



Saverio
Mascolo

WORK EXPERIENCE

- 01/11/1995 – CURRENT – Bari, Italy

Professor of Automatic Control (professore ordinario)
Politecnico di Bari

Teaching Feedback Control, Control Methods for Computer Networks, Model Predictive Control

Academic research and teaching (ERC sector: PE7 Systems and Communication Engineering)
- 01/09/2015 – 30/09/2021 – Bari, Italy

Head of the Department of Electrical Engineering and Information Science
Politecnico di Bari
- 01/10/2015 – 30/09/2021 – Bari, Italy

Member of the Academic Senate of Politecnico di Bari
Politecnico di Bari
- 10/09/1999 – 30/08/2000 – Los Angeles, United States

Visiting researcher
University of California at Los Angeles
- 2001 – 2006 – Uppsala, Sweden

External Academic consultant
Uppsala University
- 2000 – CURRENT – Bari, Italy

Scientific Coordinator and founder of the “Control of computing and communication systems Lab (C3lab)”
Politecnico di Bari
- 2021 – CURRENT – Bari, Italy

Scientific Coordinator and founder of the teaching laboratory “Mobile robot and embedded control (Mobirec)”
Politecnico di Bari
- 01/10/2021 – CURRENT – Bari, Italy

Coordinator of the MSc course in Automation Engineering
Politecnico di Bari

EDUCATION AND TRAINING

- 10/1991 – 12/1994 – Bari, Italy

Ph.D

Politecnico di Bari

Address Via Orabona 4, c/o Dipartimento di Ingegneria Elettrica ed Elettronica, Politecnico di Bari, Bari, Italy | **Web site** www.poliba.it

01/1995 – 06/1996 – Los Angeles, United States

Post-doc Visiting scholar

University of California at Los Angeles

Address Computer Science Department Boelter Hall, Los Angeles, United States | **Website** www.cs.ucla.edu

PROJECTS

Industrializzazione brevetti “Brevetti+”

Progetto del MISE gestito da Invitalia, Avviso pubblico, G.U. n. 179 del 03/08/2011.

“Guida assistita ed autonoma di carrelli elevatori”

Committente GRUPPO FARAONE.

2020 – 2022

“Monitoraggio Attivo dell’Infrastruttura (MAIA)”

Progetto finanziato dal MISE (2020-2022), PON R&I 2014-2020.

2019 – 2022

SESAME (Smart European Space Access thru Modern Exploitation of Data Science)

The project aims at improving European launchers’ manufacturing and operations through digital technologies, processes and methods. SESAME will provide the European Launcher Industry with a framework aims at achieving cost reduction through improved production and operation effectiveness, reduction of Cost of Non-Quality, improved working environment and operator’s safety. Funded by EU H2020.

01/11/2021 – 29/10/2022

PAMELA (Piattaforme mobili elevabili ad alta guidabilità)

Principal investigator. Funded Project: € 384,400. Funded by MISE- Meditech.

01/07/2018 – 30/04/2022

FURTHER (FUTURE Rivoluzionarie Tecnologie per velivoli più Elettrici)

Progetto di Ricerca Industriale e Sviluppo Sperimentale, area di specializzazione “Aerospazio”, codice identificativo ARS01_01283, dal titolo “FURTHER - FUTURE Rivoluzionarie Tecnologie per velivoli più Elettrici”. Budget Poliba: 1.521.567,50.

2016 – 2020

ATENA (Advanced Tools to assess and mitigate the criticality of ICT components and their dependencies over Critical Infrastructure)

The project will produce a set of tools that, implementing innovative models, methodologies and algorithms for security assurance, and interacting with the available smart components of a CI, will increase the level of cyber-physical security and resilience of underpinning CI & IACS. Funded by EU H2020.

2017 – 2020

CLIPS “a Cloud-based platform for Immersive adaptive video Streaming”

Principal Investigator. Funded budget: € 1,7M.

Bando “HORIZON 2020” PON I&C 2014-2020, D.M. 1 giugno 2016

2015 – 2018

BONVOYAGE “From Bilbao to Oslo, intermodal mobility solutions and interfaces for people and goods, supported by an innovative communication network”

The project aims at designing, developing and testing a platform optimizing **multimodal** door-to-door transport of passengers and goods. European Union's Horizon 2020 research and innovation program under grant agreement No 635867.

