Vincenzo Polizzi

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Italian Citizenship

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Education

Swiss Federal Institute of Technology (ETH) Zurich   *Zurich, CH*

MASTER OF SCIENCE IN ROBOTICS, SYSTEMS AND CONTROL. FINAL GRADE 5.43/6.   *2019-2022*

Politecnico di Milano   *Milan, IT*

BACHELOR IN AUTOMATION ENGINEERING. FINAL GRADE 110/110.   *2016 - 2019*

Skills

Languages   English: Proficient, Italian: Native, Chinese Mandarin: Starting Level

Technical skills   C++ (11,14,20), Python, Docker, ROS, ROS2, UNIX

Hardware platforms Thermal/visual/event cameras, NVIDIA embedded platforms, Arduino UNO, Raspberry Pi, PX4.

Experiences

Laboratory Technician   *Zurich, CH*

ETH - INSTITUTE OF DYNAMIC SYSTEMS AND CONTROL   *03-2022 - Ongoing*

- I am working in the Duckietown lab on hardware integration and testing. I am helping with the new implementation of the next generation of Duckiedrones.

Computer Vision intern   *Zurich, CH*

INIVATION   *01-2022 - Ongoing*

- I am working on the dynamic vision processing (DV-processing) library, developing new features in c++20. The goal of the internship is to implement a SLAM system that can efficiently use event-based cameras. I am also working on unsupervised learning applications for events data.

Visiting Research Student at NASA Jet Propulsion Laboratory (JPL)   *Pasadena, CA, US*

ROBOTIC AERIAL MOBILITY GROUP (347T) NASA JPL   *05-2021 - 10-2021*

- I worked on the implementation of a collaborative Thermal-Inertial Odometry system for UAVs. The resulting multi-UAV setup showed outstanding results concerning the baseline. The work is implemented in the open-source JPL xVIO framework. The project results have been submitted to the IEEE Robotics and Automation Letters (RA-L). This work also represents my Master's thesis in the Robotics and Perception Group at the University of Zurich with Prof. Davide Scaramuzza. (Coded in c++).

Robotics Engineer Intern   *Zurich, CH*

RHEINMETALL AIR DEFENCE   *2020 - 2021*

- I worked in a team of five people. I created the software infrastructure using Docker, ROS, and ROS2, DeepStream on a Jetson Xavier NX and PX4. I also worked in another group of two people, on a tracking system for aerial targets. (Coded in C++ and Python 3).

Teaching Assistant   *Zurich, CH*

ETH - DUCKIETOWN   *2020 - 2022*

- I worked as a Teaching Assistant in the Institute of Dynamic Systems and Control in Prof. Emilio Frazzoli's lab for the course "Autonomous Mobility on Demand: From Car to Fleet". I gave three tutorials to a class of 30 students at ETH about Docker, augmented reality and reinforcement learning. I helped develop the MOOC version of the course by designing control systems exercises for the students. I also worked on developing some commands for the "Duckietown shell". I promoted the project in some Sicilian Universities that are now using the platform with students. I have been responsible for the robot operability for the ETH Zurich lab, I had to ensure that everything was properly working on the robot. I've been advertised in the People Of Duckietown (https://www.duckietown.org/archives/87069).

Projects

Visual Odometry with a semantic cue   *Zurich, CH*

"VISION ALGORITHMS FOR MOBILE ROBOTICS", ETH ZURICH COURSE BY PROF. DAVIDE SCARAMUZZA   *2020*

- Project for the class Vision Algorithms for Mobile Robotics. I implemented a Visual Odometry Algorithm that uses semantic segmentation to avoid tracking feature points on moving objects and improve feature matching. For simulation, I used an ad-hoc version of the Duckietown Gym that includes the semantic ground truth. Coded in Python3.

Memory Card   *Zurich, CH*

"VIRTUAL REALITY I", ETH ZURICH COURSE BY PROF. ANDREAS KUNZ   *2020*

- The goal of the project is to give people the possibility to play Memory using Mixed Reality. I developed the App for iOS and Android in a group of two students. We did this project for the Virtual Reality I course at ETH. Coded in C# with Unity.

