

CURRICULUM VITAE ET STUDIORUM

MICHELE GARETTO

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Dipartimento di Informatica  
Università degli studi di Torino, Italy

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**PERSONAL INFORMATION**

**First name:** Michele  
**Last Name:** Garetto  
**Birth date:** May 15, 1975  
**Nationality:** Italian  
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**EDUCATION**

**Jan 2001 – Jan 2004:** Doctor of Philosophy in Electrical and Communication Engineering  
at Politecnico di Torino, Italy  
Research advisor: Prof. Marco Ajmone Marsan  
PhD Dissertation Title: "Analytical Models of IP Networks with TCP Traffic"  
Graduation date: Jan 30, 2004

**Sep 1994 - May 2000:** Telecommunication Engineering Laurea, Politecnico di Torino, Italy  
Advisor: Prof. Marco Ajmone Marsan  
Thesis Title: "Analytical models of TCP behavior"

**POSITIONS AND FOREIGN EXPERIENCE**

October 2006 – present: **Researcher**, University of Torino, Italy  
September 2005 – September 2006: **Lagrange Fellow Post-Doc**  
February 2005 – September 2005: External **collaborator**, Politecnico di Torino, Italy

August 2004 – Jan 2005: **Post-Doc** at Electrical and Computer Engineering Department  
**Rice University, Houston, TX** (Prof. Edward Knightly)

Oct 2001 – May 2002,  
Jul 2002 – Aug 2002:

**Visiting Student** at Computer Science Department,  
**University of Massachusetts, Amherst, MA**  
(Prof. [Jim Kurose](#) and Prof. [Don Towsley](#))

Aug 2000 – Dec 2001: **CSELT** (Italian Public Telephone Research Company),  
Working in the area of Network Management

## RESEARCH INTERESTS

Computer Networks, Wireless Communications, Queuing Theory, Network Measurements,  
Performance Evaluation

## SKILLS

**Operating Systems:** Linux, Windows

**Computer Languages:** C, C++, Tcl/TK, Java, HTML

**Networks:** TCP/IP, Network Management, Wireless networks (802.11, Bluetooth, Sensor Networks)

**Design/Simulation Tools:** Network Simulator (ns), MATLAB

**Foreign Languages:** English (fluent), Spanish (beginner)

## PROFESSIONAL SOCIETIES

**2000 - present:** Member, IEEE Communication Society

**2005 - present:** Member, ACM

## RESEARCH PROJECTS

- "QoS Provisioning in IEEE 802.11 WLANS" Research contract between Politecnico di Torino and ALCATEL R&I (Marcoussis, France),
- "PLANET-IP" (PLAnning IP NETworks), FIRB project sponsored by MIUR (Italian Ministry University and Research)
- "VICOM" (Virtual Immersive COMmunications), FIRB project sponsored by MIUR
- "TANGO" (Traffic models and Algorithms for Next Generation IP networks Optimization), FIRB project sponsored by MIUR
- "PATTERN", (Protocols And cross-layer Techniques To achieve Energy-efficiency in reconfigurable ad-hoc and sensor Networks) , FIRB project sponsored by MIUR

