

# Luca De Cicco, PhD

Politecnico di Bari  
Dipartimento di Elettrotecnica ed Elettronica  
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CURRENT POSITION      Post-doc at Politecnico di Bari under the Apulia Region funded strategic project “Telecommunication Facilities and Wireless Sensor Networks in Emergency Management”

RESEARCH INTERESTS      TCP Congestion Control, Multimedia Congestion Control, tools for automatic network measurement, SIP Overload Control, Time delay systems, Hybrid Modeling, Adaptive Video Streaming

EDUCATION      ♦ **Politecnico di Bari**, Bari, Italy.  
*Ph.D.* Dipartimento di Elettrotecnica ed Elettronica, Politecnico di Bari (Italy), Advisor: Prof. Saverio Mascolo (TCP Westwood+ inventor), July 2008  
Title of the thesis: *Modeling, design and implementation issues in Multimedia Congestion Control Algorithms*.

*MSc. Computer Science Engineering* graduated cum laude, Politecnico di Bari (Italy), Advisors: Prof. P. Camarda, Prof. S. Mascolo, Eng. L.A. Grieco, December 2003  
Dissertation: *Congestion Control Algorithms for Multimedia Applications*.

VISITING POSITIONS      ♦ **University of New Mexico**, Albuquerque, NM, USA, ECE Department. Advisor: Prof. Chaouki Abdallah  
Subect of the research: In the context of the NSF funded project FIND (Future INternet Design) he had the opportunity to address mobility issues in networking and new Internet paradigms (Persistent Identifiers).

♦ **Ecole Supérieure d’Electricité’ (Supelec)**, Paris, France. Advisor: Prof. Silviu Iulian Niculescu.  
Subject of the research: stability analysis of systems affected by two independent time delays

RESEARCH PROJECTS      ♦ *Implementation and measurement of congestion control protocols over GPRS and UMTS networks*, 2004. Advisors: Prof. Saverio Mascolo (Politecnico di Bari), Prof. Marco Ajmone Marsan (Politecnico di Torino).  
♦ *Fluid Analytical Models Of autonomous Systems (FAMOUS)*, MIUR-PRIN project no. 2005093971, 2005-2006  
♦ *End-to-End protocols for audio/video over Internet protocol*, 2005-2006, funded by Financial Tradeware plc, Rome  
♦ *Future Internet Design (FIND)*. Advisor: Prof. Chaouki Abdallah (University of New Mexico), funded by National Science Foundation.  
♦ *Traffic and QoS management in Wireless Multimedia Networks* , COST 290 action, contributor, 2006-2007  
♦ *End-to-end protocols for video over IP*, 2007-2008, privately funded by Financial Tradeware plc, Rome

