




# Adam Yahmadi

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## PROFILE

Computer Science student at the Technical University of Munich with experience from academic and personal projects. Interested in mathematics, machine learning, and scientific computing, and focused on turning concepts into practical implementations and usable software. Enjoy working on real-world technical problems and building reliable, functional systems across different domains.



## EXPERIENCE

- **TUfast Eco Team** 2024 – 2025  
*Driving Strategy Engineer* Technical University of Munich
  - Developed a solver-agnostic optimization framework to compute energy-optimal speed profiles for the lux025 solar race car, competing in the Bridgestone World Solar Challenge 2025.
  - Modeled vehicle energy dynamics including battery state-of-charge, solar irradiance, terrain slope, aerodynamic drag, overtaking, and control stops.
  - Implemented interchangeable optimization solvers (IPOPT, ALPSO, ParOpt, Gurobi) over a shared vehicle physics model with GPX route processing and evaluation tooling.

## EDUCATION

- **Technical University of Munich** 2023 – Present  
*Bachelor of Science in Informatics* Munich, Germany
- **Lycée Hrairia 2** 2019 – 2023  
*Scientific Baccalaureate: Mathematics* Tunis, Tunisia
  - Graduated with highest honors

## PERSONAL PROJECTS

- **InfraLens — Proxmox Topology Visualizer and LLM Diagnostics**   
*Tools: Python, FastAPI, React, Proxmox API, Ollama, SSH, Docker*
  - Built a full-stack Proxmox homelab monitor that auto-discovers nodes, VMs, and LXC containers, renders them as a real-time interactive topology graph, and streams live CPU, RAM, disk, and network RX/TX telemetry.
  - Detects running services per container via SSH socket and Docker probing, and feeds live telemetry as structured context to a local LLM chat interface for infrastructure diagnostics.
- **Vertex — CLI Document Scanner**   
*Tools: Python, OpenCV, scikit-image, NumPy*
  - CLI tool that converts document photos into scanner-quality PDFs via a computer vision pipeline: GrabCut-based boundary detection, homographic perspective correction, morphological illumination normalization, and batch PDF export.

## ACADEMIC PROJECTS

- **Lab Course: Motion Planning for Autonomous Vehicles (CommonRoad)** 2025 – 2026  
*Tools: Python, C++, CommonRoad Framework*
  - Built a conversion pipeline for drone-recorded bus station scenarios: parsed parquet trajectory files, generated typed dynamic obstacles with full state sequences, and produced planning problems from recorded ego trajectories.
  - Developed a visualization toolbox (scenario rendering, curvilinear trajectory analysis, state time profiles) and a drivability checker for collision freedom, road compliance, and kinematic feasibility.
- **Practical Course: Computer Architecture** 2024  
*Tools: C, C++, SystemC*
  - Built a cycle-accurate cache simulator supporting direct-mapped and fully associative caches with LRU eviction, configurable line count, line size, and cache/memory latency.
  - Tracked per-access primitive gate counts to estimate hardware complexity alongside cycle counts and hit/miss rates.
- **Practical Course: Fundamentals of Programming** 2024 – 2025  
*Tools: Java, Git*
  - Implemented core data structures and algorithms in Java (linked lists, binary trees, recursive sorting, stacks, queues, generics) applying OOP principles including inheritance, polymorphism, and encapsulation, with full JUnit test coverage.

## SKILLS

- **Languages:** German (native), Arabic (native), English (fluent), French (fluent)
- **Technologies:** Python, Java, C, PyTorch, NumPy, OpenCV, FastAPI, Spring Boot, Docker, Git, Linux, Proxmox
- **Mathematics:** Probability, Statistics, Algorithms, Optimization