

Darshak Panseriya

Perception & Sensing ML Engineer · Radar · Camera · Hardware-Aware ML

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PROFILE

Perception and sensing ML engineer for vehicles and autonomous systems: radar and camera ML, multimodal sensor fusion, models that hold up in the vehicle, not only on a benchmark. As technical owner of one radar sensing function at Bosch, I took it from first data to series development in **under 7 months**: data campaigns and labeling, a model sized for a microcontroller, validation on people it had never seen, then a customer vehicle and a passed OEM design review. **Over 90%** of the model's false triggers suppressed; **~100 KB** RAM budget for the whole function.

SKILLS

Programming: Python, MATLAB/Simulink; Pandas, NumPy, OpenCV, Git, Docker

ML & Deep Learning: PyTorch, TensorFlow/Keras, scikit-learn, YOLOv8; hardware-aware ML (compact models sized for microcontroller memory budgets)

Perception & Fusion: Object detection, tracking, data association, camera-radar sensor fusion, extended Kalman filter (EKF)

Radar & Signal Processing: Radar signal processing, UWB radar and ranging, real-time signal analysis, radar clustering (DBSCAN)

ML Lifecycle & Validation: Dataset design, automated labeling pipelines, validation on unseen subjects, AP/IoU, confusion analysis; real-time inference under memory budgets

Automotive & Vehicle Engineering: CAN, CANoe, CAPL, OEM series development; vehicle dynamics, SolidWorks, ANSYS FEA

Languages: German (C1), English (C1), Hindi (native), Gujarati (native)

PROFESSIONAL EXPERIENCE · PERCEPTION & ML

Robert Bosch GmbH · Stuttgart

Apr 2026 - Sep 2026

Radar ML Engineer · UWB Sensing Function, Series Development

Working Student

- Ported the function to a customer vehicle, reproduced its performance there and defended the technical side in the OEM design review, which passed.
- Extended the evaluation to the vehicle, contributed the metric definitions and directed the content of the data-quality guideline for the vehicle campaigns.
- Built the no-code evaluation suite and the shared processing code; both became standard for Bosch teams in three countries.
- Technical reference for the teams porting, optimizing and validating the function in series development.

Tech: Python, TensorFlow, signal processing, hardware-aware ML

Robert Bosch GmbH · Stuttgart

Oct 2025 - Mar 2026

Radar ML Engineer · UWB Kick-to-Open Detection

Master's Thesis

- Owned the kick-to-open detection function end to end, from first data to a live demonstrator: solution strategy, data campaigns and labeling, model design and the detection system.
- Built the signal analysis and processing for the key-finding radar, delivered as the front end of the detection.
- Designed, trained and optimized the detection algorithm and validated it on people it had never seen: **over 90%** of the model's false triggers suppressed. Its architecture is filed as an internal invention disclosure at Bosch.
- Integrated the complete function on a live demonstrator, in real time. Designed against a **~100 KB** RAM budget for the whole function, set by the microcontroller target.

Tech: Python, TensorFlow, signal processing, hardware-aware ML

Robert Bosch GmbH · Stuttgart

Feb 2025 - Sep 2025

Radar Systems Engineer · UWB Validation & Tooling

Internship

- Built the team's real-time radar signal-analysis tool (Python, PyQt), cutting signal analysis per measurement from **1-2 hours** to seconds.
- Built the labeling workflow that cut manual label cleanup from **hundreds of hours** to **10-15 hours** per campaign; it became the team's standard.
- Ran radar and ranging evaluations on real hardware and reported the results as evidence for the team's decisions.

Tech: Python, MATLAB, CANoe, CAPL, PyQt

Schanzer Racing Electric · Ingolstadt
Perception System Engineer

Oct 2024 - Apr 2025
Formula Student Team

- Built an automated validation framework for YOLOv8-pose cone detection on the driverless race car: AP across IoU thresholds and keypoint RMSE against segmentation-derived ground truth, saving **roughly 100 hours** of labeling.
- Range-aware evaluation: monocular distance estimation bounded assessment to the safety-critical **1-15 m** band, cutting noise from distant detections and improving false-positive behavior.
- Per-class confusion analysis surfaced recall losses invisible in aggregate accuracy, directing targeted model improvements.

Tech: Python, YOLOv8, OpenCV, Pandas, Matplotlib

Fraunhofer IVI · Ingolstadt
Sensor Fusion Engineer · Camera-Radar Traffic Perception

Mar 2024 - Jun 2024
Research Project

- Led detector training for a camera-radar multimodal fusion pipeline on road users (dataset analysis, class balancing, augmentation), tuning model size, latency and accuracy for real-time use.
- Implemented the spatial fusion stage: object-level data association of image detections with radar clusters so both sensors resolve to one reading per road user.
- Extended DBSCAN with a non-linear scaling that clustered this dataset's radar returns more reliably than the stock algorithm.
- Built custom precision/recall tooling for detection and association quality; specified the temporal-association and EKF tracking stage as the next step.
- In 2026 extended it in the public repo with an extended Kalman tracker that uses radar Doppler, so each track knows its speed from the first frame, and a full evaluation over 22 scenes.

Tech: Python, PyTorch, YOLOv8, OpenCV, Pandas

PRIOR PROFESSIONAL EXPERIENCE · VEHICLE ENGINEERING

Three-person micromobility startup
Vehicle Platform Design Engineer

Aug 2022 - Aug 2024

- Sole vehicle-platform design engineer: took the founder's vision to a concept and the concept to a manufacturable prototype design for an ultralight (under **50 kg**) four-wheel platform.
- Owned kinematics, dynamics, FEA load cases, CAD, production drawings and the bill of materials down to every bolt, with design for manufacture that cut cost and build risk.
- Built the calculation tools: a linked performance model (cornering speed, stopping, motor power, top speed, gradient) for front and split all-wheel drive, and 12 design calculators from load cases to fatigue life; compared four drivetrain layouts on packaging and mass.

Tech: SolidWorks, ANSYS, Adams, Lotus Suspension Analysis

GTU Motorsports · India
Vehicle Dynamics Engineer

Apr 2019 - Mar 2021
Formula Student Team

- Designed the suspension and vehicle dynamics package, including the team's first decoupled heave/roll suspension; cut **~3 kg** from already-light parts and in the second season ran the vehicle-dynamics group of two engineers. Team results: **3rd overall** Formula Bharat 2020 (1st Acceleration, 1st Endurance), **3rd** Engineering Design 2021.
- Designed the damper cage on the roll unit, which keeps the roll spring-damper in compression whether the rocker pulls or pushes and ran on the 2020 car; designed a blade anti-roll bar retunable in minutes, its stiffness range checked in FEA at three blade positions.

EDUCATION

Technische Hochschule Ingolstadt
M.Eng. Automated Driving and Vehicle Safety · Grade 1.8

Mar 2023 - Sep 2026

SKODA AUTO University, CZ · Erasmus Exchange · Automotive Industry

Sep 2020 - Feb 2021

Parul University, India · B.Tech. Automobile Engineering · Grade 1.5

Sep 2017 - Jul 2020

S.T.B.S. College, Surat · Diploma in Automobile Engineering · Grade 1.1

Sep 2014 - Jun 2017

Awards: SOIC 2019 prototype grant, Creeper Assist (design patent filed) · Certificate of Excellence, B.Tech (2020)