## References

Prof. **Marco Ajmone Marsan**

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## Journal publications

1. M. GARETTO, P. GIACCONE, E. LEONARDI, **Capacity Scaling in Ad Hoc Networks with Heterogeneous Mobile Nodes: the Super-critical Regime**, IEEE/ACM TRANSACTIONS ON NETWORKING, Vol.17, No.5, pp.1522-1535, October 2009.
2. G. ALFANO, M. GARETTO, E. LEONARDI, **Capacity Scaling of Wireless Networks with Inhomogeneous Node Density: Upper Bounds**, IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS, Special issue on “Stochastic Geometry and Random Graphs for Wireless Networks”, Vol. 27, no. 7, Sept. 2009.
3. G. CAROFIGLIO, C.F. CHIASSERINI, M. GARETTO, E. LEONARDI, **Route Stability in MANETs under the Random Direction Mobility Model**, IEEE TRANSACTIONS ON MOBILE COMPUTING, Vol. 8, n.9, pp. 1167-1179, Sept. 2009.
4. M. GARETTO, P. GIACCONE, E. LEONARDI, **On the Capacity Region of MANET: Scheduling and Routing Strategy**, IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, Vol.58, No.4, pp.1930-1941, April 2009.
5. M. GARETTO; TOWSLEY D, 2008, **An efficient technique to analyze the impact of bursty TCP traffic in wide-area networks**, PERFORMANCE EVALUATION, pp.181-202, Vol.65(2).
6. M. GARETTO, M. GRIBAUDO, C.-F. CHIASSERINI, E. LEONARDI, 2008, **Sensor Deployment and Relocation: A Unified Scheme**, JOURNAL OF COMPUTER SCIENCE AND TECHNOLOGY, pp. 400- 412, Vol.23(3).
7. M. GARETTO, D. FIGUEIREDO, R. GAETA, M. SERENO, 2007, **A modeling framework to understand the tussle between ISPs and peer-to-peer file-sharing users**, PERFORMANCE EVALUATION, pp.819- 837, Vol.64.
8. M. FIORE; C. CASETTI; C.F. CHIASSERINI; M. GARETTO, 2007, **Analysis and simulation of a content delivery application for vehicular wireless networks**, PERFORMANCE EVALUATION, pp.444- 463, Vol.64(5).
9. M. GARETTO, E. LEONARDI, 2007, **Analysis of Random Mobility Models with Partial Differential Equations**, IEEE TRANSACTIONS ON MOBILE COMPUTING, pp.1204-1217, Vol.6(11).
10. G. CAROFIGLIO, M. GARETTO, E. LEONARDI, A. TARELLO, M. AJMONE MARSAN, 2007, **Beyond fluid models: Modelling TCP mice in IP networks under non-stationary random traffic**, COMPUTER NETWORKS, pp.114- 133, Vol.51(1).
11. C. CHIASSERINI, R. GAETA, M. GARETTO, M. GRIBAUDO, D. MANINI, M. SERENO, 2007, **Fluid models for large-scale wireless sensor networks**, PERFORMANCE EVALUATION, pp.715- 736, Vol.64 (7-8).

12. C. CHIASSERINI, M. GARETTO, 2006, **An Analytical Model for Wireless Sensor Networks with Sleeping Nodes**, IEEE TRANSACTIONS ON MOBILE COMPUTING, pp.1706- 1718, Vol.5(12).
13. C. KIRALY, M. GARETTO, M. MEO, M. AJMONE MARSAN, R. LO CIGNO, 2005, **Analytical computation of completion time distributions of short-lived TCP connections**, PERFORMANCE EVALUATION, pp.179- 197, Vol.59.
14. M. AJMONE MARSAN, M. GARETTO, P. GIACCONE, E. LEONARDI, E. SCHIATTARELLA, A. TARELLO, 2005, **Using partial differential equations to model TCP mice and elephants in large IP networks**, IEEE-ACM TRANSACTIONS ON NETWORKING, pp.1289- 1301, Vol.13(6).
15. M. GARETTO, LO CIGNO R, MEO M, AJMONE MARSAN M, 2004, **Closed queueing network models of interacting long-lived TCP flows**, IEEE-ACM TRANSACTIONS ON NETWORKING, pp.300- 311, Vol.12(2).
16. M. GARETTO, R. LO CIGNO, M. MEO, M. AJMONE MARSAN, 2004, **Modeling short-lived TCP connections with open multiclass queueing networks**, COMPUTER NETWORKS, pp.153- 176, Vol.44(2).

## Conference publications

1. V. MARTINA, M. GARETTO, E. LEONARDI, **Delay-Throughput Performance in Mobile Ad-Hoc Networks with Heterogeneous Nodes**, ACM MSWIM 2009, Tenerife, Canary Islands, Spain, October 2009.
2. G. ALFANO, M. GARETTO, E. LEONARDI, **Capacity Scaling of Wireless Networks with Inhomogeneous Node Density: Lower Bounds**, IEEE INFOCOM, Rio de Janeiro, April 2009.
3. M. GARETTO; GIACCONE P; LEONARDI E, 2008. **Capacity Scaling of Sparse Mobile Ad Hoc Networks**, IEEE Computer Society, 27th IEEE International Conference on Computer Communications, IEEE INFOCOM 2008, Phoenix, Arizona, US, April 15-17, 2008.
4. M. GARETTO; GRIBAUDO M; CHIASSERINI C.-F; LEONARDI E, 2007. **A Distributed Sensor Relocation Scheme for Environmental Control**, The Fourth IEEE International Conference on Mobile Ad-hoc and Sensor Systems, MASS 2007, Pisa, Italy, October 8-11, 2007.
5. M. GARETTO, P. GIACCONE, E. LEONARDI, 2007. **Capacity Scaling in Delay Tolerant Networks with Heterogeneous Mobile Nodes**, 8th ACM Interational Symposium

on Mobile Ad Hoc Networking and Computing, ACM MobiHoc 2007, Montréal, Canada, September 9-14, 2007.

