

# Claudio Caccia

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## Curriculum Vitae

*"All models are wrong, but some are useful"*  
George E.P. Box

### Experience

#### Vocational

- 2014–Present **R&D Engineer**, Atos S.p.A., Sesto Calende, employee.  
Design, dimensioning and verification of hydraulic valves, performances optimization by means of *Virtual Prototyping* tools.
- Analysis of hydraulic components and systems to define performances and fulfill customer needs
  - Use of Computational Fluid Dynamics (*CFD*) tools with the purpose of:
    - estimate *performances* of new components
    - compute forces on moving elements and estimate dynamic behavior
  - Use of Structural analysis (*FEM*) with the purpose of:
    - compute stresses and strains of components
    - determine and optimize critical sections and geometries
    - analyze dynamic behavior (frequency response and modal analysis)
  - Test-bench experiments (supervision and execution) to cross-validate simulation data
    - measure dynamic response of components
    - vibration analysis
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- 2008–2015 **Firmware Engineer**, Atos S.p.A., Sesto Calende, employee.  
Firmware Development of hydraulic actuators designed to control flow, pressure, force and position. In detail:
- Implementation of control algorithms applied to hydraulic axes defining:
    - operational modes
    - transition logic
    - programmable and automatic working sequences
    - velocity profiles
  - *Testing* of prototypes
  - Optimization of control parameters of components to be put into production

- 2007–2008 **Research Assistant**, *Università di Milano Bicocca*, Computer Science Department.  
Work with the research team in *Artificial Intelligence* and *Robotics* with the following tasks:
- Participation to the research project *Rawseeds* ([www.rawseeds.org](http://www.rawseeds.org)). Goal of the project: publication of sensor data to be used to develop, verify and benchmark SLAM algorithms (Simultaneous Localization and Mapping). Performed activities:
    - design and creation of robotic platforms
    - sensorization
    - execution of acquisitions campaigns
  - Robots development for the project *Robocup* ([www.robocup.org](http://www.robocup.org)): design and control
- 2004–2007 **Proposal Engineer**, *Siemens*, Milan, freelancer.  
Design and dimensioning of Information Systems, to manage and archive medical data, in particular for the treatment and storage of images and data coming from digital diagnostic equipment (CT, MR ...)
- 2000–2003 **Research associate**, *Politecnico di Milano*, Como branch.  
Teaching, research and consulting tasks for the Management Engineering Department. In detail:
- collaborations with textile companies of the Como area directed to the characterization and improvement of woven fabrics
  - Teaching, conducting exercises and labs for courses in *Textile Plants* and *Supply Chain Management*
  - stay at the *ETH* in Zurich to contribute to the development of an automatic device for mechanical tests on fabrics
- 1999 **Process Quality Engineer**, *Magneti Marelli*, Corbetta (MI), employee.  
Analysis of production and assembly processes, monitoring of defectiveness of outsourced and internally built components for some production lines of the division *Instrument Panels*.  
Quality audit of suppliers and of assembly lines
- Miscellaneous**
- 2003 **Freelancer**, *Successori Cattaneo S.p.A.*, Albese con Cassano (CO).  
Analysis and optimization of configuration parameters of:
- projectile weaving machines for silk fabrics with the aim to reduce defects caused by stops
  - an automatic vision machine used to inspect fabrics
- 2003 **Freelancer**, *Microsystems srl.*, Milan.
- design and control of a custom machine for artistic wax products
  - design of a robotic platform for surveillance and tele-medicine
- 2003 **Freelancer**, *Raff Progetti srl.*, Galliate (NO).  
Design, numeric modeling and simulation of components and systems, in particular:
- dimensioning of a planetary drive
  - FEM analysis of a strapping machine
  - simulation of fire suppression systems
  - design of a vacuum discharge system

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## Education

- 2009–2013 **Master Degree in Computer Science Engineering**, *Politecnico*, Milan, 110.  
2005–2007 **Bachelor's Degree in Computer Science Engineering**, *Politecnico*, Milan, 110 *cum laude*.  
Laurea online: [www.laureaonline.polimi.it](http://www.laureaonline.polimi.it)  
1992–1998 **Master Degree in Mechanical Engineering**, *Politecnico*, Milan, 100/100.  
Single-Cycle 5 years Degree  
1987–1992 **High School Diploma**, *Liceo Ginnasio D.Crespi*, Busto Arsizio, 60/60.

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## Theses

- Date 23/07/2013  
Title *Mitosis detection in histological images: Algorithms based on machine learning and their performance compared to humans*  
Supervisors Professor Vincenzo Caglioti & ing. Alessandro Giusti  
Description The work compares the abilities of humans and *machine learning* algorithms to identify mitoses in histological images  
Date 25/09/2007  
Title *Application of Reinforcement Learning methods to control an inverted pendulum robot*  
Description The thesis describes the application of the *NFQ* method to make an inverted pendulum robot find and maintain equilibrium in a quick and efficient way.  
Date 08/06/1998  
Title *Misalignment simulation in rigid joints of rotors*  
Supervisor Professor Nicolò Bachschmid  
Description The thesis compares results obtained from a test rotor with a *FEM* model developed to describe misalignment.

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## Computer Skills

### Languages

- Advanced PYTHON, C/C++  
Intermediate L<sup>A</sup>T<sub>E</sub>X, JAVA, OpenModelica, SQL  
Basic CUDA, HTML, Ruby, R

### Software and Systems

- Advanced Linux, *Code Saturne*, *Code Aster*, MATLAB  
Intermediate OpenOffice, CREO ELEMENTS, ABAQUS, OPENFOAM  
Basic SOLIDWORKS, SOLIDEDGE

### Hardware

- platforms ARM CORTEX M3-M4, Arduino

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## Languages

Italian **Mothertongue**  
English **Advanced**  
German **Basic**

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## Achievements

- 2015 Completion of basic and advanced courses on OPENFOAM at [www.technicalcourses.net](http://www.technicalcourses.net)
- 2014 Publication of the article "*A Comparison of Algorithms and Humans for Mitosis Detection*" in Proceedings of International Symposium on Biomedical Imaging (ISBI)
- 2006 Completion of the first level in *Project Management* at Siemens

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## Interests

- Basket
- Puzzles
- 3D Printing
- Crossfit
- MOOCs