Ares Koumblis

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PROFESSIONAL EXPERIENCE

Tesla, Palo Alto

Senior Autopilot Software Engineer — *Aug 2025 - Present*

- Fine-tuning end-to-end driving models with reinforcement learning (GRPO) to improve behavior in reduced-visibility scenarios
- Developed lane-change evaluation metrics in an internal video-generation simulator to quantify safety/performance tradeoffs for candidate policies

Autopilot Software Engineer — *Feb 2025 – Aug 2025*

- Adapted the Lane Departure Avoidance feature for rear-wheel-steer dynamics and deployed it on Cybertruck (prerequisite for 5-star NCAP)
- Implemented reduced-visibility slowdown logic currently deployed to the Robotaxi fleet
- Built an MPC error-tracker that forward-simulates 0.5s of MPC dynamics from control inputs and compares to SLAM ground truth for model-mismatch diagnosis and controller retuning

Autopilot Software QA Engineer — *Jan 2024 – Feb 2025*

- Led platform-specific development and evaluation for the first FSD release on Cybertruck, shipped to ~30,000 vehicles
- Developed comfort evaluation suites for end-to-end driving models (e.g., excessive decel/accel, overly conservative speed), plus camera occlusion and emergency-vehicle detection evals, using both open-loop and closed-loop simulation
- Established validation processes to correlate automated comfort metrics with operator feedback, enabling data-driven deployment gating

PROM Racing NTUA (FSAE), Athens

Head of Autonomous Driving Software — *Oct 2021 - Aug 2023*

- Founded and led a 10-member team to develop and deliver an autonomous race car over a 2-year timeline
- Fine-tuned and deployed a YOLOv5 object detection model on a TPU to detect track cones in real time
- Designed, trained, and deployed a ResNet-based keypoint detector on an iGPU for cone distance estimation
- Proposed and implemented a YOLOv5 variant with an additional regression head to directly estimate cone distance, using knowledge distillation from the existing perception stack and human labels
- Developed an Extended Kalman Filter (EKF) fusing IMU, wheel-speed, and steering data to estimate the vehicle's kinematic state
- Built a graph-based SLAM system using the iSAM algorithm for real-time cone and vehicle localization
- Designed and validated a dynamic Model Predictive Controller (MPC) for path tracking

Alexander Moore SA, Athens

Data Science Intern — *Mar 2021 – Jul 2021*

- Built a regression model to forecast product demand, reducing prediction error by 50% over existing approaches
- Developed a neural network using tf-idf features to classify customer feedback as positive or negative, achieving 96% accuracy
- Designed a recommendation system based on customer similarity for a pharmaceutical supplier

EDUCATION

National Technical University of Athens, Greece — *Oct 2017 - Feb 2024*

Integrated Master's (BE/ME) in Electrical and Computer Engineering
Thesis: Design and Implementation of an Autonomous Driving System for a Formula Student Driverless Car
GPA: 9.3/10.0

TECHNICAL SKILLS

Programming languages: Python, C++, C
CV/ML/DL frameworks: OpenCV, scikit-learn, PyTorch
Languages: Greek (native), English (fluent)