01/01/2014 – 31/12/2016

T-NOVA (Network function as a service over virtualized networks)

An Integrated Project co-funded by the European Commission / 7th Framework Programme, aiming at designing and implementing an integrated management architecture, including an Orchestrator platform, for the automated provision, management, monitoring and optimization of Virtualised Network Functions over Network/IT infrastructures. Grant Agreement no. 619520. Collaborator

2014 – 2016

MAIVISTO "Massive Adaptive Video Streaming over the Internet Using the Cloud"

Principal Investigator. Funded budget: € 963K

2012 – 2015

Res Novae (Reti, Edifici, Strade – Nuovi obiettivi virtuosi per l'ambiente e l'energia)

Funded by **Italian University Minister**.

2012 – 2015

PLATINO "PLATform for INNOvative services in future internet"

Principal Investigator at the research unit of Politecnico di Bari. Funded by **Italian University Minister** (2012-2015). Project budget €7M. Funded budget at the research unit €1,1M

2014

Google Faculty Award 2014 per la ricerca "Congestion control for WebRTC"

Control of congestion and delay in real-time communications.

03/2013

CISCO Research Award (CG #574954)

Assegnato da Fondo "Cisco-University Research Program", amministrato dalla Fondazione americana "Silicon Valley Community", per la ricerca dal titolo: "Architecture for Robust and Efficient Control of Dynamic Adaptive Video Streaming over HTTP".

2008 – 2009

"Distribuzione audio/video su IP"

Finanziato dalla società Financial Tradeware plc di Roma.

2006 – 2008

"Traffic Engineering and QoS Control in Multimedia-enabled Wireless Networks"

Azione COST 290. S. Mascolo è rappresentante dell'Italia nel Management Committee dell'azione.

2005 – 2006

FAMOUS (Fluid Analitic Models Of aUtonomic Systems)

Progetto PRIN, codice: 2005093971. S. Mascolo è responsabile dell'Unità di ricerca del Politecnico di Bari aggregata all'Unità del Politecnico di Torino.

2005 – 2006

Progetto "TCP su reti wireless"

Finanziato dalla società Financial Tradeware srl di Roma.

2002 – 2006

Progetto "Wireless IP"

Finanziato dalla Swedish Strategic Research Initiative.

Il progetto coinvolge le Università svedesi di Uppsala, Goeteborg, Lund e Chalmers.

01/01/1999 – 31/12/2004

Complex Interactive Networks/Systems

EPRI and DDR&E, through the Army Research Office (see page 104, Control Systems, vol. 19, no. 6, Dec. 1999). The initiative was a 5 year, \$30 million Government Industry Collaborative University Research effort to develop revolutionary concepts for operating complex and interconnected networks such as the electric power grid, telecommunications, transportation, banking, and finance infrastructure. Six university consortia were selected in a highly competitive process (CalTech, UCLA, UCSB, MIT, U. of Illinois U-C). S. Mascolo was in charge to coordinate the research efforts of Departments of Electrical Engineering (Prof. Paganini) and Computer Science (Prof. M. Gerla)

2001 – 2003

“Traffic models and Algorithms for Next Generation IP networks Optimization” (TANGO)

Progetto FIRB. S. Mascolo è responsabile scientifico dell’Unità di ricerca del Politecnico di Bari. Nell’ambito di tale progetto è stata realizzata interamente al Politecnico di Bari la progettazione e l’implementazione nel kernel di Linux del controllo di congestione denominato Westwood+ TCP. Tale implementazione fa parte della distribuzione ufficiale di Linux a partire dal kernel 2.6.

1998 – 2000

“Control Methods for ATM congestion control”

Finanziato dalla National Science Foundation. Saverio Mascolo è stato co-PI del progetto presso l’Università della California a Los Angeles. Tale progetto è stato presentato in seguito alle ricerche svolte da Mascolo negli anni 95-96 in cui per la prima volta sono state applicate le metodologie dei controlli automatici al controllo del traffico nelle reti ATM.