- PUBLICATIONS: Luca De Cicco, S. Mascolo, "An Experimental Investigation of the Akamai Adaptive Video Streaming", in *Proc. of USAB 2010*, Klagenfurt, Austria, Nov. 2010
- ◇ Luca De Cicco, S. Mascolo, V. Palmisano, "Skype Video Congestion Control: an Experimental Investigation", *Computer Networks, Elsevier*, 2010, in press
  - ◇ Luca De Cicco, S. Mascolo, S.-I. Niculescu, "Robust Stability Analysis of Smith Predictor-based Congestion Control Algorithms for Computer Networks", in *Automatica, Elsevier*, accepted (Impact factor 2009: 3.178)
  - ◇ Luca De Cicco, S. Mascolo, "A Mathematical Model of the Skype VoIP Congestion Control Algorithm", in *IEEE Transactions on Automatic Control*, vol. 55, n. 3, pp 790-795, Mar 2010 (Impact factor 2008: 3.293)
  - ◇ Luca De Cicco and S. Mascolo, "A Mismatch Controller for Implementing High-Speed Rate-based Transport Protocols", in *Proc. of 17th IEEE International Conference on Network Protocols (ICNP '09)*, Princeton, NJ, USA, Oct. 13-16, 2009 (Acceptance rate: 18%)
  - ◇ Luca De Cicco, S. Mascolo, S-I Niculescu, "Robust Stability Analysis of a Class of Smith Predictor-based Congestion Control Algorithms for Computer Networks", in *Proc. of IFAC 8th Workshop of Time delay Systems (TDS '09)*, Sinaia, Romania, Sept 1-3, 2009
  - ◇ Luca De Cicco, Saverio Mascolo, Vittorio Palmisano, "A Mathematical Model of the Skype VoIP Congestion Control Algorithm", in *Proc. of IEEE Conference on Decision and Control*, Cancun, Mexico, Dec 2008
  - ◇ Luca De Cicco and S. Mascolo, "Book Title: 'Traffic and QoS Management in Wireless Multimedia Networks'", Contribution to the Chapter on Packet scheduling and Congestion Control, Cost290 Book, Springer Verlag, In Press
  - ◇ Luca De Cicco, S. Mascolo, V. Palmisano, "An Experimental Investigation of the End-to-End QoS of the Apple Darwin Streaming Server", in *Proc. WWIC 2008*, Tampere, Finland, May, 2008
  - ◇ J. Khoury, Luca De Cicco, H. Jerez, C. Abdallah, J. Crichigno, W. Shu, G. Heileman, "Design and Implementation of a Framework for Persistent Identification and Communication in Emerging Networks", in *Proc. of IEEE TRIDENTCOM 2008*, Innsbruck, Austria, March, 2008
  - ◇ Luca De Cicco, S. Mascolo, V. Palmisano, "Skype Video Responsiveness to Bandwidth Variations", in *Proc. of ACM NOSSDAV '08*, Germany, May, 2008
  - ◇ J. Khoury, J. Crichigno, Luca De Cicco, C. T. Abdallah, W. Shu, and G. Heileman, H. Jerez, "The InterMesh Network Architecture", *Mobicom 2007, Montreal, Canada (Demo Session)*, September, 2007
  - ◇ Luca De Cicco, S. Mascolo and V. Palmisano, "An Experimental Investigation of the Congestion Control Used by Skype VoIP", in *Proceedings of WWIC 2007*, May 2007
  - ◇ Luca De Cicco and Saverio Mascolo, "TCP Congestion Control over 3G Communication Systems: an Experimental Evaluation", in *Proceedings of NEW2AN 2007*
  - ◇ Luca De Cicco, Saverio Mascolo, "TCP versus TFRC over wired and wireless Internet scenarios: an experimental evaluation", *NEW2AN 2006*, January 2006
  - ◇ D. Valerio, L. De Cicco, S. Mascolo, F. Vacirca, T. Ziegler, "Optimization of IEEE 802.11 parameters for wide area coverage", *MEDHOCNET 2006*, November 2005
  - ◇ Luca De Cicco and Saverio Mascolo, "Libnetmeas: A Library for Automatic Evaluation of Transport and Application Layer Network Metrics", Technical report 1-10/06, October 2006
  - ◇ Luca De Cicco and Saverio Mascolo, "SIP Overload Control", Technical report 1-11/07, November 2007

