

# Luca Mottola

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Curriculum vitæ et studiorum<sup>1</sup>

## Personal Data

*Date and Place of Birth:* September 12<sup>th</sup>, 1980 - Milan (Italy)  
*Languages:* Italian (native), English (fluent), German (base)  
*Office:* Electrum building, floor B6  
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## Current and Past Positions

*January 2010 -* **Senior Researcher**  
Networked Embedded Systems Group  
Swedish Institute of Computer Science (SICS), Stockholm (Sweden)

*January 2009 - December 2009* **ERCIM Alain Bensoussan Fellow**  
Networked Embedded Systems Group  
Swedish Institute of Computer Science (SICS), Stockholm (Sweden)

*June 2008 - December 2008* **Post-doctoral Researcher**  
Dipartimento di Ingegneria e Scienza dell'Informazione - University of Trento (Italy)  
and Embedded Systems Unit - Bruno Kessler Foundation, Trento (Italy)

*September 2006 - April 2007* **Research Scholar**  
University of Southern California, Los Angeles (CA, USA).  
Host: Prof. Viktor K. Prasanna

*March 2005 - May 2008* **Ph.D. Student**  
Dipartimento di Elettronica e Informazione, Politecnico di Milano (Italy).  
Advisor: Prof. Gian Pietro Picco

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<sup>1</sup>Last update: February 5<sup>th</sup>, 2012.

## Education

March 2005 - May 2008

### Ph.D. in Computer Engineering

Dipartimento di Elettronica e Informazione, Politecnico di Milano (Italy).

Ph.D. Thesis (Major Research Topic):

*Programming Wireless Sensor Networks: From Physical to Logical Neighborhoods*

Advisor: Prof. Gian Pietro Picco

Opponent: Prof. Matt Welsh (Harvard University, USA)

Minor Research Topic:

*Accurate Verification of Publish-Subscribe Architectures*

Advisor: Prof. Carlo Ghezzi

March 2002 - May 2005

### M.Sc. in Computer Science

University of Illinois at Chicago

GPA: 5.0/5.0

September 1999 - December 2004

### Laurea degree (equivalent to M.Sc.) in Computer Engineering

Politecnico di Milano

Thesis: *Overlay Management for Publish-Subscribe in Mobile Environments*

Advisor: Prof. Gian Pietro Picco.

Grade: 100/100 summa cum laude.

## Research Interests

Luca's research activity focuses on the design, implementation, and validation of modern distributed systems. This involves tackling diverse challenges at different levels, from the application down to the physical layer. In this context, Luca's current focus is on Wireless Sensor Networks (WSNs) as a key building block of the "Internet of Things" vision, but he has also been active in the area of Pervasive and Mobile Computing.

## Wireless Sensor Networks

Wireless Sensor Networks are distributed systems composed of embedded devices equipped with a processing unit, a wireless communication interface, as well as sensors and/or actuators. In the "Internet of Things" vision, WSNs bridge the gap between digital and virtual worlds. Most often, the WSN devices are battery-operated and can hardly perform any useful task individually. Rather, it is the collective collaboration of a high number of nodes that makes WSNs a viable solution to sense from—and act on—the real world. However, because of the characteristics of devices employed, their requirements and mode of operation inherently differ from traditional distributed computing.

During his Ph.D. studies, Luca's research activity in WSNs has mainly concentrated on the design, implementation, and evaluation of WSN programming abstractions. Indeed, developing distributed applications for WSNs still requires abilities that domain-experts are typically not provided with. Therefore, high-level programming abstractions are needed to manage complexity and hide distribution. To achieve this goal, Luca's approach is one where programming constructs are co-designed with the underlying system-level, distributed mechanisms required to implement their semantics.

