

ANDREA MANNINI

PERSONAL INFORMATION

Born in Empoli (FI), Italy, 14 October 1984

email andrea.mannini@gmail.com

phone (H) +39 0571 711 608 · (M) +39 347 64 07 358

WORK EXPERIENCE

from Jan 2015 External collaborator

Winmedical S.R.L.,
Cascina PI, Italy

Algorithm design and development for a wearable device for continuous vital signs monitoring.

Reference: Eng. Nicola TACCINI · nicola.taccini@winmedical.com

from July 2013 Research fellow

Biorobotics
Institute, Scuola
Sant'Anna, Pisa

Algorithm designer, software and hardware designer for wearable sensor nodes on the European funded projects IDONTEFALL and iSUPPORT.

Reference: Prof. Angelo M. SABATINI · sabatini@sssup.it

Mar to Aug 2012 Visiting Scholar

Northeastern
University, Boston,
MA

Research in the mHealth lab on the topic: *Activity classification from wrist worn accelerometer with subject specific calibration strategies.*

Reference: Prof. Stephen S. INTILLE · s.intille@neu.edu

2007–2008 Voluntary research activity

Research Centre E.
Piaggio,
University of Pisa

Continued working in this centre to complete the ongoing studies on dielectric elastomers and polymeric actuation for dynamic finger splints.

Reference: Prof. Federico CARPI · f.carpi@qmul.ac.uk

EDUCATION

2009–2013 Scuola Superiore Sant'Anna, Pisa

PhD in
BioRobotics

GPA: 100/100 · *cum laude* · School: Innovative Technologies, mj BioRobotics
Thesis: *Study and development of machine learning methods for human movement recognition and analysis*

Advisor: Prof. Angelo M. SABATINI

2010 Professional Habilitation

Habilitation

Information Engineering, GPA: 220/240

2007–2009 University of Pisa

Master of
Biomedical
Engineering

GPA: 110/110 · *cum laude* · *Biomedical Engineering* · Curriculum:
Bioinformatics and Bioinstrumentation

Thesis: *Study and development of methods for automatic human movements and postures classification, from accelerometers data*

Advisors: Prof. Angelo M. SABATINI · Prof. Luigi LANDINI

2003–2006 University of Pisa

Bachelor of
Biomedical
Engineering

GPA: 110/110 · *cum laude* · *Biomedical Engineering* · Curriculum:
Bioinformatics and Bioinstrumentation

Thesis: *Dynamic splint-like hand orthosis for finger rehabilitation*

Advisors: Prof. D. DE ROSSI · Prof. F.A. DI PUCCIO · Prof. F. CARPI

1998–2003 High School

Scientific Diploma

Liceo Scientifico "Il Pontormo", Empoli. GPA: 100/100

SELECTED PUBLICATIONS

I have been authoring 33 international publications, (2 book chapters, 12 journal papers and 20 conference papers). Here is a list including the most relevant one for each year. Please refer to my [Google Scholar](#) website for the complete list.

- 2016 A. MANNINI, D. TROJANIELLO, A.CEREATTI and A.M. SABATINI, A Machine Learning Framework for Gait Classification using Inertial Sensors: Application to Elderly, Post-stroke and Huntington's Disease Patients, *Sensors*, vol. 16(1), pp. 134(1-14), Jan 2016;
- 2015 A. MANNINI, A.M. SABATINI and S.S. INTILLE, Accelerometry-based recognition of the placement site of a wearable sensor, *Pervasive and Mobile Computing*, vol. 21, pp. 62-74, 2015;
- 2014 A. MANNINI and A.M. SABATINI, Walking speed estimation using foot-mounted inertial sensors: comparing machine learning and strap-down integration methods, *Medical Engineering and Physics*, vol. 36, no. 10, pp. 1312-1321, 2014;
- 2013 A. MANNINI, S.S. INTILLE, M. ROSENBERGER, A.M. SABATINI, W. HASKELL, Activity recognition using a single accelerometer placed at the wrist or ankle, *Medicine and Science in Sports and Exercise*, vol. 45, no. 11, pp. 2193-2203, 2013;
- 2012 A. MANNINI and A.M. SABATINI, Gait phase detection and classification between walking-jogging activities using Hidden Markov Models applied to foot motion data from a gyro sensor, *Gait & Posture*, 36, pp.657-661, 2012
- 2011 A. MANNINI and A.M. SABATINI, *Healthcare and accelerometry: applications for activity monitoring, recognition and functional assessment*, as part of *Healthcare Sensor Networks Challenges Toward Practical Implementation*. Editors: D. Lai, R. Begg, Taylor & Francis CRC Press, ISBN:978-1-439-82181-7, October 2011;
- 2010 A. MANNINI and A.M. SABATINI, Machine Learning Methods for Classifying Human Physical Activity from On-Body Accelerometers, *Sensors*, Vol. 10(2), pp. 1154-1175, February 2010;
- 2009 F. CARPI, A. MANNINI and D. DE ROSSI, *Dynamic splint-like hand orthosis for finger rehabilitation*, as part of *Biomedical applications of electroactive polymer actuators*, Editors: F. Carpi and E. Smela, John Wiley & Sons LTD, Chichester (United Kingdom), ISBN:978-0-470-77305-5, April 2009;
- 2008 F. CARPI, A. MANNINI and D. DE ROSSI, Elastomeric contractile actuators for hand rehabilitation splints, *Proceedings of SPIE*, Volume 6927(1), pp. 692-705, March 2008;

