Giovanni **Claudio**

R&D Robotics Engineer

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Robotics engineer specialized in perception, computer vision, sensor-based robot control and deep learning.

Experience

Autonomous Driving Engineer

Turin, Italy

Italdesign Giugiaro (AUDI Group) *Sept 2017 - now*

- Working on perception and software architecture in the *Pop.Up* project: an electric, modular and autonomous flying car.
- Research, implementation and deployment of perception, mapping/localization and control algorithms.
- Training and deployment of deep neural networks for object detection and semantic image segmentation.
- Technical lead of smart city projects for new mobility solutions.

R&D Robotics Engineer

Rennes, France

INRIA, Lagadic Team, Lead by François Chaumette *Nov 2013 - Aug 2017*

- Implemented sensor-based algorithms on drones, mobile, serial and humanoid robots for navigation and manipulation.
- Developed detection, real-time tracking and pose estimation algorithms using 2D and RGB-D cameras.
- Built a framework based on ROS, MATLAB/Simulink, and V-REP for a fast prototyping of robot control algorithms.
- Supervised several student internships and published scientific articles at ICRA'17 and Humanoids'16.
- Organized demonstrations to show the robotic platforms to the general public.

Robotics Engineer Internship

Nantes, France

IRCCyN *Feb - Sept 2013*

- Developed a C++ algorithm to estimate the pose and velocity of a high-speed parallel robot using vision.

Education

Master ARIA (Control Engineering, Robotics and Applied Informatics): Advanced Robotics

Italy and France

Double Degree: École centrale de Nantes (ECN) and University of Genoa (UNIGE) *2011-2013*

Vision-Based Control, Computer Vision, Neural Networks, Machine Learning, Real-Time Systems, Embedded Systems, Robot Programming, Optimization Techniques, Optimal kinematic design of robots, Advanced modeling of robots, Identification and control of robots.

Bachelor's Degree in Computer Science Engineering

Italy

University of Genoa (UNIGE) *2008-2011*

Computer Science, Software Engineering, Automatic Control Systems, Signal Processing, Web Technologies, Math, Physics.

Self-Driving Car Engineer Nanodegree (SDCN)

Udacity in collaboration with Mercedes-Benz, NVIDIA, BMW and Uber *Feb-Nov 2017*

The program includes theory and practical projects covering topics such as deep learning, computer vision, sensor fusion, localization, controllers, vehicle kinematics and automotive hardware.

Skills

Programming	C/C++, Python, MATLAB
Libraries	OpenCV, PCL, Tensorflow, ViSP, Panda3D
Tools and Software	ROS, V-REP, IPG CarMaker, Simulink, Blender, GIT, CMake, Doxygen, Docker
OS	GNU/Linux, Microsoft Windows
Robots	Nao, Romeo, Pepper, Pioneer P3-DX, Thymio, Adept Viper s650, OrthoGlide, Comau robot
Sensors	Camera, Depth Camera, Lidar, Radar, Ultrasonic, IMU, GNSS
Languages	Italian *(Native)*, English *(Fluent)*, French *(Intermediate)*, Spanish *(Basic)*

Projects and Software

Autonomous electric car project

Italdesign

Prototype vehicle equipped with Cameras, Lidars, Radars, GNSS, IMU and ultrasonic sensors — *C++, Python, ROS*

- Designed the sensor set, hardware and software architecture of the vehicle.
- Integrated the following functionalities:
  - Perception: 2D and 3D obstacle detection and classification.
  - Mapping and localization with camera, Lidar, IMU, odometry and GNSS.
  - Planning: trajectory following and emergency braking.
  - Control: PID and MPC (Model Predictive Control).

Pop.up Next

Italdesign

Modular flying taxy with Airbus and Audi — *C++, ROS*

- Amsterdam Drone Week 2018: 1:4 scale model flying demonstration. Developed the following:
  - Vision-based drone detection and pose estimation from car module.
  - Autonomous navigation for centering and latching with the drone module.

Moby

Italdesign

A sharing service for wheelchairs users

- ”Wheel-on” semi-autonomous electric devices located in urban hubs.
- Shared control with driver assistance system (obstacle avoidance, navigable space detection).
- Finalist of the Toyota $4 million mobility unlimited challenge.

Romeo project (with Softbank Robotics) and Comanoid project (with Airbus)

INRIA

Perception, navigation, sensor-based control and human-robot interaction — *C++, Python, ROS*

- Delivered the following demonstrations: object localization and grasping, dual arm manipulation, door handle detection and opening, camera-based and audio-based navigation, people following and obstacle avoidance.
- Demonstrations based on object detection, model-based tracking, template tracking, 3D point cloud segmentation, augmented reality, text detection on natural images, face detection and recognition, sound localization and speech recognition.
- Visual servoing in an optimization framework for the whole-body control of humanoid robots.

MATLAB ROS Bridge

INRIA

Simulink library — *MATLAB, C++, ROS*

- A bridge for creating ROS nodes in MATLAB and Simulink.
- Used to control robots in real time: Pioneer P3-DX, Adept Viper s650 and MikroKopter.
- Presented at the ICRA Workshop 2014.

Extracurricular Activities

OpenLab

Genoa, Italy

Officer — *2009 - 2014*

OpenLab is a club recognized by the University of Genoa. The aim of the club is to spread IT culture and Free Software both inside and outside the university. We organize talks, projects, thematic events, workshops and open courses.

Other interests

Music: Pop/rock singer

Member of Mika’s choir: Concert at Roundhouse in Chalk Farm, 13 Dec 2012 — *London, UK*

AIMS Summer School: Courses attended: Cabaret class, Vocal Technique, Musical class — *Eastbourne, UK*

1st Place: Singing competition “Solo per una voce”. Jury headed by TOSCA. Prize: AIMS Summer School (2012) — *Genoa*

Courses: Pop/Rock singing (2008-2012) and piano lessons (1998 - 2002) — *Genoa*

Choir: Bariton in the polyphonic choir “I polifonici di Genova”(2003 - 2008) and “JanuaVox” (2001-2003) — *Genoa*