Luca's contributions in the field of programming WSNs include the Logical Neighborhood abstraction [37, 38] and the TeenyLIME middleware [29]. Notably, in 2007 Luca received with Gian Pietro Picco the *Best Demonstration Award* at the SenSys conference [28], the flagship event in WSN research, with a demonstration based on Logical Neighborhoods. In addition, Luca has prepared an extensive tutorial on WSN programming, based on a recent survey paper [5] extracted from his Ph.D. thesis. The tutorial has been successfully given at several prestigious scientific venues, including major conferences in the field and schools, as illustrated next. In total, about 180 researchers and practitioners attended the tutorial so far. His Ph.D. thesis, which includes the above technical contributions as well as several follow-up works, was given the *EWSN/CONET Best Ph.D. Thesis Award* in 2009, recognizing Luca's outstanding achievements in the WSN field.

After the completion of the Ph.D. program, Luca has extensively worked on real-world deployments where his programming systems have been used to implement reliable and efficient WSNs. Particularly, the Torre

Aquila<sup>2</sup> deployment and the TRITon project<sup>3</sup> are entirely based on the TeenyLIME middleware. In 2009, along with co-authors, Luca received the *Best Paper Award* at the IPSN/SPOTS conference with a contribution on the Torre Aquila deployment [26]. The program committee recognized the work as one of the few examples where high-level abstractions are used in a real-world setting. The same comment was received when Luca, along with co-authors, received in 2011 another *Best Paper Award* at the IPSN/SPOTS conference for the work on adaptive lighting in road tunnels, part of the TRITon project.

Nevertheless, over the years Luca has further broadened the scope of his WSN research. His most recent publications reflect the range of topics currently under investigation, motivated by the increased understanding that WSN research requires a multi-disciplinary, cross-layer approach. In this context, while continuing to work in the field of WSN programming [20], Luca is also tackling issues in static verification of sensor network software [41], and in distributed algorithms and theory [25]. At the same time, he is also looking into problems related to low-power communications [6, 21], as well as the design and optimization of MAC protocols [24].

## Pervasive and Mobile Computing

Pervasive applications are typically based on loosely coupled interactions and evolvable, mobile environments. In this field, Luca's research has essentially tackled two complementary challenges.

On one hand, he has looked at the design and validation of these systems. Indeed, the behavior of single components is easy to validate, but it is hard to understand how the global federation behaves. To address this issue, Luca has explored the development of domain-specific model checkers, whereby it is possible to achieve fine-grained models of the underlying communication infrastructure without incurring in state explosion problems. The Loupe model checker [4, 32] adopts this approach to enable accurate and efficient verification of applications built on top of Publish-Subscribe architectures.

On the other hand, Luca has also worked in the field of content-based routing in mobile environments. Such technology is indeed a fundamental building block for pervasive and mobile applications. His contributions in this field include routing and topology maintenance mechanisms [8].

## Professional Service

Luca's achievements are recognized in the WSN and pervasive/mobile community at large. He participates in the technical program committees of top-notch conferences in the WSN and closely related fields, including the Int. Conference on Networked Sensor Systems (SENSYS), the Int. Conference on Information Processing in Sensor Networks (IPSN), the European Conference on Sensor Networks (EWSN), the Int. Conference on Distributed Computing Systems (ICDCS), the Int. Conference on Distributed Computing on Sensor Systems (DCOSS), and the Int. Symposium on Reliable Distributed Systems (SRDS). Moreover, Luca routinely serves as reviewer of prestigious journals, such as IEEE Transactions on Mobile Computing, IEEE Transactions on Computers, IEEE Transactions on Software Engineering, IEEE Transactions on Parallel and Distributed Systems, ACM Transactions on Sensor Networks, IEEE Transactions on Embedded Systems, and IEEE Journal on Selected Areas in Communications.