6. M. GARETTO; SALONIDIS T; SAHA A; KNIGHTLY E, 2007. **Identifying High Throughput Paths in 802.11 Mesh Networks: a Model-based Approach**, 5th IEEE International Conference on Network Protocols, ICNP 2007, Beijing, China, October 16-19, 2007.
7. M. GARETTO, P. GIACCONE, E. LEONARDI, 2007. **On the Capacity of Ad Hoc Wireless Networks Under General Node Mobility**, IEEE Computer Society, 26th IEEE International Conference on Computer Communications, INFOCOM 2007, Anchorage, Alaska, US, May 6-12, 2007.
8. M. GARETTO, P. GIACCONE, E. LEONARDI, 2007. **On the Effectiveness of the 2-hop Routing Strategy**, IEEE Computer Society, IEEE International Conference on Communications, ICC 2007, Glasgow, UK, June 24-28, 2007.
9. G. CAROFIGLIO, R. GAETA, M. GARETTO, P. GIACCONE, E. LEONARDI, M. SERENO, 2006. **A Fluid-Diffusive Approach for Modelling P2P Systems**, 14th International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems, MASCOTS 2006, Monterey, California, US, September 11-14, 2006.
10. M. GARETTO, E. LEONARDI, 2006. **Analysis of Random Mobility Models with PDE's**, ACM, 7th ACM International Symposium on Mobile Ad Hoc Networking and Computing, ACM MobiHoc 2006, Florence, Italy, May 22-25, 2006.
11. C. CHIASSERINI, R. GAETA, M. GARETTO, M. GRIBAUDO, M. SERENO, 2006. **Efficient broadcasting of safety messages in multihop vehicular networks**, IEEE Computer Society, 20th International Parallel and Distributed Processing Symposium, IPDPS 2006, Rhodes, Greece. April 25-29, 2006.
12. M. GARETTO, T. SALONIDIS, E. KNIGHTLY, 2006. **Modeling Per-flow Throughput And Capturing Starvation In CSMA Multi-hop Wireless Networks**, 25th Annual Joint Conference of the IEEE Computer and Communications Societies, INFOCOM 2006, Barcelona, Spain. April 23-29, 2006.
13. M. GARETTO, M. GRIBAUDO, 2006. **Performance Analysis of Delay Tolerant Networks with Model Checking Techniques**, IEEE Computer Society, 3rd International Conference on the Quantitative Evaluation of Systems, QEST'06, Riverside, California, US, September 11-14, 2006.
14. M. SERENO, R. GAETA, M. GRIBAUDO, D. MANINI, C. CHIASSERINI, M. GARETTO, 2005. **A Spatial Fluid-Based Framework to Analyze Large-Scale Wireless Sensor Networks**, IEEE Computer Society Press, International Conference on Dependable Systems and Networks (DSN 2005), Yokohama, Japan, 28 June - 1 July, 2005.

15. G. CAROFIGLIO, R. GAETA, M. GARETTO, P. GIACCONE, E. LEONARDI, M. SERENO, 2005, **A statistical physics approach for modelling P2P systems**, PERFORMANCE EVALUATION REVIEW, pp.3- 5, Vol.33(2).
16. G. CAROFIGLIO, C. CHIASSERINI, M. GARETTO, E. LEONARDI, 2006, **Analysis of route stability under the random direction mobility model**, PERFORMANCE EVALUATION REVIEW, pp.36- 38, Vol. 34(3).
17. M. GARETTO, J. SHI, E. KNIGHTLY, 2005. **Modeling media access in embedded two-flow topologies of multi-hop wireless networks**, 11th Annual International Conference on Mobile Computing and Networking, ACM MOBICOM 2005, Cologne, Germany, August 28 - September 2, 2005.
18. C. CASETTI, C. CHIASSERINI, M. FIORE, M. GARETTO, 2005. **Notes on the inefficiency of 802.11e HCCA**, IEEE 62nd Vehicular Technology Conference, VTC-2005-Fall, Dallas, TX, US, September 25-28, 2005.
19. M. AJMONE MARSAN, G. CAROFIGLIO, M. GARETTO, P. GIACCONE, E. LEONARDI, E. SCHIATTARELLA, A. TARELLO, 2005. **Of Mice and Models**, Quality of Service in Multiservice IP Networks, QoS-IP 2005, Catania, Italy, February 2-4, 2005.
20. M. GARETTO, CHIASSERINI C.-F, 2005. **Performance Analysis of 802.11 WLANs Under Sporadic Traffic**, 4th International IFIP-TC6 Networking Conference. NETWORKING 2005, Waterloo, Canada, May 2-6, 2005.
21. E. WILLE, M. GARETTO, M. MELLIA, E. LEONARDI, M. AJMONE MARSAN, 2004. **Considering end-to-end QoS in IP network design**, IEEE Computer Society, 11th International Telecommunications Network Strategy and Planning Symposium, NETWORKS 2004, Vienna, Austria, June 13-16, 2004.
22. C. CHIASSERINI, M. GARETTO, 2004. **Modeling the Performance of Wireless Sensor Networks**, IEEE Computer Society, 23rd Annual Joint Conference of the IEEE Computer and Communications Societies, INFOCOM 2004, Hong Kong, China, March 7-11, 2004.
23. M. AJMONE MARSAN, M. GARETTO, P. GIACCONE, E. LEONARDI, E. SCHIATTARELLA, A. TARELLO, 2004. **Using Partial Differential Equations to Model TCP Mice and Elephants in Large IP Networks**, IEEE Computer Society, 23rd Annual Joint Conference of the IEEE Computer and Communications Societies, INFOCOM 2004, Hong Kong, China, March 7-11, 2004.
24. R. FRACCHIA, M. GARETTO, R. LO CIGNO, 2003. **A Queuing Network Model of Short-Lived TCP Flows with Mixed Wired and Wireless Access Links**, Quality of Service in Multiservice IP Networks, QoS-IP 2003, Milano, Italy, February 24-26, 2003.
25. M. AJMONE MARSAN, M. GARETTO, M. MEO, R. LO CIGNO, 2003. **Colored GSPN Models for the QoS Design of Internet Subnets**, Applications and Theory of Petri Nets 2003, 24th International Conference, ICATPN 2003, Eindhoven, The Netherlands, June 23-27, 2003.

