks) research project funded by the EU's Seventh Framework Programme, which aims to design a heterogeneous wireless mesh network supporting carrier grade triple-play services for mobile/fixed network operators.

Development of WLAN Radio Access Layer for wireless routers and mobile terminals of an IEEE 802.21 architecture, part of Daidalos II (Designing Advanced network Interfaces for the Delivery and Administration of Location independent, Optimised personal Services) research project, funded by the EU's Sixth Framework Programme.

Lecturer of the Laboratory on Transport Protocols, part of ERASMUS MUNDUS Network and E-Business Centred Computing M.Sc. Programme at University Carlos III of Madrid.

**Rice Networks Group, Rice University**, Houston, Texas, USA

*Visiting Research Intern*

**January 2010 - July 2010**

Deployment of an experimental multi-GHz network and study of client-access mechanisms and mobility support in wide-spectrum networks (under the supervision of Prof. Edward Knightly).

Involved in management activities for the Technology For All mesh network, deployed in Peacan Park, Houston.

**Deltatel / Alcatel-Lucent**, Timisoara, Romania

*Technical Support Engineer (VAS solutions)*

**September 2006 - September 2007**

Involved in deploying IN&NGN media streaming solutions for various telcos:

- Design and deployment of a high-availability Media Server Cluster to provide audio streaming for the Local Number Portability service of Bezeq Israeli Communications Group.
- Deployment of Media Resource Functions (NGN audio streaming support) for PTK Kosovo, Rostelecom Russia, Telmex Mexico.
- Technical support for installation of Video Mailbox Systems for Telefonica Spain and BT Italy.
- Deployment of Specialized Resource Points for the Intelligent Networks of Proximus Mobile and Belgacom Belgium.
- Trainer of Alcatel-Lucent 8688 Media Resource Function 6.0 Operation and Installation, Rennes, France.

#### PUBLICATIONS

P. Patras, A. Banchs, P. Serrano, "A Control Theoretic Scheme for Efficient Video Transmission over IEEE 802.11e EDCA WLANs", accepted for publication in ACM Transaction on Multimedia Computing, Communications and Applications (TOMCCAP), 2011.

P. Patras, A. Banchs, P. Serrano, A. Azcorra "A Control Theoretic Approach to Distributed Optimal Configuration of 802.11 WLANs", IEEE Transactions on Mobile Computing, vol. 10, no. 6, pp. 897-910, Jun. 2011

J. Lessmann, A. de la Oliva, C. Sengul, A. Garcia, M. Kretschmer, S. Murphy, P. Patras, "On the Scalability of Carrier-grade Mesh Network Architectures", accepted at Future Networks & Mobile Summit, Warsaw, Poland, Jun. 2011.

P. Serrano, A. Banchs, P. Patras, A. Azcorra, "Optimal Configuration of 802.11e EDCA

for Real-Time and Data Traffic”, IEEE Transaction on Vehicular Technology, vol. 59, no. 5, pp. 2511–2528, Jun. 2010.

P. Serrano, P. Patras, X. Prez Costa, B. Gloss, D. Chieng, “A MAC Layer Abstraction for Heterogeneous Carrier Grade Mesh Networks”, ICT Mobile Summit 2009, Santander, Spain, Jun. 2009.

P. Patras, A. Banchs, P. Serrano, “A Control Theoretic Framework for Performance Optimization of IEEE 802.11 Networks”, IEEE INFOCOM 2009 Student Workshop, Rio de Janeiro, Brazil, Apr. 2009.

P. Patras, A. Banchs, P. Serrano, “A Control Theoretic Approach for Throughput Optimization in IEEE 802.11e EDCA WLANs”, ACM/Springer Mobile Networks and Applications (MONET), Special Issue on Recent Advances in IEEE 802.11 WLANs: Protocols, Solutions and Future Directions, vol. 14, no. 6, pp. 697–708, Dec. 2009.

A. Bikfalvi, P. Patras, C.M. Vancea, V. Dobrota, “The Management Infrastructure of a Network Measurement System for QoS Parameters”, 14th Intl. Conference on Software, Telecommunication and Computer Networks, Split-Dubrovnik, Croatia, Oct. 2006.

#### TALKS/ PRESENTATIONS

“Wireless Mesh Networks as an Alternative to Conventional Wired backhaul Deployments”, Institute IMDEA Networks Open House, Xth Week of Science, Spain, Nov. 2010.

“Enabling Efficient Client Access in Wide-Spectrum Networks”, Rice University, Houston, TX, USA, Apr. 2010

“Student Perspective on Institute IMDEA Networks”, IX/Xth Week of Science, Madrid, Spain, Nov. 2009 / Nov. 2010.

“A Control Theoretic Framework for Performance Optimization of IEEE 802.11 Networks”, IMDEA Networks Seminar, Legans, Spain, Mar. 2009.

#### PROFESSIONAL ACTIVITIES

Publication co-chair of IEEE WoWMoM 2012.

TPC member of IFIP Networking 2012, IEEE WoWMoM 2012, WINSYS 2012, MeshTech 2011 (co-located with IEEE MASS).

Reviewer for IEEE Communications Letters (Exemplary Reviewer 2011), IEEE/ACM Transactions on Networking, IEEE Transactions on Communications, Elsevier Computer Networks, Computer Communications, Mobile Networks and Applications (MONET), Wireless Networks, IEEE INFOCOM, IEEE GLOBECOM, IEEE ICC, IEEE PIMRC, IEEE Intl. Conference on Distributed Computing in Sensor Systems (DCOSS), IEEE WoWMoM HotMesh, European Wireless.

Scientific secretariat of European Wireless 2010.

#### LANGUAGE SKILLS

Romanian - native speaker

English - speak fluently and read/write with high proficiency (Cambridge Advanced Exam certification)

Spanish - speak, read, and write with medium competence

German - speak, read, and write with medium competence