

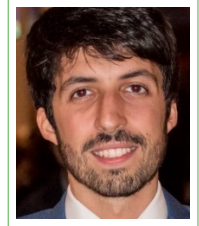
Michele Ermidoro

1, Rossini St.
24129 Bergamo
Italy

+39 329 8937973

✉ michele@ermidoro.net

Date of birth: 25/10/1987



Judge a man by his questions, rather than by his answers.

Education

- 2012 – 2015 **PhD**, *Università degli studi di Bergamo*, Bergamo.
Thesis: "Control and estimation problems based on inertial measurements in industrial mechatronic systems"
PhD in Mechatronics, Information Technology and Mathematical Methods
- 2009 – 2011 **Master Degree**, *Università degli studi di Bergamo*, Bergamo, 110/110 *Cum Laude*.
Thesis: "Inertial Sensors for Motion Capture applications"
Master degree in Computer Science & Engineering
- 2006 – 2009 **Bachelor Degree**, *Università degli studi di Bergamo*, Bergamo, 107/110.
Bachelor degree in Computer Science & Engineering

Experience

2017–now **Freelance consultant**, Collaboration with companies and Universities for research projects. Two main areas of activities, mechatronics and data science..

Mechatronic **Mechatronics activities.**
Collaboration with Seriomac Srl, Intellimech research center and Meccanica Gervasoni srl.

Data science **Data science activities.**
Main activities are related to Machine Learning, Machine vision, pattern recognition and signal processing. Projects with Politecnico di Milano, Università di Bergamo, FunkyBots Ltd, E-novia spa and 221e srl.

Academic **Academic activities.**
Professor of the course "Control System Engineering" at the Università degli studi di Bergamo.

2015–2017 **Research Assistant**, *Università degli studi di Bergamo*, Bergamo.
Project manager of different research projects. Main activities: projects writing, problem solving, technical reports, work management.

Project 1 **Development of an automatic system for diseases detection in tomato plants**, Collaboration with MasterPlant (www.masterplant.cl).

Keywords: Multispectral camera - Image processing - Data analysis - System development

Project 2 **Creation of an innovative algorithm for automatic ACNE detection in images**, Collaboration with MySkin and E-novia (www.myskin.com / www.e-novia.it).

Keywords: Image processing - Machine Learning - Algorithms - Python

- Project 3 **Development of an automatic failure detection in steel ropes using RGB cameras** , *Collaboration with Vinati (www.vinati.com).*
Keywords: *System development - Image processing - Fault detection - Algorithms*
- Project 4 **Development of an innovative orientation-based button panel**, *Collaboration with Vinati Spa (www.vinati.com).*
Keywords: *Signal processing - Inertial sensors - Orientation Estimation - Filtering*
PATENTED
- Project 5 **Development of an innovative collision prevention algorithm for the retractable bollard based on magnetometer measurements**, *Collaboration with O&O Spa (www.oeo.it).*
Keywords: *Signal processing - Impact prevention - Magnetometer - Data analysis*
PATENT PENDING
- 2012–2015** **PhD Student**, *Università degli studi di Bergamo, Bergamo.*
The PhD program i followed was very practical. Its aim was to increase the technology transfer between the University and the companies, researching solutions for practical problems.
- Project 1 **Development of an anti-sway system for bridge-crane**, *Collaboration with Vinati Spa (www.vinati.com).*
Keywords: *Control Loop Design - Angle Estimation - PLC - Filtering*
PATENTED - PUBLISHED
- Project 2 **Development of a collision detection algorithm based on inertial and current measurements for heavy automatic access systems**, *Collaboration with BFT Spa (www.bft.it).*
Keywords: *Signal Processing - Algorithm Design - Impact Detection - Sensing*
PATENTED - PUBLISHED
- Project 3 **Development of a diagnostics system for high-voltage circuit breaker**, *Collaboration with ABB Spa (www.abb.com).*
Keywords: *Algorithm design - Acquisition System Design - Machine Learning - Vibration Analysis*
PATENTED - PUBLISHED
- 2011–2011** **Trainee**, *ST Microelectronics www.st.com, Agrate.*
Development of a new wireless inertial sensor (IMU/MARG). Main activities:
- Choice of the components(sensors, microcontroller etc)
 - Creation of the schematics of the board
 - Creation of the algorithm for the estimation of the orientation
- 2011–2011** **Advanced software and algorithm programmer**, *Tecnobody*
<http://www.tecnobody.it>, Dalmine.
Creation of an inertial motion capture system.

PhD thesis

Title *"Control and estimation problems based on inertial measurements in industrial mechatronic systems*

Supervisors Prof. Fabio Previdi

Description The thesis explores the possibility of using the inertial measurements inside a mechatronic environment. Three different type of usage are presented: Non-linear filtering for predictive maintenance, sensor fusion for impact detection and orientation estimation inside a control loop for the suppression of the load sway in a bridge crane.

