Gastone Pietro **Rosati Papini**

Advanced Control System Engineer | Game & Software & Fullstack Developer | AI Lover

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Executive Summary Research fellow in advanced control systems applied to the field of **autonomous driving** and ADAS at Department of Industrial Engineering of the University of Trento and co-founder of **Cheros s.r.l.** a spinout of the University of Pisa. With 5+ years experience in **advanced control systems** and **fullstack programming**.
Proven experience in control of **mechanical systems** using standard and **machine learning techniques**. Know-how in optimal control and model predictive control applied to robotics systems, exoskeletons and **autonomous vehicles**. Skills in programming languages, software engineering and **full-stack applications**. Now focused on deep learning techniques for modeling and control of complex systems in particular in the field of autonomous driving. Fullstack developer in QatHome, a web-application for queue management. Game programmer for MnemosyneGames during free time.

Awards

September 2017 | Honourable Mention for PhD Thesis by AREA Science Park, Trieste, Italy
"Dynamic Modelling and Control of Dielectric Elastomer Generators for OWC Wave Energy Converter"

August 2013 | IEEE RO-MAN 2013 Best Conference Paper Award, Gyengjou, South Korea
"Haptic Hand-Tremor Simulation for Enhancing Empathy with Disabled Users"

European Project Experiences

2017→ | Dreams4Cars
- Design and develop of bio-inspired agent for autonomous driving car
- Modelling & control of vehicle using standard and neural network approaches
- Testing autonomous agent in simulation and on real cars

Deep-learning | Neural Networks | Optimal control | Vehicle dynamics
Python | Ruby | Mathematica(Neural Networks,Mathcode) | C | C++ | make/nmake/cmake | MXnet | Docker | ROS | OpenDS

2012-2016 | PolyWEC (Polymeric Wave Energy Converter)
- Modelling & control of dielectric elastomer generator for oscillating water column system (Poly-OWC)
- Test campaigns on prototypes of Poly-OWC systems with a computer vision analysis of the results
- Optimal control of Poly-OWC systems
- Design of machine learning techniques for system identification and control of waves energy

Machine Learning | Optimal Control | Model Predictive Control | Multi-physics Modelling
Matlab (script, Simulink, Stateflow) | Mathematica

2012-2014 | VERITAS (Virtual and Augmented Environments and Realistic User Interactions To achieve Embedded Accessibility DesignS)
- Design of control of a haptic interface for stimulation of essential tremor on upper limb
- Analysis of experimental data of Parkinson's patients' hands tremor (using Optitrack system)
- Validation of control strategy against the experimental data on Parkinson's patients

Haptic control | Human Robot Interaction | Robotics
C++ (thread, network) | Python (numpy, matplotlib) | Matlab (script, Simulink)

My Spinoff Activities Cheros s.r.l.

2014 → | QatHome web queue manager system
- Manager and fullstack developer

Software Engineering | REST application | Javascript | Python (Django, Rest Framework, Django Test)

2014-2017 | Wave energy Scotland Projects
- Control of WECs based on Dielectric Elastomer Generators
- Inflatable Dielectric Elastomer Generator power take-off

Model predictive control | Multi-physics modelling | Matlab (script, Simulink, Simulink realtime)

Languages

Italian ●●●●● English ●●●●○

Education and Training

Dec 2017→	Research fellow **Department of Industrial Engineering** of the **University of Trento**
Dec 2016-Nov 2017	Research fellow **Percro Laboratory** of **Sant'Anna University of Pisa**
2012-2016	**Ph.D.** in Emerging Digital Technologies at **Sant'Anna University** Advance control of **electroactive polymers** for ocean wave energy and control theory of **human-robot interaction** Thesis: *Dynamic Modelling and Control of Dielectric Elastomer Generators for OWC Wave Energy Converter* Haptic control · Human Robot Interaction · Robotics · Optimal Control · Model Predictive Control · Multi-physics Modelling C++ (network) · Python (numpy, matplotlib) · Matlab (script, Simulink, Stateflow) · Mathematica
Apr-Nov 2016	Ph.D. period abroad at **The University of Edinburgh**
Feb-Mar 2015	PhD+ Programme 2015 at **University di Pisa**
Jul-Oct 2012	Research fellow **Percro Laboratory** of **Sant'Anna University of Pisa**
2007-2011	**Master's degree** in automation engineering at **University of Pisa**, **110/110** *cum laude* Thesis: *Robust Force Control for Exoskeletons for Human Performance Augmentation* Human Robot Interaction · Robotics · Elastic Joint · Force Control C++ (multithreading, network) · Python (numpy, matplotlib) · Matlab (script, Simulink, Stateflow) · Mathematica
2004 - 2007	**Bachelor's degree** in Software Engineering at **University of Pisa**, **110/110** Thesis: *Problems and solutions of multimedia applications on Internet* Dynamic System · Machine-Learning · Programming Languages · Software Engineering C · C++ · Java · Javascript · PHP · Matlab · Assembly MASM/GAS · SQL · Verilog HDL
Feb 2007	Certificate of attendance Cisco Certified Network Associate at **University di Pisa**

Tecnical Skills

System and Control	linear & nonlinear systems analysis and control (SISO and MIMO), **robots modelling and control**, elastic joints modelling and control, force control, **autonomous vehicles**, vehicle dynamics, **model predictive control**, optimal control, teleoperation, actuators and sensors modeling, navigation and guidance systems;
Machine learning	**neural networks** and deep learning, Q-learning, genetic algorithm, fuzzy logic;
Environment	microcontrollers, multithreading, **realtime systems**, routers, switches, ROS, Docker;
Language	Verilog HDL, assembly MASM/GAS, C, C++, **C++11**, nmake/make/**cmake**, Java, Ruby, **Python**, LaTeX(TikZPGF), SQL, PHP, Javascipt, CSS, HTML, Regexp, Modelica, **Matlab**;
Framework and library	SDL, OpenGL, GTK+, Qt, **jQuery**, AngularJS, **Django**, **Django-REST-framework**, POSIX, **Node.js**, **Keras(Tensorflow,mxnet)**;
Program	**Git**, **Matlab**(**Simulink**), **Mathematica**(**Mathcode, MXnet**), **PyCharm/Intellij/Clion**, Unity;

Social skills

Team spirit and solidarity experience developed in more of 13 years of Scouting (AGESCI), including two as Scoutmaster, especially in supporting Sarajevo. Open to understanding different cultural realities, gained during travels and periods abroad. Organizational skills and good team work experience matured thanks to the many projects developed during the University.

Personal Interests

Scoutmaster (AGESCI), Game programming, Web development, Artificial Intelligence, Travelling, Snowboarding, Rock climbing

Personal Project

2017 →	**PyNet**. A didactic framework for machine learning in Python.
2017 →	**Demodé**. New table game (Premio Archimede 2018).
2015 →	Currently member of **Mnemosyne** team as Unity developer.
2011-2015	**antruling.com**. A social website very exclusive in Django & jQuery.
2013	**wall2me.com**. A web application in Node.js & HTLM5 Canvas.

References

Marco Fontana, *Researcher* at **University of Trento**
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Rocco Vertechy, *Associate Professor* at **University of Bologna**
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