## Awards & Scholarships

- In 2011, ERCIM *Cor Bayeen Award* to a promising young researcher in computer science and applied mathematics.
- In 2011, listed amongst *Postscapes' IoT Top 100 Thinkers*, partly also by public vote.
- In 2011, *Best Paper Award* at ACM/IEEE International Conference on Information Processing in Wireless Sensor Networks (IPSN/SPOTS), Chicago (IL, USA).
- In 2009, *Best Lecturer* at the International School on Cyber-Physical and Sensor Networks (SensorNets), Monastir (Tunisia).
- In 2009, EWSN/CONET *Best Ph.D. Thesis Award*, given at European Conference on Wireless Sensor Networks (EWSN), Cork (Ireland).
- In 2009, *Best Paper Award* at ACM/IEEE International Conference on Information Processing in Wireless Sensor Networks (IPSN/SPOTS), San Francisco (CA, USA).

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<sup>2</sup><http://d3s.disi.unitn.it/projects/torreaquila>

<sup>3</sup><http://triton.disi.unitn.it/>

- In 2009, recipient of ERCIM *Alain Bensoussan Fellowship* for the same year.
- In 2007, *Best Demonstration Award* at ACM International Conference on Networked Embedded Sensor Systems (SENSYS), Sydney (Australia).
- In 2005, recipient of *Ph.D. scholarship* granted by Italian Ministry of Education, University and Research by ranking first among the Ph.D. applicants at Politecnico di Milano (Italy).
- In 2004, selected among the best 30 European students in Computer Science for the 1<sup>st</sup> *IBM Top EMEA Student Recognition Event*, Nice (France).

## Professional Service

Program chair/co-chair in the following scientific events:

- 2<sup>nd</sup> *Int. Workshop on Software Engineering for Sensor Network Applications* (SESENA11).
- 8<sup>th</sup> *Int. Extended Semantic Web Conference - Sensor Web Track* (ESWC11).

Program committee member in the following scientific events:

- 7<sup>th</sup> *IEEE Int. Workshop on Practical Issues in Building Sensor Network Applications* (SENSEAPP12).
- 3<sup>rd</sup> *International Workshop on Software Engineering for Sensor Network Applications* (SESENA12 - co-located with ICSE12).
- 10<sup>th</sup> *ACM Int. Conference on Networked Sensor Systems* (SENSYS12).
- 3<sup>rd</sup> *Int. Workshop on Networks of Cooperating Objects* (CONET12 - colocated with CPSWEEK12).
- 1<sup>st</sup> *on Data-intensive Process Management in Large-Scale Sensor Systems: From Sensor Networks to Sensor Clouds* (DPMSS12 - colocated with CCGrid12).
- 9<sup>th</sup> *European Conference on Wireless Sensor Networks* (EWSN12).
- 4<sup>th</sup> *Int. Workshop on Information Quality and Quality of Service for Pervasive Computing* (IQ2S12).
- 11<sup>th</sup> *ACM/IEEE Int. Conference on Information Processing in Sensor Networks* (IPSN12).
- 6<sup>th</sup> *Int. Workshop on Middleware Tools, Services and Run-Time Support for Sensor Networks* (MIDSENS11).
- 7<sup>th</sup> *IEEE International Conference on Distributed Computing in Sensor Systems* (DCOSS11).
- 2<sup>nd</sup> *2nd IEEE Int. Conference on Networked Embedded Systems for Enterprise Applications* (NESEA11).
- 32<sup>nd</sup> *Int. Conference on Architecture of Computer Systems* (ARCS12).
- 36<sup>th</sup> *IEEE Int. Conference on Local Computer Networks* (LCN11).
- 6<sup>th</sup> *IEEE Int. Workshop on Practical Issues in Building Sensor Network Applications* (SENSEAPP11).
- 10<sup>th</sup> *Int. Workshop on Real Time Networks* (RTN11).
- 14<sup>th</sup> *Euromicro Conference on Digital System Design—Special Session on Wireless Sensor Networks* (DSD11).
- 9<sup>th</sup> *ACM Int. Conference on Networked Sensor Systems* (SENSYS11).
- 10<sup>th</sup> *ACM/IEEE Int. Conference on Information Processing in Sensor Networks* (IPSN11).
- 31<sup>st</sup> *IEEE Int. Conference on Distributed Computing Systems* (ICDCS11).
- 9<sup>th</sup> *Ph.D. Forum at the Int. Conference on Pervasive Computing and Communications* (PerCom11).
- 35<sup>th</sup> *IEEE Int. Conference on Local Computer Networks* (LCN10).
- 5<sup>th</sup> *Int. Workshop on Middleware Tools, Services and Run-Time Support for Sensor Networks* (MIDSENS10).
- 29<sup>th</sup> *IEEE International Symposium on Reliable Distributed Systems* (SRDS10).
- 13<sup>th</sup> *Euromicro Conference on Digital System Design—Special Session on Wireless Sensor Networks* (DSD10).
- 1<sup>st</sup> *Int. Workshop on Networks of Cooperating Objects* (CONET10 - colocated with CPSWEEK10).
- 5<sup>th</sup> *IEEE Int. Workshop on Practical Issues in Building Sensor Network Applications* (SENSEAPP10).
- 72<sup>nd</sup> *IEEE Vehicular Technology Conference* (VTC Fall 2010).
- 2<sup>th</sup> *International Conference on Ad-hoc Networks* (AdHocNets10).
- 6<sup>th</sup> *IEEE International Conference on Distributed Computing in Sensor Systems* (DCOSS10).
- 9<sup>th</sup> *Int. Workshop on Real Time Networks* (RTN10).
- 3<sup>rd</sup> *Wireless Sensing Demonstrator Showcase* (WSDS10).
- 1<sup>st</sup> *International Workshop on Software Engineering for Sensor Network Applications* (SESENA10 - co-located with ICSE10).
- 3<sup>rd</sup> *IEEE Int. Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing* (SUTC10).
- 9<sup>th</sup> *ACM/IEEE Int. Conference on Information Processing in Sensor Networks* (IPSN10).
- 7<sup>th</sup> *European Conference on Wireless Sensor Networks* (EWSN10).
- 34<sup>th</sup> *IEEE Int. Conference on Local Computer Networks* (LCN09).
- 4<sup>th</sup> *Int. Workshop on Middleware Tools, Services and Run-Time Support for Sensor Networks* (MIDSENS09).

