PERSONAL INFORMATION

Full name: **Guglielmo Cola**
Date and place of birth: 16/04/1985, Livorno, Italy
Telephone, email: +39 050 2217 691, g.cola@iet.unipi.it

CURRENT POSITION

- **Postdoctoral Researcher**
  Since Jun 2015
  Dept. Ingegneria dell'Informazione (Computer Engineering), University of Pisa, Pisa, Italy

EDUCATION

- **PhD in Ingegneria dell'Informazione (Computer Engineering)**
  Jan 2012 – Jun 2015 (Three-year grant issued by the Italian Ministry of Education)
  University of Pisa, Pisa, Italy
  PhD thesis entitled *"Detection of falls and gait anomalies using wearable sensors",*
  supervisors Prof Marco Avvenuti, Prof Alessio Vecchio

- **Master's degree in Ingegneria Informatica (Computer Engineering)**
  Oct 2007 – May 2010
  University of Pisa, Pisa, Italy
  Final evaluation: **110/110 cum laude**
  Thesis entitled *"An innovative approach to false alarm recognition in fall detection systems",*
  supervisors Prof Marco Avvenuti, Prof Paolo Corsini, Prof Alessio Vecchio

- **Bachelor's degree in Ingegneria Informatica (Computer Engineering)**
  Oct 2004 – May 2007
  University of Pisa, Pisa, Italy
  Final evaluation: **110/110 cum laude**
  Thesis entitled *"Image creation for domotics simulator",*
  supervisors Prof Luigi Rizzo, Prof Marco Avvenuti

POSITIONS AND RELATED RESEARCH GRANTS

- **Postdoctoral Researcher** (since Jan 2017)
  Dept. Ingegneria dell'Informazione (Computer Engineering), University of Pisa, Pisa, Italy
  Research grant entitled: "*Algorithms based on swarm intelligence to coordinate drones in unstructured environments*"

- **Postdoctoral Researcher** (Jan 2016 – Dec 2016)
  Dept. Ingegneria dell'Informazione (Computer Engineering), University of Pisa, Pisa, Italy
  Research grant entitled: "*Analysis of sensory data: from traditional sensors to social sensors*"

- **Postdoctoral Researcher** (Jul 2015 – Dec 2015)
  Dept. Ingegneria dell'Informazione (Computer Engineering), University of Pisa, Pisa, Italy
  Research grant entitled: "*Continuous activity monitoring to enhance healthcare*"

- **Research Fellow** (Jan 2015 – June 2015)
  Dept. Ingegneria dell'Informazione (Computer Engineering), University of Pisa, Pisa, Italy
  Research grant entitled: "*Techniques for gait-based identification using wearable sensors*"

- **Research Fellow** (Sep 2011 – Dec 2011)
  Dept. Ingegneria dell'Informazione (Computer Engineering), University of Pisa, Pisa, Italy
  Research grant entitled: "*Design of a system to gather context information from wireless sensors, aimed to the recognition of human activities*"

VISITING EXPERIENCE

- **Visiting PhD student** (Jan 2014 – Jul 2014 and Sep 2014 – Dec 2014)
  Hamlyn Centre, Imperial College London, London, UK
  Scholarship issued by the Italian Ministry of Education to foster mobility to other EU countries
  Main research activity: use of wearable sensors for the detection of gait anomalies and gait-based user authentication.
  Supervisors: Prof Guang-Zhong Yang, Dr Benny Lo

TEACHING AND MENTORING EXPERIENCE

TEACHING ASSISTANT AND MEMBER OF THE EXAM COMMITTEE:

- **Operative systems** (academic year 2017/2018)
  University of Pisa, Bachelor's course in Computer Engineering
- **Computer programming** (academic years 2012/2013 and 2013/2014)
  University of Pisa, Bachelor's course in Biomedical Engineering

SUPERVISION OF STUDENTS:

- **2017,** Andrea Soldati, Bachelor's thesis (Computer Engineering) entitled:
  "Rilevazione delle fasi del passo mediante scarpa sensorizzata (Detection of gait phases using a sensorized shoe)".
- **2016,** Fabio Musso, Master's thesis (Computer Engineering) entitled:
  "A reliable gait detection method for wrist-worn smart devices".
- **2016,** Pierpaolo Piazza, Master's thesis (Computer Engineering) entitled:
  "A wrist-worn fall detection system using accelerometer and barometer sensors".
- **2015,** Daniele Conventi, Bachelor's thesis (Computer Engineering) entitled:
  "iOS Logger Application".
- **2015,** Manuel Pratelli, Master's thesis (Computer Engineering) entitled:
  "Studio e sperimentazione di un metodo per il riconoscimento di attivita mediante l'uso combinato di smartwatch e smartphone (Combined use of smartphones and smartwatches for activity recognition)".
- **2014,** Carmela Rosetta, Master's thesis (Computer Engineering) entitled:
  "Utilizzo di tecniche di anomaly detection nella realizzazione di sistemi di fall detection personalizzati basati su smartphone (Anomaly detection techniques for personalised fall detection using smartphones)".