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|-----------------------|---|
| PATENTS               | <ul style="list-style-type: none"> <li>◇ Luca De Cicco, Saverio Mascolo, "An actuator for implementing rate-based packet sending over packet switching networks", US patent application n. 20100020691, filed 1st July 2009</li> <li>◇ Luca De Cicco, Saverio Mascolo, "An Actuator for implementing rate-based packet sending over packet switching networks", PCT/IB2009/006186 filed 08 July 2009</li> <li>◇ Luca De Cicco, Saverio Mascolo, "Meccanismo di attuazione per l'invio di pacchetti in modalita' rate-based su reti di comunicazione a commutazione di pacchetto", Italian patent application no. BA2008A000024, filed 9 July 2008</li> </ul>  |
| PHD<br>COURSES        | <ul style="list-style-type: none"> <li>◇ <i>1st HYCON PhD School on Hybrid Systems</i>, 19-22 July 2005, Siena Italy.</li> <li>◇ Tutorial on <i>Peer-to-Peer Networking</i>, by Raouf Boutaba, Networking 2006, May 15-19 2006, Coimbra Portugal.</li> <li>◇ Workshop on <i>Performance Control in Wireless Sensor Networks</i>, Networking 2006, May 15-19 2006, Coimbra Portogallo.</li> <li>◇ PhD School <i>X CIRA Scuola di dottorato sui Sistemi Positivi</i> (PhD school on Positive Systems), July 10-16 2006, Bertinoro Italy.</li> </ul>   |
| REVIEWING<br>ACTIVITY | <ul style="list-style-type: none"> <li>◇ IEEE Transactions on Automatic Control (2006-2010)</li> <li>◇ Computer Networks, (Elsevier) (2007-2010)</li> <li>◇ IEEE Conference on Decision and Control (2006-2009)</li> <li>◇ IEEE American Control Conference (2006-2010)</li> <li>◇ Wired/Wireless Internet Communications (WWIC) (2006-2009)</li> </ul>   |
| TEACHING              | <ul style="list-style-type: none"> <li>◇ He is contract professor of the course "Fondamenti di Automatica I" (Automatic Controls I) (Electronic Engineering, Politecnico di Bari, Italy) (2008/2009 and 2009/2010)</li> <li>◇ He has held a 40 hours course named "The unix-based operating system: GNU/Linux" as a module of the Cisco Certification course (CCNA) held in Matera, Italy, 2004</li> <li>◇ He has held a 65 hours course named "GNU/Linux for the telecommunications" for the training of 6 employees of the telecommunication company AET (Apparecchiature Elettro Telefoniche) S.r.l., (Bari, 2007).</li> <li>◇ He has been TA for the courses "Automatic Controls I" and "Automatic Controls II" at Politecnico di Bari, 2005, 2006, 2007</li> <li>◇ He held several workshops about linux kernel and implementation of congestion control in the linux kernel for the course "Control methods for Telecommunications" (Politecnico di Bari)</li> <li>◇ Since 2007, he serves as a member of the commission for the proficiency exams "Automatic Controls I", "Automatic Controls II", "Control tools for Telecommunication applications" (Telecommunication Engineering, Politecnico di Bari).</li> </ul> |
| SKILLS                | <ul style="list-style-type: none"> <li>◇ <b>Networking</b> Excellent skills in developing and designing TCP/IP stack applications, even in the transport layer of the Linux Kernel. He has very good skills in congestion control algorithms implementation at application layer for video streaming and Voice over IP (VoIP) applications.<br/>He is currently maintaining the TCP Westwood+ module in the Linux Kernel since 2.6.16 release. He has authored a patch for Web100 which enables logging of the Westwood+ end-to-end available bandwidth.</li> <li>◇ <b>Operating Systems</b> Linux user and developer until 1996. Excellent skills in the administration and usage of the most important GNU/Linux distributions. Very good knowledge of Linux Kernel internals.</li> <li>◇ <b>Programming Languages</b> Excellent skills in design and implementation of applications (networking, graphical interfaces, web services) in the following programming languages: C, C++, python, perl, PHP, bash, Tcl</li> </ul>   |

- ◇ **Embedded Systems** Since 2003 he is an active member and developer in the handhelds.org project ([www.handhelds.org](http://www.handhelds.org)) which aims at porting the linux kernel and applications on handhelds devices.

He is active member of the GPE project (<http://gpe.linuxtogo.org/>) and he is mantainer of several applications he wrote. He is promotor of a project named GPE Device Manager which aims at providing a plugin structure for the generic managment of hardware devices present in PDA systems.

Since July 2005 he contributes to the Maemo project ([www.maemo.org](http://www.maemo.org)) and he is in the developer program of the internet tablets N770, N800 and N810.

- FOREIGN     ◇ **English** Good.  
LANGUAGES   ◇ **Portuguese** Good.  
              ◇ **French** Beginner.  
              ◇ **Spanish** Beginner.

REFERENCES ◇ **Prof. Saverio Mascolo**

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◇ **Prof. Chaouki Abdallah**

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