- 8<sup>th</sup> Int. Workshop on Real Time Networks (RTN09).
- 1<sup>st</sup> Int. Workshop on Middleware for Sensing and Actuation Augmented Pervasive Systems (MSAPS09).
- 2<sup>nd</sup> Wireless Sensing Demonstrator Showcase (WSDS09).
- 4<sup>th</sup> IEEE Int. Workshop on Practical Issues in Building Sensor Network Applications (SENSEAPP09).
- 1<sup>st</sup> Int. Conference on Sensor Networks Applications, Experimentation and Logistics (SENSAPPEAL09).
- 1<sup>st</sup> Int. Workshop on Protocols and Algorithms for Reliable and Data Intensive Sensor Networks (PARIS07 - colocated with IEEE MASS07).

Demonstration/poster chair in the following scientific events:

- 8<sup>th</sup> European Conference on Wireless Sensor Networks (EWSN11).

Panelist in the following scientific events:

- 9<sup>th</sup> Ph.D. Forum at the Int. Conference on Pervasive Computing and Communications (PerCom11).

School organization and direction:

- The 3<sup>rd</sup> CONET Summer School “Networked Embedded Systems: Humans in the Loop”, 2011.

Organization committee member in the following scientific events:

- General chair of the 3<sup>rd</sup> International Workshop on Software Engineering for Sensor Network Applications (SESENA12 - co-located with ICSE12).
- Publicity chair of the 11<sup>th</sup> ACM/IEEE Int. Conference on Information Processing in Sensor Networks (IPSN12).
- Publication chair of the 4<sup>th</sup> Int. Workshop on Real-world Wireless Sensor Networks (REALWSN10).
- Sponsorship chair of the 8<sup>th</sup> Int. Conference on Embedded Networked Sensor Systems (SenSys10).
- Local chair of the 1<sup>st</sup> Int. Workshop on Networks of Cooperating Objects (CONET10 - colocated with CPS-WEEK10).
- Publication chair of the 1<sup>st</sup> Int. Conference on Sensor Systems and Software (SCUBE09).

