Matteo Barbieri | CV

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Current Position

PhD Student in Automatic Controls — **University of Bologna**
Bologna (Italy) — *November 2017 – Expected: March 2021*
Supervisor: Prof. Roberto Diversi and Prof. Andrea Tilli

Research Interests

Condition Monitoring, Diagnostic and Prognostic in Automatic Machines; Machine Learning; System Identification; Machinery Controllers.

Education

MSc in Automation Engineering — **University of Bologna**
Bologna (Italy), Grade 110/110 cum laude — *September 2015 – October 2017*

- Main topics: System Theory, Advanced Control Systems, Real-Time Systems for Automation, Foundations of Applied Mechanics, Mechatronics, Industrial Robotic, Adaptive Control, Automation Software and Design Patterns, Discrete Time Systems Identification And Control, Diagnosis and Control, Image Processing And Computer Vision.
- **Project Work** "Principles and Methods of Automatic Machines Design" project work at UNITEC S.p.A. involved in machinery for the selection and packaging of fruits.
- **MSc thesis** – Supervisor: Prof. Andrea Tilli and Roberto Diversi
  "Seamless infrastructure for "Big-Data" collection and transportation and distributed elaboration oriented to predictive maintenance of automatic machines"
  Framework to perform model-of-signals approach for condition monitoring of automatic machines allowing to exploit PLCs edge-computing capabilities integrated with remote data processing. In collaboration with **LIAM Lab**. See Research Positions and **publication [1]**.

BSc in Automation Engineering — **Alma Mater Studiorum University of Bologna**
Bologna (Italy), Grade 110/110 — *September 2012 – July 2015*

- Main topics: Mathematics, Physics, Computer Science, Automatic Control, Electrical Circuits, Electronics, Computer Architectures, Control Systems Technologies, Electric Drives, Foundations of Robotics.
- **AlmaTong** exchange project: I attended the second year at the **Tongji University of Shanghai** (see Awards).
- **BSc thesis** – Supervisor: Prof. Andrea Tilli and Ing. Matteo Sartini
  "Modeling and experimental analysis of a motion control test bench using an Omron automation system"
  Matlab/Simulink modeling of the drive together with a low stiffness load. Evaluation and Validation of the model done on experimental setup available at **LIAM Lab**. See Research Positions.

Research Positions

Universities and Research Centers

PhD Student — **University of Bologna**
Laboratory of Automation and Robotics (LAR) — *November 2017 – onwards*
- Supervisor: Prof. Roberto Diversi and Prof. Andrea Tilli
- Topic: Condition Monitoring and Predictive Maintenance

Research in Companies

Degree Candidate and Consultant — **LIAM Lab**
Bologna (Italy), Supervisor: Ing. Matteo Sartini — *June 2015 – onwards*
My work during the *bachelor thesis* and *master thesis* was done in the frame of a collaboration with LIAM Lab in Bologna and Modena. This is a brief summary of the project I participated in:
- Benchmarking of Industrial Automation PLC suppliers;
- Modeling and testing of commercial drive control schemes;
- PLC Software library definition and implementation;
- Implementation of diagnosis algorithms for incipient faults detection.

See **publication [C1].**

Teaching Activity

University Courses

Graduate Teaching Assistant — **University of Bologna**
Automation Software and Design Patterns: MSc course, (3h p/w) — *February 2018 – June 2018*
Main activities:
- Tecnhical support to students on PLC platform during lab sessions;
- Q&A with students on course topics.

Graduate Teaching Assistant — **University of Bologna**
Mechatronics Systems Modeling and Control: MSc course, (3h p/w) — *February 2018 – June 2018*
Main activities:
- Tecnhical support to students on SMA set up during lab sessions;
- Q&A with students on course topics.

Technical courses

Technical Teacher — **CFP FUTURA**
Training course for Industial Automation Technicians — *February – March, since 2017*
Course modules:
- Real-Time task scheduling;
- Real-Time Networks;
- PLC programming.

Awards

1. **AlmaTong scholarship**: Winner of one of the ten (10) *AlmaTong* scholarships during the first bachelor year, because of high level performance in university career. It entailed cover to Shanghai's Tongji University stay expenses (for one year), Bologna-Shanghai round trip flight ticket and medical insurance.

Languages

Italian: Mothertongue

English: Proficient — *7.5 IELTS certificate (July 2016)*

Chinese: Basic (spoken) — *Tongji University certificate*

Activity as a Reviewer

Conferences: European Control Conference (ECC).

Publications

Conferences & Workshops

[C1] **M. Barbieri**, A. Bosso, C. Conficoni, R. Diversi, M. Sartini, and A. Tilli, *"An onboard model-of-signals approach for condition monitoring in automatic machines*, in "Enterprise Interoperability: SmartServices and Business Impact of Enterprise Interoperability, conference proceedings pp. 263–269, 2018