FRANCESCO **SARNO**

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https://francescosarno.github.io

EDUCATION

M.Sc. in Robotics, System and Control | ETH Zürich
2018 – 2021
Advisor: Prof. Dr. Roland Siegwart
Grade: 5.61/6.00

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

B.Sc. in Automation Engineering | Politecnico di Milano
2015 – 2018
Grade: 106/110

High School Diploma | Liceo Scientifico Statale N. Copernico
2010 – 2015
Grade: 95/100

EXPERIENCE

Computer Vision and Robotics Research Engineer |
Switzerland Innovation Park Biel/Bienne, Swiss Battery Technology Center [Biel, CH]
02/2023 – Current
Application of deep reinforcement learning and computer vision for battery disassembly.

Computer Vision Research Engineer | EPFL, Computer Vision Lab [Lausanne, CH]
02/2022 – 03/2023
Advisor: Prof. Dr. Pascal Fua
Research in 3D reconstruction, GCNN, biomedical imaging, crowd-counting, SFM, camera calibration.

Computer Vision Research Assistant | ETH Zürich, Computer Vision Lab [Zürich, CH]
05/2021 – 12/2021
Advisor: Prof. Dr. Luc Van Gool, Dr. Suryansh Kumar
Research in automated machine learning, 3D vision, view synthesis. Research concluded with 2 publications at WACV22.

Computer Vision Engineer |Solera Holdings, Qapter [Zürich, CH]
08/2021 – 12/2021
Deep learning and neural radiance fields algorithms applied to 3D reconstruction, segmentation and depth estimation.

Computer Vision Engineer Intern | Rheinmetall Air Defence, Qapter [Zürich, CH]
02/2020 – 12/2020
Development of algorithms aimed at firings' accuracy evaluation and 3D visualization.

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: development of an automatically designed pipeline achieving state-of-the-art results in uncalibrated photometric stereo.

Semester Project | ETH Zürich, Autonomous Systems Lab

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

Semantically informed localization in building structures: pipeline allowing to localize a four-wheels robot in indoor environments leveraging out information of 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: development of an algorithm performing sparse SLAM with point clouds in large outdoor environments.

Course Project | ETH Zürich, Innovation Center Virtual Reality

Advisor: Prof. Dr. Andreas Kunz

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

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.

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).

VOLUNTERING

Core Team Member| Google Developer Student Club Zürich
10/2021 – 10/2022

Football Coach| GSO Azzano Mella
08/2022 – Current

Volunteer| Gruppo Volontariato Primavera
08/2022 – Current

REFERENCES

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