Luca Maurelli's Curriculum Vitae

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CURRENT POSITION

Ph.D. Student at the Department of Engineering and Applied Sciences
University of Bergamo

Oct 2019 – Present

PREVIOUS POSITION

Research Assistant at the Department of Management, Information and Production Engineering
University of Bergamo

May 2018 – Sep 2019

- Project SMART4CPPS, funded by Regione Lombardia, led by 4 OdR and 10 local companies.
  - Management activity of Pilot 1 and Pilot 4
  - Pilot 1: Design of a health monitoring system for electromechanical actuators (University of Bergamo, Camozzi)
  - Pilot 4: Machine learning algorithms for the zero-defect end-of-line tuning of medium-voltage switches (University of Bergamo, Cosberg, ABB, CNR)
- Project CRYOABLATION:
  - Model identification of the temperature dynamics in *cryoblation* for atrial fibrillation therapy (Dipartimento di Cardiologia, Ospedale di Seriate)
- Project SP@RK-4.0-I.E.S.:
  - Data analysis and development of a health monitoring and predictive maintenance system in high performance workcenters (Mandelli spa)
- Project SMI-PREDICTIVE MAINTENANCE:
  - Design of a predictive maintenance system for beverage packaging machines using accelerometers (SMI Group)

Software Engineer at Consortium Intellimech
Kilometro Rosso

Oct 2017 – Apr 2018

- Project KNOWLEDGIZE, funded by Regione Lombardia, led by Consortium Intellimech, with 2 OdR and 3 local companies.
  - Development of a Knowledge Management Web Platform with an Innovative ML Algorithm based on Tag Searching using Django and Google Services (University of Bergamo, University of Brescia, Cosberg, Elettrocablaggi, Vin Service)
- Development of software applications:
  - Push-bottom panel for testing procedures on PLC in C#
  - Monitoring system using industrial communicating protocols MQTT, MTCONNECT, UPC-UA and MODbus in Python

EDUCATION

Master's degree cum laude in Computer Science, University of Bergamo, Italy — 110L/100
Development of a Knowledge Management Web Platform with an Innovative ML Algorithm based on Tag Searching — Mar 2018

Bachelor's degree in Computer Science, University of Bergamo, Italy — 105/100
Development of a library for Mobile Robot Trajectory Control — Sep 2015

POST-GRADUATE EDUCATION

Ph.D. **Courses** in:

- *Nonlinear System Identification*
  Proff. L. Piroddi, S. Formentin, S. Garatti, G. Panzani and L. Fagiano
  Politecnico of Milan, Italy — 48h, Jan 2019
- *Model based Fault Diagnosis using a MATLAB Linear Framework*
  Proff. A. Varga and D. Ossmann
  University of Padova, Italy — 48h, Mar 2019
- *Optimization Models and Algorithms*
  Prof. M. T. Vespucci
  University of Bergamo, Italy — 24h, Jul 2019
- *Advanced Mathematical Methods for Engineering*
  Proff. M. Pedroni and A. Raimondo
  University of Bergamo, Italy — 24h, Oct 2019
- *Advanced Numerical Methods for Engineering*
  Prof. C. Vergara
  University of Bergamo, Italy — 20h, Nov 2019
- *Noise and Vibration Control Engineering*
  Prof. N. B. Roozen
  University of Brescia, Italy — 15h, Nov 2019
- *Statistical Signal Processing in Engineering*
  Prof. U. Spagnolini
  Politecnico of Milan, Italy — 26h, Jan 2020
- *Numerical Methods for Optimal Control*
  Prof. M. Zanon
  IMT School for Advanced Studies Lucca, Italy — 30h, May 2020
- *Machine Learning: A Computational Intelligence Approach*
  Prof. F. Masulli and S. Rovetta
  University of Genova, Italy — 20h, Jun 2020

Ph.D. **Schools** in:

- *RegML2020 – Regularization Methods for Machine Learning*
  Prof. L. Rosasco
  University of Genova, Italy — 19h, Jun 2020

Ph.D. **Seminars** in:

- *Optimization and control of airborne wind energy systems*
  University of Bergamo, Italy — 2h, Jan 2019
- *Identification for Control*
  University of Bergamo, Italy — 2h, Mar 2019
- *Optimization Models and Algorithms*
  University of Bergamo, Italy — 1h, Jul 2019
- *Fault diagnois application in industry and mechatronics*
  University of Bergamo, Italy — 1h, Oct 2019
- *Kernel-based learning for system identification*
  University of Bergamo, Italy — 1h, Oct 2019
- *Set-based methods in estimation and control*
  IFAC2020 workshop — 6h, Jul 2020

TEACHING EXPERIENCE

Lecture Assistant of the following **MSc courses** at the University of Bergamo:

- *Controlli Automatici* (Advanced Control Systems) A.Y. 2018/2019 — italian, 20h, Sep 2018 – Dec 2018
- *Controlli Automatici* (Advanced Control Systems) A.Y. 2019/2020 — italian, 12h, Sep 2019 – Dec 2019
- *Dynamic System Identification* A.Y. 2019/2020 — english, 18h, Jan 2020 – Jun 2020
- *Controlli Automatici* (Advanced Control Systems) A.Y. 2020/2021 — italian, 12h, Jan 2021 – Jun 2021
- *Identificazione di modelli ed analisi di dati* A.Y. 2020/2021 — italian, 12h, Jan 2021 – Jun 2021

Co-advisor of the following **MSc theses** at the University of Bergamo:

- *Sviluppo preliminare di un sistema di health monitoring per un attuatore elettromeccanico*
  Advisor: prof. F. Previdi — Students: Davide Palazzini, Alen Preda
- *Data-driven health monitoring di attuatori elettromeccanici per automazione industriale*
  Advisor: prof. F. Previdi — Students: Davide Presciani, Matteo Gusmini
- *Simulatore elettro-termo-meccanico di strisce bimetalliche per interruttori industriali a bassa tensione*
  Advisor: prof. F. Previdi — Student: Paolo Pasinetti
- *Predizione della vita utile residua di valvole elettropneumatiche usando tecniche di machine learning*
  Advisor: prof. F. Previdi — Student: Angela Pomata

PUBLICATIONS

International conferences

- M. Mazzoleni, M. Scandella, L. Maurelli, F. Previdi.
  Mechatronics applications of condition monitoring using a statistical change detection method.
  Accepted for publication to 21st IFAC World Congress, Berlin, Germany, July 12-17, 2020