Reviewer for the following scientific conferences and journals: *IEEE Transactions on Mobile Computing*, *IEEE Transactions on Computers*, *IEEE Transactions on Parallel and Distributed Systems*, *IEEE Transactions on Software Engineering*, *ACM Transactions on Sensor Networks*, *IEEE Transactions on Embedded Systems*, *IEEE Journal on Selected Areas in Communications (JSAC)*, *IEEE Communication Surveys and Tutorials*, *IEEE Communication Letters*, *Proceedings of IEEE*, *Elsevier Pervasive and Mobile Computing Journal (PMC)*, *Elsevier Computer Networks*, *Elsevier Journal of Network and Computer Applications*, *Elsevier Computer Communications*, *Springer Mobile Networks and Applications*, and *Springer Wireless Networks*.

## Public Talks

### Keynote Speeches

- “Monitoring Heritage Buildings with Wireless Sensor Networks: The Torre Aquila Deployment”, keynote speech at the 2<sup>nd</sup> Wireless Sensing Demonstrator Showcase, London (UK), July 2009.

### WSN Programming Tutorials

Luca Mottola’s tutorial on WSN programming, largely based on his Ph.D. thesis [50] and the corresponding survey paper [5], has been presented in different versions at major scientific venues, schools, and graduate courses, including:

- the 3<sup>rd</sup> Cyber-Physical Systems week (CPSWEEK) held in Stockholm (Sweden), April 2010. CPSWEEK brought together five leading conferences—HSCC, ICCPS, IPSN, LCTES, and RTAS—on the research and development of cyber-physical systems.
- the 1<sup>st</sup> International School on Cyber-Physical and Sensor Networks (SensorNets), held in Monastir (Tunisia), December 2009.
- the 6<sup>th</sup> European Wireless Sensor Network Conference (EWSN), Cork (Ireland), February 2009.
- the 7<sup>th</sup> ACM/USENIX International Middleware Conference, held in Leuven (Belgium), December 2008.
- the 1<sup>st</sup> GII doctoral school in Computer Engineering, held in L’Aquila (Italy), September 2008.

