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Ilario Filippini

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Professional Experience

November 2011 - present

Assistant professor at Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano (Italy).

March 2011 - September 2012

Contract Professor at Università degli Studi di Bergamo.

March 2009 - September 2011

PostDoc temporary researcher at Dipartimento di Elettronica e Informazione, Politecnico di Milano (Italy). Research topic: "Cognitive Radio Networks Performance Analysis"

Winter 2010

Teaching Assistant Politecnico di Milano (Italy) Lecturer and Lab Organizer for Telecommunications Networks courses.

February 2008 - August 2008

Visiting Ph.D. student at Department of Electrical and Computer Engineering, The Ohio State University (Columbus, OH, USA).

Spring 2006 - Winter 2008

Teaching Assistant Politecnico di Milano (Italy) Lecturer and Lab Organizer for Telecommunications Networks courses.

October 2006

Qualified as professional Information Engineer by Milan Province Order of Engineers.

January 2006 - March 2009

Admitted (1st ranked) to Information Engineering Doctoral Program at Dipartimento di Elettronica e Informazione, Politecnico di Milano (Italy).

Education

January 2006 - March 2009

Ph.D. in Information Engineering at Dipartimento di Elettronica e Informazione, Politecnico di Milano (Italy). Dissertation: Planning and Optimization of Heterogeneous Wireless multi-hop Networks. Advisor: prof. Antonio Capone.

October 2003 - October 2005

Laurea specialistica (M.Sc. equivalent) in Telecommunication Engineering at Politecnico di Milano (Italy). Thesis: Trajectory-based forwarding techniques for ad-hoc networks. Advisor: prof. Antonio Capone. Grade: 110/110 cum Laude.

September 2000 - October 2003

Laurea (B.Sc. equivalent) in Telecommunication Engineering at Politecnico di Milano (Italy). Thesis: Quality of Service in IP networks with Integrated Services. Advisor: prof. Antonio Capone. Grade: 110/110.

September 1995 - July 2000

Scientific School Diploma at Liceo Scientifico Statale A. Calini di Brescia. Grade: 96/100.

Research Interests

Wireless Networks:

Cellular Networks, Wireless Sensor Networks, Wireless Mesh Networks, Cognitive Radio Networks.

Wireless Networking Topics:

MAC and Routing Protocols, Network Planning and Optimization, Performance Evaluation, Network Selection, Resource Allocation.

Operation Research:

Optimization, Mathematical Programming, Computational Complexity, Heuristic Algorithms, Game Theory.

Background, Methodologies and Skills

Background and Methodologies:

Networking, Wireless communications, Wireless multi-hop Network issues, Network planning and optimization, Mixed-integer mathematical programming, OPL/AMPL modeling, Game Theory, Heuristic approaches, Performance Analysis, Protocol design, and Algorithm implementation.

Skills:

CPLEX optimization solver, OPL/AMPL modeling and scripting, MATLAB, NS2 simulator, Omnet++ simulator, C/C++ programming, reporting languages, bash scripting, Linux system and network administrator, \LaTeX word processing.

Teaching activities

Fall 2013	Teacher of <i>Reti di Comunicazione ed Internet</i> . Politecnico di Milano, Italy
Fall 2013	T.A. of <i>Traffic Theory</i> held by prof. F. Borgonovo. Politecnico di Milano, Italy.
Fall 2012	Teacher of <i>Reti di Comunicazione ed Internet</i> . Politecnico di Milano, Italy.
Fall 2012	T.A. of <i>Traffic Theory</i> held by prof. F. Borgonovo. Politecnico di Milano, Italy.
Spring 2012	Teacher of <i>Fondamenti di Reti e Telecomunicazioni</i> . Università degli Studi di Bergamo, Italy.
Spring 2011	Teacher of <i>Fondamenti di Reti e Telecomunicazioni</i> . Università degli Studi di Bergamo, Italy.
Fall 2010	T.A. of <i>Fundamentals of Telecommunications Networks</i> held by proff. M. Cesana and A. Capone. Politecnico di Milano, Italy.
Spring 2008	T.A. of <i>Fundamentals of Telecommunications Networks</i> held by prof. L. Fratta. Politecnico di Milano, Italy.
Spring 2007	T.A. of <i>Fundamentals of Telecommunications Networks</i> held by prof. L. Fratta. Politecnico di Milano, Italy.
Spring 2006	T.A. of <i>Fundamentals of Telecommunications Networks</i> held by prof. L. Fratta. Politecnico di Milano, Italy.
From 2006 to the present	Co-advisor of several MS theses on planning and optimization of wireless networks.