26. M. GARETTO, W. GONG, D. TOWSLEY, 2003. **Modeling Malware Spreading Dynamics**, IEEE Computer Society, Twenty-Second Annual Joint Conference of the IEEE Computer and Communications Societies, INFOCOM 2003, San Francisco, CA, US, March 30-April 3, 2003.
27. M. GARETTO, D. TOWSLEY, 2003. **Modeling, simulation and measurements of queuing delay under long-tail internet traffic**, Proceedings of the International Conference on Measurements and Modeling of Computer Systems, ACM SIGMETRICS 2003, San Diego, CA, US, June 9-14, 2003.
28. M. GARETTO, M. AJMONE MARSAN, M. MEO, R. LO CIGNO, 2003. **On the use of fixed point approximations to study reliable protocols over congested links**, Global Telecommunications Conference, GLOBECOM 2003, San Francisco, CA, US, December 1-5, 2003.
29. C.-F. CHIASSERINI, M. GARETTO, M. MEO, 2002. **Improving TCP over wireless by selectively protecting packet transmissions**, 4th International Workshop on Mobile and Wireless Communications Network, MWCN 2002, Stockholm, Sweden, September 9-11, 2002.
30. M. GARETTO, R. LO CIGNO, M. MEO, E. ALESSIO, M. AJMONE MARSAN, 2002. **Modeling Short-Lived TCP Connections with Open Multiclass Queuing Networks**, Protocols for High Speed Networks, 7th IFIP/IEEE International Workshop, PfHSN 2002, Berlin, Germany, April 22-24, 2002.
31. M. GARETTO, R. LO CIGNO, M. MEO, M. AJMONE MARSAN, 2001. **A Detailed and Accurate Closed Queueing Network Model of Many Interacting TCP Flows**, Twentieth Annual Joint Conference of the IEEE Computer and Communications Societies, INFOCOM 2001, Anchorage, AK, US, April 22-26, 2001.
32. M. GARETTO, R. LO CIGNO, M. MEO, M. AJMOME MARSAN, 2001. **On the Use of Queueing Network Models to Predict the Performance of TCP Connections**, Evolutionary Trends of the Internet, Thyrrhenian International Workshop on Digital Communications, IWDC 2001, Taormina, Italy, September 17-20, 2001.
33. E. ALESSIO, M. GARETTO, R. LO CIGNO, M. MEO, M. AJMONE MARSAN, 2001. **Analytical Estimation of the Completion Times of Mixed NewReno and Tahoe TCP Connections over Single and Multiple Bottlenecks**, Global Telecommunications Conference, GLOBECOM 2001, San Antonio, Texas, US, November 25-29, 2001.

## Book chapter

1. C. CHIASSERINI, R. GAETA, M. GARETTO, M. GRIBAUDO, M. SERENO, 2007. **Message Broadcasting in Wireless Vehicular Ad Hoc Networks**, in G. Min, Y. Pan, and P. Fan, Advances in Wireless Networks: Performance Modelling, Analysis and Enhancement, Nova.