INVITED TALKS:

- ***Wearable sensors to continuously monitor activities and enhance healthcare"***
  Master's course in Computer Engineering, **18 May 2017**, University of Pisa, Pisa, Italy
- ***"Wearable sensors to continuously monitor activities and enhance healthcare"***
  Master's course in Computer Engineering, **28 Apr 2016**, University of Pisa, Pisa, Italy
- ***"Continuous activity monitoring using wearable sensors to enhance healthcare"***
  Master's course in Computer Engineering, **21 May 2015**, University of Pisa, Pisa, Italy
- ***"Continuous Monitoring of Gait Changes through Anomaly Detection"***
  Hamlyn Centre, 2 Jul 2014, Imperial College London, London, UK
- ***"Activity recognition: a case study on fall detection systems"***
  Master's course in Computer Engineering, **22 May 2013**, University of Pisa, Pisa, Italy
- ***"Human activity recognition through wearable sensors"***
  Master's course in Computer Engineering, **23 May 2012**, University of Pisa, Pisa, Italy
- ***"An innovative approach to false alarm recognition in fall detection systems"***
  Master's course in Computer Engineering, **25 May 2010**, University of Pisa, Pisa, Italy

SERVICE TO THE SCIENTIFIC COMMUNITY

ORGANISATION OF SCIENTIFIC MEETINGS:

- **TPC member**
  International Workshop on the Impact of Human Mobility in Pervasive Systems and Applications (PerMoby 2016), Sidney, Australia, **2016**
- **Publicity chair**
  International Workshop on the Impact of Human Mobility in Pervasive Systems and Applications (PerMoby 2016), San Diego, USA, **2013**

EDITORIAL SERVICE:

- **Co-guest editor**
  Special issue on Wearable systems for e-health and wellbeing, Personal and Ubiquitous Computing, Springer, **2017**

REFEREE ACTIVITY:

Journals:

- EURASIP Journal on Wireless Communications and Networking, Springer
- Internet of Things Journal, IEEE
- Journal of Biomedical and Health Informatics, IEEE
- Personal and Ubiquitous Computing, Springer
- Pervasive Computing, IEEE
- Pervasive and Mobile Computing, Elsevier
- Sensors Journal, IEEE
- Transactions on Neural Systems & Rehabilitation Engineering, IEEE
- Transactions on Cognitive and Developmental Systems, IEEE

Scientific Meetings:

- BioMedical Circuits and Systems Conference (BIOCAS), IEEE
- International Conference on Emerging Technologies and Factory Automation (EFTA), IEEE
- International Conference on Intelligent Environments (IE), IEEE
- International Conference on Robotics and Automation (ICRA), IEEE
- International Workshop on the Impact of Human Mobility in Pervasive Systems and Applications (PerMoby), IEEE

PARTICIPATION TO PROJECTS

- **SCIADRO (since 2017)**
  "Swarms of drones", funded by the Tuscany Region
- **PRA 2016**
  "Analysis of sensory data: from traditional sensors to social sensors", funded by the University of Pisa
- **PRIN 2010-2011**
  "Dinamica dei sistemi morfologici in risposta ai cambiamenti globali e rischi geomorfologici indotti (Dynamics of morphological systems in response to global changes and associated geomorphic risks)", funded by the Italian Ministry of Education
- **FIDO 2010-2011**
  "Sistema wireless per il riconoscimento e la segnalazione di cadute di persone anziane (Wireless system for the detection and notification of falls in older adults)", funded by Cassa di Risparmio di Lucca.
- **PRIN 2008**
  "Cloud@Home: un paradigma di calcolo nuovo e potente (a novel and powerful computing paradigm)", funded by the Italian Ministry of Education

COLLABORATIONS WITH INDUSTRY

- **2014-2015**, Research contract with TD Nuove Tecnologie S.p.A. (Cagliari, Italy), for the "*Implementation and testing of lightweight fall detection techniques based on acceleration analysis on miniaturised devices"*. Principal investigator: Prof. Marco Avvenuti.
- **2010-2011**, 1-year contract as System Analyst with the Avionics Laboratory, I.D.S. Ingegneria dei Sistemi S.p.A. Main activity: Object-oriented development using C++ and the Qt framework

PATENTS

- S. Abbate, M. Avvenuti, G. Cola, P. Corsini, A. Vecchio[1]
  Dispositivo e procedimento per il riconoscimento di falsi allarmi in un apparecchio personale di segnalazione di emergenze (Device and method for the recognition of false alarms in a wearable equipment for emergency alert)
  Italian Patent number 0001404040, owned by the University of Pisa, **2012**

PUBLICATIONS

JOURNALS:

- A. Vecchio, F. Mulas, G. Cola,
  Posture recognition using the interdistances between wearable devices
  Sensors Letters (IEEE), **2017**
  (DOI: 10.1109/LSENS.2017.2726759 – ISSN: 2475-1472)