HONOURS AND AWARDS

2018

IEEE Fellow

IEEE Fellow for "contributions to modeling and control of congestion in packet networks"

2014

Google Faculty Award – Google US

for the research entitled "Congestion Control for Web Real-Time Communication (WebRTC)"

2013

Cisco Academy Research Award – Cisco US

"Architecture for Robust and Efficient Control of Dynamic Adaptive Video Streaming over HTTP" (CG #574954)

EDITORIAL ACTIVITY

01/2008 – 12/2012

Associate Editor of the IEEE Transactions on Automatic Control

04/2016 – CURRENT

Associate Editor of the IEEE/ACM Transactions on Networking

01/2008 – CURRENT

Associate Editor of the Computer Networks Journal, Elsevier

2003 – 2018

Associate Editor of the IEEE Control Systems Conference Editorial Board

PATENTS

End-to-end bandwidth estimation for congestion control in packet switching networks

United States patent 7130268 granted Oct. 31 2006.

Inventor: S. Mascolo

METHOD AND APPARATUS FOR TCP WITH FASTER RECOVERY

United States patent 7299280 granted nov. 2007

Title: Inventors: S. Mascolo, C. Casetti, M. Gerla, M. Senadidi, S. Lee

Rate based congestion control for packet networks

United States Patent 7593335 granted on **Sept. 22, 2009**

Inventor: S. Mascolo,

Actuator for implementing rate-based packet sending over packet switching networks

United States patent nr. 7916637 granted **march 29, 2011**

Inventors: Luca De Cicco and Saverio Mascolo

Controlling Player Buffer and Video Encoder for Adaptive Video Streaming

United States Patent nr. 2015/014677, 8 granted **dec 27, 2016**

Inventors: Luca De Cicco and Saverio Mascolo.

SELECTED PUBLICATION LIST RELEVANT FOR THE PROJECT

2022

Optimal QoE-fair Resource Allocation in Multi-Path Video Delivery Networks

Gioacchino Manfredi, Luca De Cicco, Saverio Mascolo, *IEEE Transactions on Network and Service Management*, 2022

05/2020

A DASH 360° Immersive Video Streaming Control System

G. Ribezzo, L. De Cicco, V. Palmisano, S. Mascolo, *Internet Technology Letters*, Wiley, May 2020, DOI: 10.1002/itl2.175

06/2019

Reducing the Network Bandwidth Requirements for 360° Immersive Video Streaming

L. De Cicco, S. Mascolo, V. Palmisano, G. Ribezzo, *Internet Technology Letters*, Wiley, e118, doi: 10.1002/itl2.118, June, 2019

01/06/2019

QoE-driven Resource Allocation for Massive Video Distribution

Luca De Cicco, Saverio Mascolo, Vittorio Palmisano, *Ad Hoc Networks*, Elsevier, vol. 89, pp. 170-176, 1 June, 2019

03/2018

Modeling and Design of Adaptive Video Streaming Control Systems

Giuseppe Cofano, Luca De Cicco, Saverio Mascolo, *IEEE Transactions on Control of Network Systems*, vol. 5, no. 1, pp. 548-559, doi: 10.1109/TCNS.2016.2631452, March 2018;

2017

Congestion Control for WebRTC: Standardization Status and Open Issues

L. De Cicco, G. Carlucci, and S. Mascolo, *IEEE Communications Standards Magazine*, Feature topic 'Real Time Communications in the Web', vol. 1, no. 2, pp. 22-27, 2017, doi: 10.1109/MCOMSTD.2017.1700014

10/2017

Congestion Control for Web Real-Time Communication

G. Carlucci, L. De Cicco, S. Holmer, and S. Mascolo, *IEEE/ACM Transactions on Networking*, vol. 25, no. 5, pp. 2629-2642, Oct. 2017.