Master thesis

Title *Inertial Sensors for Motion Capture applications*
Supervisors Prof. Massimo Manghisoni
Description The thesis describes the development of a small, wireless inertial platform. From the choice of the sensors to the design of the board. The second part of the thesis involves the description of some algorithms developed for an efficient estimation of the orientation of the sensor, composed by accelerometer, gyroscope and magnetometer.

Teaching Activities

- 2015– **Adjunct Professor**, *Università degli studi di Bergamo*, Bergamo.
Head of the course "Automation Laboratory".
- 2017– **Adjunct Professor**, *Università degli studi di Bergamo*, Bergamo.
Head of the course "Control System Engineering".
- 2014–2014 **Professor**, *California Polytechnic State University*, San Luis Obispo.
8 hours of teaching activities for the course ME 212 (Dynamics).
- 2015– **Professor**, *ITS Meccatronica Lombardia* (www.itslombardiemeccatronica.it), Bergamo.
Head of the course "Fondamenti di Automatica".

Scientific Activities

- 2013 **Development of a wireless low-power multi-sensor network for motion tracking applications**, *In Body Sensor Networks (BSN), 2013 IEEE International Conference on (pp. 1-6)*. IEEE , Comotti, D., Ermidoro, M., Galizzi, M., & Vitali, A.. 2013
- 2014–2014 **Visiting student**, *California Polytechnic State University*, San Luis Obispo.
Development of an optical motion capture system in order to analyze the gait differences between normal and obese people.
- 2014 **On time-optimal anti-sway controller design for bridge cranes**, *Proceedings of the 2014 American Control Conference, Portland (USA)*., M. Ermidoro Formentin S., F. Previdi, S.M. Savaresi.
- 2014 **Development of an attitude and heading reference system for motion tracking applications**, *Sensors and Microsystems*, pages 335-339, D. Comotti, M. Ermidoro, M. Galizzi, A. Vitali.
- 2015 **A friction estimation approach to fault detection in electromechanical systems**, *Safe Process, 2015 IFAC symposium on fault detection.*, M. Ermidoro, F. Angeloni, F. Previdi, S.M. Savaresi.

- 2016 **A condition assessment algorithm based on dynamic time warping for high-voltage circuit breaker**, *2016 12th IEEE International Conference on Control and Automation (ICCA)*, M. Ermidoro, F. Previdi.
- 2016 **Fixed-order gain-scheduling anti-sway control of overhead bridge cranes**, *Mechatronics pages 237-247*, Michele Ermidoro, Alberto L Cologni, Simone Formentin, Fabio Previdi.
- 2016 **An application of the remote maintenance paradigm to semi-automated machines**, *14th IMEKO TC10 Workshop Technical Diagnostics*, Fabio Previdi, Mirko Mazzoleni, Alberto L. Cologni, Michele Ermidoro.
- 2017 **Anti-sway fixed-order control of bridge cranes with varying rope length**, *IEEE-International Conference on Mechatronics 2017 (IEEE-ICM)*, Michele Ermidoro, Alberto L Cologni, Simone Formentin, Fabio Previdi.

Languages

Italian **Mother tongue**
 English **Optimal level**
 French **School level**

Skills

A - Optimal knowledge B - Practical knowledge C - Scholar knowledge

Programming languages C/C++ [A], Java [A], Matlab&Simulink [A], C# [A], LaTeX [A], Python [A], Ruby [C]

Software Matlab [A], Simulink [A], Office(Word, Excel, Power Point..) [A], Adams [A], Arduino IDE [A], Adobe Lightroom [A], Eclipse [A], Jupyter notebook [B], Pinnacle [B], Adobe photoshop CS5 [B], LabView [B], Atollic (Microprogramming) [B], MPLab [B], Automation Studio B&R PLC [B], Cadence Orcad [C].

Graphics OpenGL [B], XNA [B].

Protocols Bluetooth interface [A], CAN interface [A], RS-232/RS-485 [A], Wi-Fi [A], MQTT[B], ZigBee [C].

Technical Signal processing and filtering [A], Orientation estimation using inertial modules [A], Math [A], Big Data analysis [A], Estimation and identification of physical parameters [A], Sensing (sonar, infrared, depth camera, inductive, capacitive, magnetic, load cells, inertial...) [A], Machine Learning [B], Electronic [B], Microprogramming [B], PLC programming [B].

Interests

hobby 1 Photography - <https://500px.com/michinge>
 hobby 2 Cinema

Extra

- Owner of the project hosted at <https://danico.github.io/9dof-orientation-estimation/>.