## Invited Talks

- “Developing Software for the Internet of Things: Challenges and Opportunities”, the 1<sup>st</sup> ERC Workshop on Software Quality, Venice (Italy), September 2011.
- “Bullet-proof Software Development for Networked Embedded Systems: Dream or (Future) Reality?”, the 3<sup>rd</sup> International CONET Summer School from Sensor Networks to Networked Intelligent Objects, Bertinoro (Italy), July 2011.
- “Programming Sensor Networks: from Abstractions to Running (Correct) Code”, guest lecture in the graduate course on “Advanced Topics in Software Engineering” at Politecnico di Milano (Italy), May 2011.
- “An Overview on State of The Art of Wireless Sensor Networks”, guest lecture in the graduate course on “Data Communication Networks III” at Uppsala University, Uppsala (Sweden), April 2011.
- “An Overview on State of The Art and Real-World Deployments of Wireless Sensor Networks”, guest lecture in the graduate course on “Distributed Information Systems” at Uppsala University, Uppsala (Sweden), November 2010.
- “An Overview on State of The Art of Wireless Sensor Networks”, guest lecture in the graduate course on “Data Communication Networks III” at Uppsala University, Uppsala (Sweden), April 2010.
- “Real-World Applications of WSN and RFID systems”, the 1<sup>st</sup> International School on Cyber-Physical and Sensor Networks (SensorNets), Monastir (Tunisia), December 2009.
- “An Overview on State of The Art and Real-World Deployments of Wireless Sensor Networks”, guest lecture in the graduate course on “Distributed Information Systems” at Uppsala University, Uppsala (Sweden), December 2009.
- “WSN Programming: From Abstractions to Running Code”, guest lecture in the graduate course on “Principles of Wireless Sensor Networks” at Kungliga Tekniska Högskolan (KTH), Stockholm (Sweden), September 2009.
- “Operating Systems for Networked Embedded Devices”, the 1<sup>st</sup> International CONET Summer School from Sensor Networks to Networked Intelligent Objects, Bertinoro (Italy), July 2009.
- “Real-World Deployments of WSN Applications”, the 1<sup>st</sup> International CONET Summer School from Sensor Networks to Cooperating Objects, Bertinoro (Italy), July 2009.
- “WSN Programming Abstractions: Five Reasons for a Bottom-Up Approach”, the International WASP/CONET Workshop, Darmstadt (Germany), March 2009.
- “A Short Introduction to Contiki Operating System”, public talk at University College London, host Prof. Yang Yang, London (UK), February 2009.
- “Monitoring Heritage Buildings with Wireless Sensor Networks: The Torre Aquila Deployment”, public talk at University College London, host Prof. Yang Yang, London (UK), February 2009.
- “Monitoring Heritage Buildings with Wireless Sensor Networks: The Torre Aquila Deployment”, public talk at ETH Zurich, host Dr. Kay Roemer, Zurich (Switzerland), January 2009.
- “Moving WSN Programming Abstractions into the Real World”, public talk at University of Cambridge, host Dr. Cecilia Mascolo, Cambridge (UK), August 2008.
- “Moving WSN Programming Abstractions into the Real World”, public talk at University of Warwick, host Dr. Arshad Jhumka, Warwick (UK), August 2008.
- “Programming Wireless Sensor Networks: From Physical to Logical Neighborhoods”, public talk at University College London, host Dr. Cecilia Mascolo, London (UK), February 2008.
- “Virtual Nodes: Abstracting Physical Devices in Wireless Sensor Networks”, the Italian Software Engineering Days 2007, host Prof. Carlo Ghezzi, Como (Italy), September 2007.
- “Scoping in Sensor Networks: from Programming Abstractions to Routing”, public talk at University of Southern California, host Prof. Viktor K. Prasanna, Los Angeles (CA, USA), September 2006.
- “Logical Neighborhoods: A Programming Abstraction for Wireless Sensor Networks”, the 1<sup>st</sup> International Summer School on Wireless Sensor Networks (selected as student presentation of ongoing research), Ottawa (Canada), August 2006.
- “Logical Neighborhoods: A Programming Abstraction for Wireless Sensor Networks”, public talk at ETH Zurich, host Dr. Kay Roemer, Zurich (Switzerland), May 2006.

## Conference Talks

- “Evaluation of an Electronically Switched Directional Antenna for Real-world Low-power Wireless Networks”, the 4<sup>th</sup> International Workshop on Real-world Wireless Sensor Networks (REALWSN), Colombo

(Sri Lanka), December 2010.