03/2017

Design and Experimental Evaluation of Network-assisted Control Strategies for HTTP Adaptive Video Streaming

G. Cofano, L. De Cicco, T. Zinner, A. Nguyen-Ngoc, P. Tran-Gia, and S. Mascolo, *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)*, March 2017

08/2016

A Hybrid Model of the Akamai Adaptive Streaming Control System

L. De Cicco, G. Cofano, and S. Mascolo, *Nonlinear Analysis: Hybrid Systems, Special Issue da 'IFAC World Congress 2014'*, Elsevier, Volume 21, Pages 139-154, DOI 10.1016/j.nahs.2015.12.007, August 2016

07/2016

● **Controlling Queuing Delays for Real-Time Communication: Interplay of E2E and AQM Algorithms**

G. Carlucci, L. De Cicco, and S. Mascolo, *ACM SIGCOMM Computer Communication Review*, July 2016

09/2015

● **Local SIP Overload Control: Controller Design and Optimization by Extremum Seeking**

L. De Cicco, G. Cofano, and S. Mascolo, *IEEE Transactions on Control of Network Systems*, Vol. 2, Issue 3, pp. 267-277, Sept. 2015

04/2014

● **An Adaptive Video Streaming Control System: Modeling, Validation, and Performance Evaluation**

L. De Cicco and S. Mascolo, *IEEE/ACM Transaction on Networking*, Volume 22, Issue 2, April 2014

04/2014

● **An Adaptive Video Streaming Control System: Modelling, Validation, and Performance Evaluation**

L. De Cicco and S. Mascolo, *IEEE/ACM Transactions on Networking*, in Volume 22, Issue 2, April 2014 ([PDF](#))

2011

● **Skype Video Congestion Control: an Experimental Investigation**

L. De Cicco, S. Mascolo, V. Palmisano, *Computer Networks, Elsevier*, vol. 55, n.3, pp. 558-571, 2011

08/2011

● **Robust Stability Analysis of Smith Predictor-based Congestion Control Algorithms for Computer Networks**

L. De Cicco, S. Mascolo, S.-I. Niculescu, *Automatica, Elsevier*, vol. 47, issue 8, pp. 1685-1692, August, 2011.

03/2010

● **A Mathematical Model of the Skype VoIP Congestion Control Algorithm**

L. De Cicco, Saverio Mascolo, *IEEE Trans. on Automatic Control*, vol. 55, n. 3, pp. 790-795, Mar 2010. **IF 3.293**

04/2007

● **Feedback-based Control for Providing Real-time Services with the 802.11e MAC**

G. Boggia, P. Camarda, L. A. Grieco, Saverio Mascolo, *IEEE/ACM Trans. on Networking*, vol.15, no.2, pp. 323-333, April 2007. **(Regular paper). IF 1.831.**

04/2006

● **Modeling the Internet congestion control using a Smith controller with input shaping**

Saverio Mascolo, *Control Engineering Practice*, vol. 14, Issue 4, pp. 425-435, April 2006, Elsevier. **(Regular paper). IF 1.263.**

2005

● **A Congestion Control Algorithm for the Deep Space Internet**

L. A. Grieco, Saverio Mascolo, *Space Communications*, An International Journal, Special Issue on Satellite Network Protocols, Volume 20, Number 3/4, 2005, pp. 155-160. **(Regular paper). IF. 0.250.**

01/2005

● **Mathematical analysis of Westwood+ TCP congestion control**

L. A. Grieco and S. Mascolo, *IEE PROCEEDINGS-CONTROL THEORY AND APPLICATIONS*, vol. 152, no.1, pp. 35-42, Jan 2005. **(Regular paper). IF 1.045.**

10/2004

● **A Control Theoretical Approach to Congestion Control in Packet Networks**

D. Cavendish, M. Gerla, S. Mascolo, **IEEE/ACM Transactions on Networking**, vol. 12, no. 5, pp. 893-906, October 2004. (Regular paper). IF 1.789.

06/2004

Adaptive Rate Control for Streaming Flows over the Internet

L.A. Grieco, S. Mascolo, **ACM Multimedia Systems Journal**, vol. 9, no. 6, pp. 517 – 532, June 2004, Springer-Verlag. (Regular paper). IF 0.438.

04/2004

Performance Evaluation and Comparison of Westwood+, New Reno, and Vegas TCP Congestion Control

L. A. Grieco, S. Mascolo, **ACM Computer Communication Review**, vol. 34, no. 2, pp. 25-38, April 2004. (Regular paper). IF 0.578.

