FRANCESCO SARNO

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Professional Experience

Computer Vision and Robotics Research Engineer Feb 2023 – Current
Switzerland Innovation Park Biel/Bienne, Swiss Battery Technology Center, Biel, CH
Created a pipeline for detection and pose estimation of EV battery components. RL applied to automated disassembly. Synthetic dataset creation based on Omniverse. ROS2 integration of computer vision algorithms.

Computer Vision Specialist Sep 2023 – Present
ETH Juniors, Zurich, Switzerland
Leading multiple POCs based on computer vision:
OCR for Information Extraction – Text recognition models to extract relevant data from documents.
Damage Detection & Classification – Defect identification and localization on challenging surfaces.
3D Indoor Scene Synthesis – VLMs and NVIDIA Omniverse for 3D environment generation.
OCR for Fraud Detection – OCR and ML-based feature matching to identify counterfeit gold bars.

Computer Vision Research Engineer Feb 2022 – Mar 2023
EPFL, Computer Vision Lab, Lausanne, CH
Conducted research in 3D reconstruction, GCNN, biomedical imaging, crowd-counting, SFM, and camera calibration.

Computer Vision Research Assistant May 2021 – Dec 2021
ETH Zürich, Computer Vision Lab, Zurich, CH
Conducted research in automated machine learning, 3D vision, and view synthesis. Concluded with two publications at WACV22.

Computer Vision Engineer Aug 2021 – Dec 2021
Solera Holdings, Qapter via ETH Juniors, Zurich, CH
Developed deep learning and NeRF-based algorithms for 3D reconstruction, segmentation, and depth estimation.

Computer Vision Engineer Intern Feb 2020 – Dec 2020
Rheinmetall Air Defence, Qapter, Zurich, CH
Developed algorithms aimed at firings' accuracy evaluation and 3D visualization.

Education

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

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

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

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.
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.

Certificates and Awards

Best Poster Presentation Award @ Nvidia GTC 2025
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

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.

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. Udaranga Wickramasinghe