- “Anquiro: Efficient Static Verification of Sensor Network Software”, the 1<sup>st</sup> International Workshop on Software Engineering for Sensor Networks (SESENA - colocated with ACM/IEEE ICSE), Cape Town (South Africa), May 2010.
- “Programming Storage-centric Sensor Networks with Squirrel”, the 9<sup>th</sup> ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN/IP), Stockholm (Sweden), April 2010.
- “On Consistent Neighborhood Views in Wireless Sensor Networks”, the 28<sup>th</sup> IEEE International Symposium on Reliable Distributed Systems (SRDS), Niagara Falls (NY, USA), September 2009.
- “Monitoring Heritage Buildings with Wireless Sensor Networks: The Torre Aquila Deployment”, the 8<sup>th</sup> ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN/SPOTS), San Francisco (CA, USA), April 2009. Recipient of the *Best Paper Award*.
- “FiGaRo: Fine-Grained Software Reconfiguration in Wireless Sensor Networks”, the 5<sup>th</sup> European Conference on Wireless Sensor Networks (EWSN), Bologna (Italy), January 2008.
- “Programming Wireless Sensor Networks with The TeenyLIME Middleware”, the 6<sup>th</sup> ACM/USENIX International Middleware Conference, Newportbeach (CA, USA), November 2007.
- “Programming Wireless Sensor Networks with Logical Neighborhoods: A Road Tunnel Use Case”, public demonstration at the 5<sup>th</sup> ACM International Conference on Embedded Networked Sensor Systems (SENSYS07), Sydney (Australia), November 2007. Recipient of the *Best Demo Award*.
- “Enabling Scope-Based Interactions in Sensor Network Macro-programming”, the 4<sup>th</sup> IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS07), Pisa (Italy), October 2007.
- “Playing with Time in Publish-Subscribe using a Domain-Specific Model Checker”, the 6<sup>th</sup> International Workshop on Specification and Verification of Component-Based Systems (SAVCBS07 - colocated with ACM ESEC), Dubrovnik (Croatia), September 2007.
- “On Accurate Automatic Verification of Publish-Subscribe Architectures”, the 29<sup>th</sup> ACM/IEEE International Conference on Software Engineering (ICSE07), Minneapolis (MN, USA), May 2007.
- “The RUNES Middleware and its Application in a Disaster Management Scenario”, the 5<sup>th</sup> IEEE International Conference on Pervasive Computing and Communications (PERCOM07), New York (NY, USA), March 2007.
- “Using Logical Neighborhoods to Enable Scoping in Wireless Sensor Networks”, the 3<sup>rd</sup> ACM International Middleware Doctoral Symposium (MDS06 - colocated with ACM/USENIX Middleware), Melbourne (Australia), December 2006.
- “Pervasive Games in a Mote-Enabled Virtual World Using Tuple Space Middleware”, the 5<sup>th</sup> ACM International Workshop on Network & System Support for Games (NETGAMES06), Singapore, November 2006.
- “Lightweight Information Dissemination in Inter-Vehicular Networks”, the 3<sup>rd</sup> International Workshop on Vehicular Ad-hoc Networks (VANET06 - colocated with ACM MOBICOM), Los Angeles (CA, USA), September 2006
- “Logical Neighborhoods: A Programming Abstraction for Wireless Sensor Networks”, the 2<sup>nd</sup> IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS06), San Francisco (CA, USA), June 2006.
- “Logical Neighborhoods: A Programming Abstraction for Wireless Sensor Networks”, the 1<sup>st</sup> International Conference on Integrated Internet Ad-hoc and Sensor Networks (INTERSENSE06), Nice (France), May 2006.

## Teaching Activities

Lecturer for the following courses:

- Fall 2010 - Kungliga Tekniska Högskolan (KTH), Sweden:
  - *Programming Wireless Sensor Networks: A System Perspective* (graduate course).
- Spring 2008 - Politecnico di Milano - CEFRIEL, Italy:
  - *Introduction to Middleware* (graduate course).
- Fall 2007 - Politecnico di Milano - CEFRIEL, Italy:
  - *Introduction to Middleware* (graduate course).
- Spring 2007 - Politecnico di Milano - CEFRIEL, Italy:

- *Introduction to Middleware* (graduate course).

Guest lecturer for the following courses and schools:

- Summer 2011 - Bertinoro, Italy:
  - *International CONET Summer School: Networked Embedded Systems: Humans in the Loop* (school).
- Spring 2011 - Politecnico di Milano, Italy:
  - *Advanced Topics in Software Engineering* (graduate course).
- Spring 2011 - Uppsala University, Sweden:
  - *Data Communication Networks III* (graduate course).
- Fall 2010 - Uppsala University, Sweden:
  - *Distributed Information Systems* (undergraduate course).
- Spring 2010 - Uppsala University, Sweden:
  - *Data Communication Networks III* (graduate course).
- Fall 2009 - Monastir, Tunisia:
  - *International School on Cyber-Physical and Sensor Networks (SensorNets)* (school).
- Fall 2009 - Uppsala University, Sweden:
  - *Distributed Information Systems* (undergraduate course).
- Fall 2009 - Kungliga Tekniska Högskolan (KTH), Sweden:
  - *Principles of Wireless Sensor Networks* (graduate course).
- Summer 2009 - Bertinoro, Italy:
  - *International CONET Summer School: from Sensor Networks to Networked Intelligent Objects* (school).
- Fall 2008 - L'Aquila, Italy:
  - *GII Doctoral School in Computer Engineering* (school).

