Claudio Caccia

Curriculum Vitae

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

Experience

Vocational

2012–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
  - optimize flow rate of existing products
  - compute forces on moving elements
- 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
- Use of *DoE* methods to search optimal working conditions minimizing the number of required tests or simulations

2008–2012 **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

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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`). 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`): design of components and platforms

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 deployment 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

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

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*.

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.

Computer Skills

Languages

Advanced PYTHON, C/C++

Intermediate LaTeX, 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**

Achievements

2015 Completion of basic and advanced courses on OpenFOAM at 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

Interests

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

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