04/03/2004

Intraprotocol Fairness and Interprotocol Friendliness of the TFRC Congestion Control Algorithm

L. A. Grieco, S. Mascolo, **IEE Electronics Letters**, 4th March 2004, vol. 40, no. 5. IF 1.063.

01/2004

Performance evaluation of Westwood+ TCP congestion control

S. Mascolo, L. A. Grieco, R. ferorelli, P. camarda , G. piscitelli, **Performance Evaluation**, 55 (2004), pp. 93-111, *Special Issue with Selected papers from Golbecom 02*, Elsevier, North-Holland, January 2004. (Regular paper). IF 0.694.

15/08/2003 – 15/08/2003

Dead-time and Feed-forward Disturbance Compensation for Congestion Control in Data Networks

S. Mascolo, **International Journal on System Science**, Special Issue on: Time Delay Systems for Communication Networks, vol. 34, no. 10-11, pp. 627-639, 15 Aug-15 Sept. 2003, Taylor and Francis Group. (Regular paper). IF 0.492.

12/2002

Generalized Window Advertising for TCP Congestion Control

M. Gerla, R. Locigno, S. Mascolo, W. Weng, **European Transactions on Telecommunications**, vol. 13, no. 6, pp. 549-562, Nov/Dec. 2002. (Regular paper). IF 0.236.

09/2002

TCP Westwood: end-to-end bandwidth estimation for enhanced transport over wireless links

C. Casetti, M. Gerla, S. Mascolo, M. Sanadidi, R. Wang, **ACM Wireless Networks**, *Special issue with Extended Versions of selected papers from Mobicom 2001*, vol. 8, no. 5, pp.467-479, Sept. 2002. Springer Netherlands. (Regular paper). (Il paper pubblicato a Mobicom è citato 378 volte). IF 1.350.

02/2000

Smith's Principle for Congestion Control in High Speed Data Networks

S. Mascolo, **IEEE Trans. on Automatic Control**, vol. 45, no. 2, pp. 358-364, Feb 2000. (Technical Note). IF 1.553.

12/1999

Congestion control in high-speed communication networks using the Smith principle

S. Mascolo, **Automatica**, vol. 35, no. 12, Dec. 1999, pp. 1921-1935. Special Issue on "Control methods for communication networks". Eds. VenkatAnantharam, Jean Walrand (Regular paper). IF 1.449.

11/1997

ATM Rate Based Congestion Control Using a Smith Predictor

S. Mascolo, D. Cavendish, M. Gerla, **Performance Evaluation**, *Special Issue on "ATM Traffic Control"*, vol. 31, no. 1-2, Nov. 1997, pp. 51-65, Elsevier. (Si tratta della versione estesa del lavoro pubblicato alla conferenza Infocom 1996 citato 80 volte). (Regular paper). IF 0.593.

Bibliometric indices

h-index = 44

g-index = 91

papers: 279

citations: 8829

Source: scholar google on 18/09/2022

TECHNOLOGY TRANSFER

2009 - CURRENT

Founder of Quavlive srl

A Multimedia streaming and videoconferencing company. Active since 2014.

DICHIARAZIONE

DICHIARAZIONE

DICHIARAZIONI SOSTITUTIVE DI CERTIFICAZIONI

(art. 46 del D.P.R. n. 445/2000)

DICHIARAZIONI SOSTITUTIVE DELL'ATTO DI NOTORIETA'

(art. 47 del D.P.R. n. 445/2000)

COGNOME MASCOLO

NOME Saverio

consapevole che chiunque rilascia dichiarazioni mendaci, forma atti falsi o ne fa uso è punito ai sensi del codice penale e delle leggi speciali in materia,

DICHIARA

che quanto riportato nel presente Curriculum Vitae et Studiorum corrisponde al vero.

Dichiara inoltre di essere informato, ai sensi e per gli effetti di cui al D.Lgs 196/2003 che i dati personali raccolti saranno trattati, anche con strumenti informatici, esclusivamente nell'ambito del procedimento per il quale le presenti dichiarazioni vengono rese.

(*) Autentica omessa ai sensi del c. 11 dell'art. 2 della L. 191/98

"According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV."

Bari, 19/09/2022