Awards and Scholarship

- Doctoral program scholarship from Italian Government for years 2006-2008.
- ACCENTURE Laurea Award winner in 2005.
- International Foundation Scholarship "Paolo Galli" granted by VERIZON - VODAFONE ITALIA in academic years 2001/2002, 2002/2003 and 2003/2004.

Editorial Work

- Regular reviewer for the following international journals: Elsevier Ad Hoc Networks, Elsevier Computer Networks, IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing, Springer Wireless Networks, IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology, Elsevier Pervasive and Mobile Computing, Elsevier Computer Communications.
- Reviewer for the main international networking conferences, like INFOCOM, GLOBECOM, SECON, MASS, PIMRC.

Other Professional Activities

- System Administrator of Linux servers and workstations at ANTLab laboratory of Politecnico di Milano.

Research Activities and Publications

- Member of IEEE Communication Society.

Projects

- "FI-WI - Future integrated Access Architecture Based on optical and Broadband Wireless Technologies" within the European Network of Excellence EuroNF.
- "CAVE-NET - Context-aware information dissemination in vehicular networks" within the European Network of Excellence EuroNF.
- "BCG² - Beyond Cellular Green Generation" within the GreenTouch Consortium.
- "Green ICT & ICT for Green" funded by Regione Lombardia.
- "MiWEBA - Millimetre-wave Evolution for Backhaul and Access" FP7-ICT-2013-EU-Japan.

Journals

- [J.8] I. Filippini, M. Cesana, E. Ekici, *A New Outlook on Routing in Cognitive Radio Networks: Minimum Maintenance Cost Routing*, to appear in IEEE/ACM Transactions on Networking, 2012.
- [J.7] E. Amaldi, A. Capone, M. Cesana, I. Filippini, *Design of Wireless Sensor Networks for Mobile Target Detection*, IEEE/ACM Transactions on Networking, vol. 20(3), June 2012, Pages 784-797.
- [J.6] I. Filippini, M. Cesana, *Topology Optimization for Hybrid Optical/Wireless Access Networks*, Ad Hoc Networks, vol. 8(6), August 2010, Pages 614-625, Elsevier.
- [J.5] A. Capone, M. Cesana, D. De Donno, I. Filippini, *Deploying Multiple Interconnected Gateways in Heterogeneous Wireless Sensor Networks: an Optimization Approach*, Computer Communications, vol. 33(10), June 2010, Pages 1151-1161, Elsevier.
- [J.4] A. Capone, G. Carello, I. Filippini, S. Gualandi, F. Malucelli, *Routing, Scheduling and Channel Assignment in Wireless Mesh Networks: optimization models and algorithms*, Ad Hoc Networks, vol. 8(6), August 2010, Pages 545-563, Elsevier.
- [J.3] A. Capone, G. Carello, I. Filippini, S. Gualandi, F. Malucelli, *Solving a Resource Allocation Problem in Wireless Mesh Networks: a Comparison Between a CP-based and a Classical Column Generation*, Networks, vol. 55(3), May 2010, Pages 221-233, Wiley.
- [J.2] E. Amaldi, A. Capone, M. Cesana, I. Filippini, F. Malucelli, *Optimization Models and Methods for Planning Wireless Mesh Networks*, Computer Networks, vol. 52(11), August 2008, pp. 2159-2171, Elsevier.
- [J.1] A. Capone, I. Filippini, L. Fratta, L. Pizziniaco, *Receiver Oriented Trajectory Based Forwarding*, Lecture Notes in Computer Science, LNCS 3883, pp. 21-33, 2006. Springer-Verlag Berlin Heidelberg 2006.

Book chapters

- [B.1] A. Capone, I. Filippini, S. Gualandi, D. Yuan, *Resource Optimization in Multiradio Multichannel Wireless Mesh Networks* in "MOBILE AD HOC NETWORKING: Cutting Edge Directions", Second Edition, ed. by S. Basagni, M. Conti, S. Giordano, I. Stojmenovic, Wiley, 2013.

Conferences

- [C.18] A. Redondi, I. Filippini, A. Capone, *Context Management in Energy-efficient Radio Access Networks*, Tyrrhenian International Workshop on Digital Communications 2013, TIWDC 2013, Genova, Italy.
- [C.17] I. Filippini, M. Cesana, I. Malanchini, *Competitive Spectrum Sharing in Cognitive Radio Networks: A Queuing Theory based Analysis*, International Black Sea Conference on Communications and Networking 2013, BlackSeaCom 2013, Batumi, Georgia.