Teaching assistant for the following courses:

- Spring 2008 - University of Trento, Italy:
  - *Programming Wireless Sensor Networks* (in English - Ph.D. course taught by Prof. Gian Pietro Picco).
- Fall 2007 - University of Trento, Italy:
  - *Middleware and Application-Level Protocols* (in English - graduate course taught by Prof. Gian Pietro Picco).
- Fall 2006 - Politecnico di Milano, Italy:
  - *Distributed Computing Systems* (graduate course taught by Prof. Gian Pietro Picco).
  - *Programming Fundamentals I* (undergraduate course taught by Prof. Dino Mandrioli).
- Spring 2006 - Politecnico di Milano, Italy:
  - *Distributed Computing Systems* (in English - graduate course taught by Prof. Gian Pietro Picco).
  - *Theoretical Computer Science I* (undergraduate course taught by Prof. Matteo Pradella).
- Spring 2005 - Politecnico di Milano, Italy:
  - *Theoretical Computer Science I* (undergraduate course taught by Prof. Matteo Pradella).

Thesis supervision:

- B. Silase Geletu, *Modelling an Electronically Switchable Directional Antenna for Wireless Sensor Networks*, Master Thesis, Swedish Institute of Computer Science and Blekinge Tekniska Högskola (BTH) (Sweden), 2010.
- C. Olsson, *Programming Disconnected Operations in Wireless Sensor Networks*, Master Thesis, Swedish Institute of Computer Science and Kungliga Tekniska Högskolan (KTH) (Sweden), 2009.
- E. Öström, *Building and Experimentally Evaluating a Smart Antenna for Low-Power Wireless Communication*, Master Thesis, Swedish Institute of Computer Science and Mälardalen University (Sweden), 2009.

- M. Zimmerling, *Automatic Parameter Optimization of Sensor Network MAC Protocols*, Master Thesis (co-supervised with Thiemo Voigt), Swedish Institute of Computer Science and Technische Universität Dresden (Germany), 2009.  
*Best M.Sc. Thesis Award* at the 1<sup>st</sup> International School on Cyber-Physical and Sensor Networks (Sensor-Nets), Monastir (Tunisia), December 2009.
- F. Pompermaier, *Accurate Estimation of Residual Lifetime in WSNs*, Master Thesis, University of Trento (Italy), 2008.
- G. Khasanova, *High-level Programming of WSNs Using Distributed Abstract Data Types*, Master Thesis, University of Trento (Italy), 2008.
- E. Bisoffi, *Understanding Over-the-air Reprogramming in WSNs: A Case Study with the Deluge Protocol*, Master Thesis, University of Trento (Italy), 2008.
- C. Benoni, *Time Synchronization for the TeenyLIME Middleware*, Bachelor Thesis, University of Trento (Italy), 2007.
- A. Amjad, *Routing for Fine-Grained Code Deployment in Sensor Networks*, Master Thesis, University of Trento (Italy), 2007.
- G. Pedrazza, *A Comparative Analysis of MANETs Simulators*, Master Thesis, Politecnico di Milano (Italy), 2007.
- G. Gerosa, *Analyzing Temporal Aspects in the Automated Verification of Publish-Subscribe Architectures*, Master Thesis, Politecnico di Milano (Italy), 2007.
- A. Ungari, *Code Deployment in Heterogeneous Wireless Sensor Networks*, Master Thesis, Politecnico di Milano (Italy), 2006.
- P. Ciciriello, *Routing to Multiple Sinks in Wireless Sensor Networks*, Master Thesis, Politecnico di Milano, 2006.
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