Tanasa **Dragos**

ML ENGINEER, SOFTWARE ENGINEER ·

Florence, Italy

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Education

M.S. in Artificial Intelligence
Florence, Italy

UNIVERSITY OF FLORENCE
Sep. 2022 - Dec. 2024

- Developing a strong understanding of the theoretical foundations of AI with a focus on statistics and applications.
- The main courses include: Statistical Modelling and Machine Learning, Deep Learning, Data Mining, Parallel Programming for Machine Learning, Knowledge Engineering, Computer Vision, Optimization for Machine Learning, Generative Models, Geometric Learning.

B.S. in Mechanical Engineer
Florence, Italy

UNIVERSITY OF FLORENCE
Sep. 2019 - Dec. 2022

- Grade: 110/110 with Honors.
- Thesis: Machine learning techniques applied to turbolence closure problem in RANS.

Experience

Firenze Race Team (formula student team of UNIFI)
Calenzano, Florence

HEAD OF TRAJECTORY AND CONTROLS DEPARTMENT
Aug. 2023 - today

- Proved leadership and management skills by organizing and supervising the work of the eight members of the entire department. Developed strong interdisciplinary competences by interacting with various departments within the team.
- Created a new version of the Pure Pursuit control algorithm that embeds vehicle dynamics into an otherwise geometric controller only. Improved car's state estimation using Kalman Filters.
- Recreated the cone detection pipeline from scratch by fine-tuning the YOLOv8 network and integrating it into our autonomous pipeline through ROS. This improved the frequency of the ROS node by about 20% and mAP@0.95 by about 5%.

SOFTWARE ENGINEER
Oct. 2022 - Aug 2023

- Developed the trajectory estimation algorithm from scratch using Delaunay triangulation in Python.
- Improved curvature estimation of the trajectory and realized the physical model for the car in Simulink. Implemented a Pure Pursuit and PID control algorithm from scratch in C++, Simulink and Matlab.
- Integrated modules of the Autonomus System using ROS.

Projects

Longformer

DEEP LEARNING, NLP
Jan. 2024

- Implemented Longformer (The Long-Document Transformer) in PyTorch focusing on both the Transformer architecture and an efficient local attention mechanism.
- Reproduce the literature results by performing both pre-training and fine tuning.
- Fine tuned on the most common NLP tasks like classification, question answering and coreference resolution.

Scikit-learn Add-on

MACHINE LEARNING
Jun. 2023

- Designed an add-on library for the scikit-learn framework. All the estimators implemented are designed to adhere to scikit-learn API conventions.
- Developed several ML algorithms in Python: kernel regression, Super-Learner, AdaBoost, Gradient Boosting.
- Parallelized code when possible (Super-Learner) using the joblib module, achieving speedups of up to 7.
- Leveraged optimized libraries such as NumPy, Pandas, and SciPy to achieve maximum efficiency.

Image Processing

COMPUTER VISION
Sept. 2023

- Designed and implemented a highly efficient kernel image processing algorithm in C++.
- Used the OpenCV library to leverage its image processing and computer vision capabilities.
- Used CUDA and OpenMP to parallelize the 2D convolution. In particular, my OpenMP implementation is three times faster than the OpenCV one.
- Used tools like Nsight Compute and Nvidia Visual Profiler to optimize the CUDA implementation.

Other

Martial artist having practiced Karate for 10 years and now Brazilian Jiu Jitsu. Huge passion for motosport. I play chess and I'm a speedcuber.