

Giovanni Claudio

R&D ROBOTICS ENGINEER

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Robotics engineer with experience in perception, sensor-based robot control, computer vision and machine learning

Experience

R&D Robotics Engineer at INRIA

Rennes, France

LAGADIC TEAM, LEAD BY FRANÇOIS CHAUMETTE

Nov 2013 - Now

- Designed and integrated sensor-based control algorithms on mobile, industrial robots, drones and humanoids.
- Developed automatic 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 our robotic platforms to the general public.

Robotics Engineer Internship at IRCCyN

Nantes, France

“POSE AND VELOCITY ESTIMATION FOR HIGH-SPEED ROBOT CONTROL”

Feb - Sept 2013

- Developed a C++ multi-threading algorithm to estimate the pose and velocity of a high-speed parallel robot using vision.
- Designed a visual system with high-performance CoaXPress cameras.

IT assistant at Spack Srl

Genoa, Italy

IT CONSULTING

Jul - Sept 2008

- In charge of the software installation of the Carige bank's workstations.
- Set up and testing of new hardware in the bank's branch offices.

Education

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 as deep learning, computer vision, sensor fusion, localization, controllers, vehicle kinematics and automotive hardware.

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.

Skills

Programming C/C++, Python, MATLAB

Libraries OpenCV, PCL, Tensorflow, Keras, VISP, Panda3D

Tools and Softwares ROS, V-REP, Simulink, R, GIT, SVN, CMake, Doxygen, Blender

OS GNU/Linux, Microsoft Windows

Robots Nao, Romeo, Pepper, Pioneer P3-DX, Thymio, Adept Viper s650, OrthoGlide, Comau robot

Languages Italian (*Native*), English (*Fluent*), French (*Intermediate*) and Spanish (*Basic*)

Extracurricular Activities

Open Source Self Driving Car Initiative (OSSDC)

MEMBER

Jan 2017

Full stack open source software and hardware to allow anyone to build from toy to full-size self-driving cars. I am working on the implementation of a Vision-Based Adaptive Cruise Control using a deep neural network for car detection followed by a tracking algorithm.

OpenLab

Genoa, Italy

OFFICER

2009 - now

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.

Projects and Software

Traffic sign classification

SDCN

CONVOLUTIONAL NEURAL NETWORKS (CNN)

Tensorflow, Keras

- Implement and train a neural network to classify traffic signs using the German Traffic Sign Recognition Benchmark (43 signs in total).
- Designed a CNN inspired by LeNet architecture, with L2 regularization, data augmentation, image preprocessing and dropout.
- Obtained 98.5% of validation accuracy with a fast convergence using only a CPU to train.

Finding Lane Lines on the Road

SDCN

COMPUTER VISION PROJECT

Python, OpenCV

- Detect highway lane lines from a video stream using image analysis techniques.
- Implemented a pipeline using color selection, Canny detector and Hough transform and RANSAC algorithm.

Libraries for perception and robot control

INRIA

COLLECTION OF DEMOS, CLASSES AND TOOLS, MAINLY FOR THE HUMANOID ROBOTS ROMEO AND PEPPER

C++, Python

- Demonstrations based on automatic 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.
- Created a new kinematic controller for Romeo and Pepper Robot to command the joints in velocities.

MATLAB ROS Bridge

INRIA

SIMULINK LIBRARY

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.

V-REP ROS Bridge

INRIA

PLUGIN FOR V-REP

C++, ROS

- A bridge to control the V-REP simulation using ROS messages and services.
- Tested on the following simulated robots: Romeo, Pioneer P3-DX, Adept Viper s650 and MikroKopter.

Stay Alert! Ford

UNIGE

MACHINE LEARNING COMPETITION: KAGGLE

R, MATLAB

- A classifier to detect whether the driver is alert or not, using data acquired while driving.
- Implemented a Support Vector Machine with a gaussian kernel, reordering and sampling the training set.
- Obtained a score of 0.80 on a range from 0.43 (worst) to 0.86 (best).

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