

FRANCESCO SARNO

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Professional Experience

Computer Vision and Robotics Research Engineer Switzerland Innovation Park Biel/Bienne, Swiss Battery Technology Center, Biel, CH Created a pipeline for detection and pose estimation of EV battery components. Working towards RL applied to automated disassembly. Synthetic dataset creation based on Omniverse.	Feb 2023 – Current
Computer Vision Specialist ETH Juniors, Zurich, CH Development of POC on 3D indoor scene synthesis and NVIDIA Omniverse.	May 2024 – Current
Computer Vision Specialist Valcambi via ETH Juniors, Zurich, CH Developed a proof of concept for gold bars fraud detection using deep learning-based feature detection and matching.	Sep 2023 – Feb 2024
Computer Vision Research Engineer EPFL, Computer Vision Lab, Lausanne, CH Conducted research in 3D reconstruction, GCNN, biomedical imaging, crowd-counting, SFM, and camera calibration.	Feb 2022 – Mar 2023
Computer Vision Research Assistant ETH Zürich, Computer Vision Lab, Zurich, CH Conducted research in automated machine learning, 3D vision, and view synthesis. Concluded with two publications at WACV22.	May 2021 – Dec 2021
Computer Vision Engineer Solera Holdings, Qapter via ETH Juniors, Zurich, CH Developed deep learning and NeRF-based algorithms for 3D reconstruction, segmentation, and depth estimation.	Aug 2021 – Dec 2021
Computer Vision Engineer Intern Rheinmetall Air Defence, Qapter, Zurich, CH Developed algorithms aimed at firings' accuracy evaluation and 3D visualization.	Feb 2020 – Dec 2020

Education

M.Sc. in Robotics, Systems and Control ETH Zürich Advisor: Prof. Dr. Roland Siegwart Grade: 5.61/6.00	2018 – 2021
B.Sc. in Automation Engineering Politecnico di Milano Grade: 106/110	2015 – 2018
High School Diploma Liceo Scientifico Statale N. Copernico Grade: 95/100	2010 – 2015

Selected Projects

Master's Thesis ETH Zürich, Computer Vision Lab Advisor: Prof. Dr. Luc Van Gool, Dr. Suryansh Kumar, Dr. Berk Kaya Completed with distinction 5.75/6.00 Exploring Automated Machine Learning Framework for Deep Photometric Stereo: developed an automatically designed pipeline that achieves state-of-the-art results in uncalibrated photometric stereo.	
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Semester Project

ETH Zürich, Autonomous Systems Lab

Advisor: Prof. Dr. Roland Siegwart, Dr. Abel Gawel, Dr. Hermann Blum

Semantically informed localization in building structures: developed a pipeline for localization of a four-wheel robot in indoor environments using a segmentation-oriented neural network and point clouds.

Course Project

ETH Zürich, Computer Vision and Geometry Group

Advisor: Prof. Dr. Marc Pollefeys

Fully Convolutional Place Recognition Network: developed an algorithm for sparse SLAM with point clouds in large outdoor environments.

Course Project

ETH Zürich, Innovation Center Virtual Reality

Advisor: Prof. Dr. Andreas Kunz

AMazing videogame: created a maze-based video game from scratch, playable with keyboard and HTC VIVE.

Research Interests

Computer Vision

3D Reconstruction, View Synthesis, Photometric Stereo, Segmentation, Camera Calibration.

Robotics

Visual SLAM, State Estimation

Machine Learning

Deep Neural Networks, Deep Reinforcement Learning, Diffusion Models (T2I, T2V), Generative Models (GAN, Normalizing Flow), AutoML (Neural Architecture Search, Evolutionary learning), LLMs.

Skills

Programming Skills

Python, PyTorch, C, C++, ROS, MATLAB, C#, Unity

Language Skills

Italian (Native), English (Proficient), Spanish (Intermediate), German (Basic), French (Basic)

Publications

WACV 22 Neural Architecture Search for Efficient Uncalibrated Deep Photometric Stereo. Francesco Sarno, Suryansh Kumar, Berk Kaya, Zhiwu Huang, Vittorio Ferrari, Luc Van Gool. IEEE/CVF Winter Conference on Applications of Computer Vision, 2022, Hawaii, USA.

WACV 22 Neural Radiance Fields Approach to Deep Multi-View Photometric Stereo. Berk Kaya, Suryansh Kumar, Francesco Sarno, Vittorio Ferrari, Luc Van Gool. IEEE/CVF Winter Conference on Applications of Computer Vision, 2022, Hawaii, USA.

Certificates

ICVSS 2024 / Computer Vision in the Age of Large Language Models, 2024

IEEE RAS Summer School on Multi-Robot Systems, CTU Prague, 2022

IELTS (International English Language Testing System), Grade: 7.5, 2018

Volunteering

Core Team Member, Google Developer Student Club Zürich, Oct 2021 – Oct 2022

Football Coach, GSO Azzano Mella, Aug 2022 – Current

Volunteer, Gruppo Volontariato Primavera, Aug 2022 – Current

References

Prof. Dr. Luc Van Gool, Prof. Dr. Pascal Fua, Prof. Dr. Roland Siegwart, Prof. Dr. Suryansh Kumar, Dr. Berk Kaya, Dr. Udara Wickramasinghe