FRANCESCO SARNO

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EDUCATION

M.S. in Robotics, Systems and Control| ETH Zurich
2018 – 2021, **TUTOR**: PROF. DR. ROLAND SIEGWART, **GRADE**: 5.61/6.00

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

B.S. in Automation Engineering| Politecnico di Milano
2015 – 2018, **GRADE**: 106/110

High School Diploma| Liceo Scientifico N. Copernico Brescia
2011- 2015, **GRADE**: 95/100

EMPLOYMENT

Computer Vision Research Engineer | EPFL, Computer Vision Lab
03/2022 – Present
Advisors: Prof. Dr. Pascal Fua
Research in 3D, segmentation, biomedical imaging, GAN and one-shot learning.

Computer Vision Engineer | Solera Holdings, Qapter
08/2021 – 12/2021
Deep Learning applied to 3D reconstruction, segmentation and depth estimation.

Research Assistant | ETH Zurich, Computer Vision Lab
05/2021 – 12/2021
Advisors: Prof. Dr. Luc Van Gool, Dr. Suryansh Kumar
Research in Automated Machine Learning, 3D Vision and View Synthesis fields.

Computer Vision Engineer Intern | Rheinmetall Air Defence
02/2020 – 12/2020
Development of algorithms aimed to firings' accuracy evaluation/3D visualization.

VOLUNTEERING

Core Team Member| Google Developer Student Club ETH Zurich
10/2021 – 10/2022
Core member of GDSC (Machine Learning focus).

RESEARCH INTERESTS

- **Computer Vision**: 3D Reconstruction, View Synthesis, Photometric Stereo.
- **Robotics**: Camera Calibration, Visual SLAM, State Estimation.
- **Machine Learning**: Deep Neural Networks, Generative Models (GAN, Normalizing Flow), AutoML (Neural Architecture Search, Evolutionary learning).

SELECTED PROJECTS

Master's Thesis| ETH Zurich, Computer Vision Lab
Advisors: Prof. Dr. Luc Van Gool, Dr. Suryansh Kumar
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 System Lab
Advisors: Prof. Dr. Roland Siegwart, Dr. Abel Gawel, 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.

FCPR| ETH Zurich, Computer Vision and Geometry Group
Advisors: Prof. Dr. Marc Pollefeys
Fully Convolutional Place Recognition Network: development of an algorithm performing sparse SLAM with point clouds.

Maze Video Game| ETH Zurich, Innovation Center Virtual Reality
Advisors: Prof. Dr. Andreas Kunz
Video game developed from scratch, playable with keyboard and HTC VIVE.

SKILLS

- **Programming Skills**: Python, PyTorch, TensorFlow, C, MATLAB, C++, ROS, C#, Unity
- **Language Skills:** Italian (native), English (proficient), Spanish (Basic), German (Basic)

MAJOR COURSES

- 3D Vision
- Virtual Reality
- Autonomous Mobile Robots
- Model Predictive Control
- Introduction to Machine Learning

PUBBLICATIONS

[1] **[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.

[2] **[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.

REFERENCES

- Prof. Dr. Luc Van Gool
- Prof. Dr. Pascal Fua
- Prof. Dr. Marc Pollefeys
- Prof. Dr. Roland Siegwart
- Prof. Dr. Andreas Kunz
- Dr. Suryansh Kumar