Joe Najm

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Summary — EPFL Master's graduate with a strong passion and interest in computer vision, machine learning and data science, with previous experience in research and Formula One!

Skills

OS Debian, Ubuntu, Windows, Docker
Machine Learning Pytorch, Scikit-learn
Languages Python, C++, Kotlin, Matlab
Project management GIT, Jira, Scrum Master
Data analysis NumPy, SciPy, Pandas, Plotly, Gradio
Computer Vision OpenCV, Deep nets, Visual Odometry/SLAM

Experience

Alfa Romeo/Stake Sauber Formula One Team **Sep 2023 – Sep 2024**
Data Analytics Intern

- Extract trajectory information (Yaw Rate and velocity) from monocular on-board footage.
- Applied Visual SLAM and Visual Odometry algorithms for State estimation.
- Trained and Deployed deep networks for extraction of Yaw Rate and velocity.
- Developed python based graphic interfaces for data visualisation and analysis of results.
- Performed statistical analysis on the results to evaluate the robustness of the experimented methods.

Centre hospitalier universitaire vaudois (CHUV) **Jul 2022 - May 2023**
Student Research assistant

- Part of the Medical Image Analysis Laboratory under Dr. Meritxell Bach Cuadra.
- Trained deep networks for the detection and classification of Multiple-Sclerosis lesions in brain MRI images.
- Developed software tool to deploy the model to clinicians using docker (More details can be found on my website over here).
- Published an abstract at the ECTRIMS 2023 conference, regarding the robustness of the deep model to shifts in the centre-patch selection. The abstract is publicly available over here.

EPFL Racing Team **Sep 2021 - Aug 2023**
Head of Perception group - Driverless Division

- Supervised and lead a team to develop the perception algorithms of the EPFL Racing Team driverless division.
- Developed realtime object detection and distance estimation algorithms, using a monocular camera and a LiDAR.
- Performed sensor fusion using computer vision projections to obtain better results.
- Made sure to obtain the most robust algorithms, while respecting the realtime constraint.
- Integrated the algorithms to the main pipeline using ROS2.
- Successfully tested the algorithms on a Nvidia Jetson Orin.
- Part of the team that developed the first self-driving of our team's history.
- More details available on my website

Education

Ecole Polytechnique Fédérale de Lausanne (EPFL)
Master's of Science in Electrical Engineering with specialisation in signal, image and video processing: 2021-2024
Bachelor of Science in Electrical and Electronics Engineering: 2018-2021

Projects

Android Applications developer **Sep 2023 – Present**

- Independent android app developer during my free time, using Kotlin and Kotlin Jetpack-Compose
- All my projects are open source and available on my github, as well as on the project page of my website with a small description and more details!
- Developed a fully local and offline application to track gym workout, exercises, weights, nutrition ...
- Developed a fully local and offline application to keep track of the expiry dates of medications at home.

ApiZoom **Feb 2021 – July 2021**

- Bachelor thesis with Prof. Jean-Philippe Thiran.
- Trained a YOLOv5 network for the automatic detection of toxic varroa mites in bee hive images.
- More details over here.