- [C.16] S. Paris, F. Martignon, I. Filippini, L. Chen, *A Bandwidth Trading Marketplace for Mobile Data Offloading*, IEEE International Conference on Computer Communications 2013, INFOCOM 2013 (Mini-conference), Turin, Italy.
- [C.15] U. Barh, A. Capone, I. Filippini, B. Gloss, *Rethinking Cellular System Architecture for Breaking Current Energy Efficiency Limits*, IFIP Conference on Sustainable Internet and ICT for Sustainability 2012, SustainIT 2012, Pisa, Italy.
- [C.14] S. Paris, F. Martignon, I. Filippini, A. Capone, *A Truthful Auction for Access Point Selection in Heterogeneous Mobile Networks*, IEEE International Conference on Communications 2012, ICC 2012, Ottawa, Canada.
- [C.13] A. Capone, A.F. dos Santos, I. Filippini, B. Gloss, *Looking Beyond Green Cellular Networks*, IEEE International Conference on Wireless On-Demand Network Systems and Services 2012, WONS '12, Courmayeur, Italy.
- [C.12] I. Filippini, F. Malandrino, G. Dan, M. Cesana, C. Casetti, I. Marsh, *Non-cooperative RSU Deployment in Vehicular Networks*, IEEE International Conference on Wireless On-Demand Network Systems and Services 2012, WONS '12, Courmayeur, Italy.
- [C.11] S. Paris, F. Martignon, I. Filippini, A. Capone, *A Bandwidth Marketplace for Heterogeneous Mobile Networks*, International Conference on Network Games, Control and Optimization 2011, NetGCooP 2011, Paris, France.
- [C.10] F. Martignon, S. Paris, I. Filippini, A. Capone, *Efficient Bandwidth Allocation in Wireless Community Networks*, IFIP Wireless Days Conference 2011, Wireless Days 2011, Niagara Falls, Ontario, Canada.
- [C.9] C. Casetti, M. Cesana, I. Filippini, G. Dan, I. Marsh, *Context-aware Information Dissemination in Vehicular Networks*, Conference on Next Generation Internet Networks 2011, NGI 2011, Kaiserslautern, Germany.
- [C.8] I. Filippini, M. Cesana, E. Ekici, *Minimum Maintenance Cost Routing in Cognitive Radio Networks*, IEEE International Conference on Mobile Ad-hoc and Sensor Systems, MASS 2009, Macau SAR, P.R.C.
- [C.7] D. Remondo, M. Nunes, S. Sargento, M. Cesana, I. Filippini, J. Triay, A. Agusti, M. De Andrade, L.I. Gutierrez, S. Sallent, C. Cervello-Pastor, *Integration of Optical and Wireless Technologies in the Metro-Access: QoS Support and Mobility Aspects*, Conference on Next Generation Internet Networks 2009, NGI 2009, Aveiro, Portugal.
- [C.6] E. Amaldi, A. Capone, M. Cesana, I. Filippini, *On the Design of Wireless Sensor Networks for Mobile Target Detection*, International Network Optimization Conference 2009, INOC 2009, Pisa, Italy.
- [C.5] A. Capone, M. Cesana, D. De Donno, I. Filippini, *Optimal Placement of Multiple Interconnected Gateways in Heterogeneous Wireless Sensor Networks*, IFIP International Conference on Networking 2009, Networking 2009, Aachen, Germany.
- [C.4] E. Amaldi, A. Capone, M. Cesana, I. Filippini, *Coverage planning of Wireless Sensors for Mobile Target Detection*, IEEE International Conference on Mobile Ad-hoc and Sensor Systems 2008, MASS 2008, Atlanta, Georgia, USA.
- [C.3] A. Capone, I. Filippini, F. Martignon, *Joint Routing and Scheduling Optimization in Wireless Mesh Networks with Directional Antennas*, IEEE International Conference on Communications 2008, ICC 2008, Beijing, China.
- [C.2] G. Carello, I. Filippini, S. Gualandi, F. Malucelli, *Scheduling and routing in wireless multi-hop networks by column generation*, International Network Optimization Conference 2007, INOC 2007, Spa, Belgium.
- [C.1] A. Capone, I. Filippini, L. Pizziniaco, M.A. Garcia De La Fuente, *SiFT: An efficient method for Trajectory Based Forwarding*, 2nd International Symposium on Wireless Communications Systems 2005, ISWCS '05, Siena, Italy.

Posters and demo

[P.2] S. Paris, F. Martignon, I. Filippini, A. Capone, *A Bandwidth Marketplace for Heterogeneous Mobile Networks* (Poster), International Conference on Network Games, Control and Optimization 2011, NetGCooP 2011, Paris, France.

[P.1] A. Capone, I. Filippini, L. Fratta, L. Pizziniaco, *Receiver Oriented Trajectory Based Forwarding* (Poster), European Workshop on Wireless Sensor Networks 2006, EWSN '06, Zurich, Switzerland.

Milano, September 2013

Ilario Filippini