GENERAL SKILLS

- Advanced* Machine learning for classification and regression (preferred methods: support vector machines, hidden markov models, Logistic regression), algorithm development, human movement analysis, gait segmentation methods, gait classification methods, wearable sensor networks, inertial sensors, scientific writing and results presentation, high level programming languages
- Intermediate* Data fusion methods, biomedical signals processing and algorithms (ECG, respiration from electrical impedance, photoplethysmography, tonometry, blood pressure estimation from pulse transit time), project proposal writing, low level programming languages, graphical user interfaces implementation (Matlab/Visual C/Android Java), fall detection algorithms
- Basic* Bioinformatics algorithms, emerging technologies for actuation such as electroactive polymers

COMPUTER AND CODING SKILLS

<i>Advanced</i>	Matlab, Vicon Nexus
<i>Intermediate</i>	ANSI C, text writing using WYSIWYM approach (L ^A T _E X, LyX), Simulink, Labview, Arduino, Eclipse
<i>Basic</i>	JAVA, Android Apps, C++, CAD design with Eagle (printed circuit boards) and Solidworks (small mechanical parts), R and SPSS for statistics

OTHER INFORMATION

<i>Awards</i>	<p>2014 · Sensors Best Papers Award 2014, 4th Prize. For the article published in 2010 titled: <i>Machine Learning Methods for Classifying Human Physical Activity from On-Body Accelerometers</i>.</p> <p>2013 · Ex aequo winner of the 15th Italian National Bioengineering Group (GNB) and Patron Ed. PhD Thesis Award for the project: <i>Study and development of machine learning methods for human activity recognition and analysis</i></p> <p>2011 · SIAMOC-Elsevier award for the best methodological paper presented at the XII Conference of the italian movement analysis society (SIAMOC)</p> <p>2011 · SIAMOC-BTS stage-award for the best student paper presented at the XII Conference of the italian movement analysis society (SIAMOC)</p> <p>2009 · Ex aequo winner of one of the 9th Italian National Bioengineering Group (GNB) Master Thesis Awards for the project: <i>Study and development of methods for automatic human movements and postures classification, from accelerometers data</i></p>
<i>Internship and summer schools</i>	<p>2012 · BTS-SIAMOC stage for young researchers, Alder Hey Children NHS Foundation Trust, Liverpool (UK), February 6th–10th</p> <p>2010 · Machine Learning Summer School MLSS 2010, Australian National University, Canberra, Australia, September 26th–October 6th</p> <p>2009 · 28th summer school of bioengineering: <i>Bioengineering for Cognitive Sciences</i>, Bressanone, Italy, September 7th–11th</p>
<i>Online courses</i>	<p>Creative, serious and playful science of Android Programming, Prof. L. ANGRAVE, University of Illinois, 2013.</p> <p>Control of Mobile Robots, Prof M. EGERSTEDT, Georgia Inst. of Tech., 2013.</p> <p>Human Computer Interaction, Prof. S. KLEMMER, Stanford University, 2012.</p> <p>Machine Learning, Prof. A. NG, Stanford University, 2011.</p>
<i>Communication Skills</i>	<p>I have reported my work in 13 oral presentations and 8 poster presentations at National or International conferences. I held 4 seminars:</p> <p>2016 · Screening and classification of altered gait using wearable sensors. Lecture included in the course "Movement analysis in clinics by means of inertial and magnetic sensors", <i>SIAMOC pre-conference courses session, Oct 2016</i>, Milano, Italy</p> <p>2014 · Advanced methods for the activity detection and analysis by means of wearable inertial sensors. Lecture included in the workshop titled "Movement analysis with wearable inertial sensors: stepping into clinics and sports", <i>ISEK Conference 2014</i>, Roma, Italy</p> <p>2012 · Automatic gait phase segmentation method using a Hidden Markov Model. Seminar included in the PhD students seminars cycle, <i>College of Computer and Information Science</i>, Northeastern University, Boston, MA (USA)</p> <p>2012 · Automatic gait phase segmentation method using a Hidden Markov Model. <i>North West Movement Analysis Centre</i>, Alder Hey Children NHS Foundation Trust, Liverpool (UK)</p>

Languages

ITALIAN · Mothertongue

ENGLISH · Intermediate (conversationally fluent)

FRENCH · Basic (simple words and phrases only)

Interests

Technology · Cooking · Photography · Ukulele

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October 10, 2016