Semantic Place Recognition for Multi-Robot Applications

Zurich, CH

Semester Project in the Vision for Robotics Lab at ETH

2020

- I proved how different semantic descriptors could improve features matching in loop closure with wide view changes for UAV systems, enabling multi-robots collaboration. Coded in C++.

Duckietown Parking Area

Zurich, CH

"Autonomus Mobility on demand: from car to fleet" ETH Zurich course by Prof. Frazzoli

2019 - 2020

- Autonomous Mobility on Demand from car to fleet, a.k.a Duckietown, is a limited seat course (30 students) at ETH. I worked in the parking area team. The goal was to make a Duckiebot (3 wheels car prototype) park. Coded in Python2.7.

Monumenta

Sicily, IT

iOS and Android application

2016 - Ongoing

- The app provides tourists a city guide using augmented reality, offering suggestions to organize a good journey in the city. Six municipalities have already been involved in the project, thanks to the interest of cultural associations that want to enlighten Sicily's beautiful archaeological and natural sites. The app was downloaded by 287 users. Monumenta is currently offline. Coded in Java and Swift.

PoliAssembly

Milan, IT

Computer Science class, Politecnico di Milano

2016 - 2017

- I made the pseudo-assembly interpreter used during the computer science class in Politecnico di Milano. It shows how registers and memory work when a program is executed. The program was used by more than 150 students, the Porf. Daniele Maria Braga shared the program with his class. Coded in C#.

Awards and Competitions

OpenCV AI Competition 2021 Phase 1 Finalists

Zurich, CH

OpenCV.org

2021

- For this competition my team used the depth camera with on edge computing, made by OpenCV and LUXONIS (OAK-D). Our project brings the OAK technology in the Duckietown platform, enabling depth AI research in the Autonomous Driving Cars educational product. Certificate number: 29536451

Getting Started with DeepStream for Video Analytics on Jetson Nano

Zurich, CH

NVIDIA Deep Learning Institute

2020

- It is a certificate of completion for the course "Getting Started with DeepStream for Video Analytics on Jetson Nano" held by NVIDIA DLI. During the course I learned about the DeepStream plugins and structure to develop Intelligent Video Analytics applications. Certificate number: 9cf3cc1926b24f90be64f2c522d09482

Getting Started with AI on Jetson Nano

Zurich, CH

NVIDIA Deep Learning Institute

2020

- It is a certificate of completion for the course "GETTING STARTED WITH AI ON JETSON NANO" held by NVIDIA DLI. During the course is showed how to use the NVIDIA Jetson AI tools. Certificate number: b708b0aee20646ad81506c9791497f5d

The Best Freshmen Students

Milan, IT

Politecnico di Milano

2016

- Prize for "The best freshmen students", conferred based on academic achievements in the first year of the bachelor degree.

RomeCup

Rome, IT

Fondazione Mondo Digitale

2016

- Italian Robotics Competition Explorer category, the goal was to build a robot that can find sounds, light, and gas sources moving in an unknown environment. I was the third-best.

Chess championships

Agrigento, IT

A.C.S.D. Leonardo

2009 - 2010 - 2011 - 2012 - 2013

- I participated in the Italian and Sicilian chess championships. I was the provincial champion for five consecutive years. I also did the regional competitions, and I also took part in the national ones.

Extracurricular courses

Google Developers Student Club (GDSC) Zurich

Zurich, CH

Student organization

2022 - ongoing

- GDSC are university-based community groups for students interested in Google developer technologies. In GDSC, students grow their knowledge in a peer-to-peer learning environment and build solutions for local businesses and their communities. I organized the event "Look back in time with NASA James Webb Space Telescope" attended by more than 116 students (https://youtu.be/LA7iowv2vQA).

JUMP (Job-University Matching Project)

Milan, IT

Torrescalla, RUI

2016 - 2019

- The aim of the curse is to teach the students different teaching concerning the technical one. Indeed some of the taught topics are: ethics, global mindset, public speaking.