Ali Shirzad

Software Engineer | Python | PyTorch | Machine Learning | Automotive Software

+46 79 332 36 36 | ali.shirzad.cs@gmail.com | linkedin | github | alishirzad.se

SUMMARY

Software Engineer with a Master's in Complex Adaptive Systems and 1+ years of automotive software development experience at Volvo Group Trucks Technology, where I develop automation tooling and machine learning solutions for vehicle dynamics. A Python tool I created saves the team about **400 engineering hours a year** and is actively used in production; my thesis model forecasts truck vibration in **seconds** versus conventional simulations that take hours to days.

EDUCATION

Chalmers University of Technology | Civilingenjörsexamen i Datateknik 2021 – 2026

Master of Science (M.Sc.), Complex Adaptive Systems *08/2024 – 06/2026*

Bachelor of Science (B.Sc.), Computer Science and Engineering *08/2021 – 06/2024*

WORK EXPERIENCE

Software Engineer Intern | Volvo Group Trucks Technology (GTT) 06/2026 – 09/2026

Tools: Python, XML, Excel VBA, Visio, automated testing, Scrum, Jira, Bitbucket, Jenkins

- Fully automated pinout (wiring) Word documents with a Python script, previously written by hand
- Added features to a heavily used internal Python/VBA Excel tool, making it robust and user-friendly
- Delivered it alone: Python script, Visio drawing template, XML files, validation, tests, logging

Master's Thesis Student | Volvo Group Trucks Technology (GTT) 01/2026 – 06/2026

Machine Learning-Based Model Order Reduction for Full Vehicle Finite Element Models

Tools: Python, PyTorch, LSTM, CNN, TCN, FNO, MATLAB, finite element (FE), time-series data

- Built and trained neural network models that predict truck vibration in seconds, not hours to days
- Made the models small enough to run later on a data logger beside live sensors
- Led the work from start to finish and evaluated models based on physical fidelity, not just training error

Software Engineer Intern | Volvo Group Trucks Technology (GTT) 06/2025 – 08/2025

Tools: Python, Visio, automated testing, Scrum, Jira, Bitbucket, Jenkins

- Automated a manual task, saving the team **400 hours/year**; the tool is now used in production
- Designed the diagram template and rebuilt the Python script that generates the documents
- Automated output validation by writing unit tests that verify generated documents against the specification

OTHER EXPERIENCE

Warehouse Worker and Forklift Operator (part-time) | Dagab 12/2019 – Present

TECHNICAL SKILLS

Languages: Python, C, C++, SQL (PostgreSQL), JavaScript, HTML/CSS, MATLAB

Frameworks and Libraries: PyTorch, TensorFlow, NumPy, Pandas, Jupyter Notebook, FastAPI, React, Node.js

Developer Tools: Git, Bitbucket, Jenkins, CI/CD, Docker, Microsoft Azure, Linux, Jira, Scrum, CUDA, HPC and multi-GPU, XML, Excel VBA, Visio, automated testing

Machine Learning: neural networks, time-series modelling, surrogate and reduced-order models, LLM integration, MCP, agent workflows

Spoken: Swedish (fluent), English (fluent), Persian/Dari (native)

PROJECTS

ADAS: Automatic Emergency Braking | *C++17, CMake, GoogleTest, Kalman filter* Personal project

- Car safety feature in C++ that warns the driver and brakes by itself to avoid hitting the car ahead
- Avoids the crash in 14 of 15 simulated Euro NCAP tests, the tests used to rate the safety of new cars
- A Kalman filter cleans up noisy radar data, cutting false emergency braking from 17 of 20 drives to 0

PowerPoint AI Assistant | *JavaScript, Office.js, Node.js, LLM API* Personal project

- AI assistant inside PowerPoint that turns one sentence into a consulting-style slide deck
- Edits existing slides on request and keeps their design; the AI key stays on a backend server

HittaJob | *React, Node.js, PostgreSQL (Supabase), GitHub Actions, Cloudflare* Personal project

- Full-stack web app that finds jobs, scores them against my CV with AI and saves the best matches

- Automates about 90% of my job search; Google sign-in, and API keys stay in the user's browser

SmartBI Insights | *React*, *FastAPI*, *PostgreSQL*, *Docker*, *Microsoft Azure* Personal project

- Full-stack analytics web app for retail suppliers, live on Microsoft Azure
- Every change is tested and deployed to the cloud automatically through a CI/CD pipeline
- Every figure is checked against the database, so the AI cannot invent a number

Local AI Coding Agent | *Python*, *Docker*, *local LLMs* Personal project

- Python agent that turns a plain-English task into working code and tests it itself
- Runs each generated program in a Docker sandbox with automatic security checks

GPU-Accelerated CFD Solver | *Python*, *CUDA*, *MPI*, *NVIDIA AMGX*, *A100 and H100* Chalmers

- CUDA fluid-flow simulator running across many GPUs on an HPC cluster

AI Pollen Detection for Sustainable Beekeeping | *Python*, *YOLOv8*, *computer vision* With Ericsson

- Six-person team: fine-tuned YOLOv8 to spot bees carrying pollen in images and video, over 90% accuracy

Image Enhancement and Colour Restoration | *PyTorch*, *TensorFlow*, *ResNet50*, *U-Net* Chalmers

- Three-stage PyTorch pipeline restoring damaged images: 37% better quality, 80% accuracy

Cooperative Self-Driving Vehicles | *Python*, *C++*, *shared memory*, *ROS* Bachelor's thesis

- Redesigned how the positioning system talks to the vehicles, making communication almost 500% faster

CAN-Based Door and Motion Alarm System | *C*, *STM32 (ARM)*, *CAN bus*, *embedded* Chalmers

- Six-person team: built an alarm system of microcontrollers in C that talk over a CAN bus
- Designed our own CAN message protocol with acknowledgements, resends and bus load testing

REFERENCES & MORE

References available on request | More projects at github