- G. Cola, M. Avvenuti, A. Vecchio
  Real-Time Identification Using Gait Pattern Analysis on a Standalone Wearable Accelerometer
  The Computer Journal (Oxford Press), **2017**
  (DOI: 10.1093/comjnl/bxw111 – ISSN: 0010-4620)

- G. Cola, M. Avvenuti, A. Vecchio, G.Z. Yang, B. Lo,
  An on-node processing approach for anomaly detection in gait
  Sensors Journal (IEEE), **2015**
  (DOI: 10.1109/JSEN.2015.2464774 – ISSN: 1530-437X)

- G. Cola, A. Vecchio, M. Avvenuti
  Improving the performance of fall detection systems through walk recognition
  Journal of Ambient Intelligence and Humanized Computing (Springer), **2014**
  (DOI: 10.1007/s12652-014-0235-x – ISSN: 18685137)

- S. Abbate, M. Avvenuti, F. Bonatesta, G. Cola, P. Corsini, A. Vecchio[1]
  A smartphone-based fall detection system
  Pervasive and Mobile Computing (Elsevier), **2012**
  (DOI: 10.1016/j.pmcj.2012.08.003 – ISSN: 15741192)

BOOK CHAPTERS:

- G. Cola, M. Avvenuti, P. Piazza, and A. Vecchio
  Fall detection using a head-worn barometer
  Perego P., Andreoni G., Rizzo G. (eds) Wireless Mobile Communication and Healthcare. MobiHealth 2016. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 192. Springer, Cham, 2017
  (DOI: 10.1007/978-3-319-58877-3_29 – ISBN 978-3-319-58876-6)

- M. Avvenuti, C. Bernardeschi, M.G.C.A. Cimino, G. Cola, A. Domenici, and G. Vaglini[1]
  Detecting elderly behavior shift via smart devices and stigmergic receptive fields
  Perego P., Andreoni G., Rizzo G. (eds) Wireless Mobile Communication and Healthcare. MobiHealth 2016. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 192. Springer, Cham, 2017
  (DOI: 10.1007/978-3-319-58877-3_50 – ISBN 978-3-319-58877-3)

[1] Authors listed in alphabetical order.

CONFERENCE AND WORKSHOP PROCEEDINGS:

- M. Avvenuti, N. Carbonaro, M. Cimino, G. Cola, G. Vaglini[1]
  Smart shoe-based evaluation of gait phase detection accuracy using body-worn accelerometers
  Accepted for presentation at the 7th EAI Int. Conf. on Wireless Mobile Communication and Healthcare - "Transforming healthcare through innovations in mobile and wireless technologies"

- G. Cola, M. Avvenuti, F. Musso, A. Vecchio
  Personalized gait detection using a wrist-worn accelerometer
  Proc. of the 14th IEEE International Conference on Wearable and Implantable Body Sensor Networks (BSN), IEEE, May 2017, Eindhoven, Netherlands
  (DOI: 10.1109/BSN.2017.7936035 – ISBN: 978-1-5090-6244-7)

- G. Cola, M. Avvenuti, F. Musso, A. Vecchio
  Gait-based authentication using a wrist-worn device
  Proc. of the 13th Annual Int. Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MOBIQUITOUS), ACM, November 2016, Hiroshima, Japan
  (DOI: 10.1145/2994374.2994393 – ISBN: 978-1-4503-4750-1)

- A. Vecchio, G. Cola
  Fall detection using ultra-wideband positioning
  Proc. of IEEE Sensors 2016, IEEE, October 2016, Orlando, Florida, USA
  (DOI: 10.1109/ICSENS.2016.7808527 – ISBN: 978-1-4799-8287-5)

- G. Cola, M. Avvenuti, A. Vecchio, G.Z. Yang, B. Lo
  An Unsupervised Approach for Gait-based Authentication
  Proc. of the 2015 IEEE Int. Conf. on Body Sensor Networks (BSN),
  Jun 9-12 **2015**, MIT, Cambridge, MA, USA
  (DOI: 10.1109/BSN.2015.7299423)

- S. Abbate, M. Avvenuti, G. Cola, P. Corsini, J. Light, A. Vecchio[1]
  Recognition of false alarms in fall detection systems
  Proc. of the 8th Annual IEEE Consumer Communications & Networking Conference,
  Jan 9-12 **2011**, Las Vegas, NV, USA
  (DOI: 10.1109/CCNC.2011.5766464)

EDITORIALS:

- G. Cola, A. Vecchio[1]
  Special issue on ***Wearable systems for e-health and wellbeing***
  Personal and Ubiquitous Computing (Springer), 2017
  (DOI: 10.1007/s00779-017-1041-1 – ISSN: 1617-4909)

IMPACT OF RESEARCH

Database	Citations	H-Index
Google Scholar	262	5
Scopus	164	4