

# KH SAFKAT AMIN

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## PROFILE

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I am a Master's graduate in Automotive Engineering with a strong focus on software simulation, functional development, and intelligent systems. My interests lie at the intersection of robotics, automated driving, and AI-based simulation. I have experience in developing and evaluating software solutions for automotive applications, with a growing research interest in generative AI and foundation models for autonomous systems.

## EDUCATION

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10/2020 - 03/2025  
Aachen, Germany

### Master of Science in Automotive Engineering

*RWTH Aachen University*

**Thesis:** Development of a framework for harmonization, enrichment and classification of behavioral data.

05/2012 - 02/2017  
Dhaka, Bangladesh

### Bachelor of Science in Mechanical Engineering

*Bangladesh University of Engineering and Technology*

**Thesis:** Analysis of the production process for homemade cornflakes

## PROJECTS

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04/2025 - 04/2025

### Literature Review: Generative AI and Foundation Models in Automated Driving

- Literature review on generative AI and foundation models in automated driving, exploring recent developments, applications, and challenges in offline and on-vehicle pipelines.
- Project-Link: [GitHub-Repository-Link](#)

03/2024 - 03/2024

### Customer Experience Enhancement with Public Data and Generative AI *EESTECH Challenge AACHEN*

- Developed an automated system using LLaMA2 for processing GitHub issues by extracting key attributes and generating feedback, supported by a web interface for enhanced usability.
- Project-Link: [GitHub-Repository-Link](#)

Skills: **Python, Node.js, Generative AI**

04/2023 - 09/2023

### A Comparative Study on YOLOv5-Based Traffic Light Recognition for Automated Driving

*Automated and Connected Driving Challenges - Research Project*

- Developed a YOLO-based traffic light detection system with a custom data processing pipeline, comparing its performance against Faster R-CNN and SSD MobileNet across two diverse datasets.
- Project-Link: [GitHub-Repository-Link](#)

Skills: **Python, Docker, Object Detection**

## WORK EXPERIENCE

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06/2024 – 03/2025

Aachen, Germany

**Institute for Automotive Engineering, RWTH, *Master Thesis Student***

- Designed and developed a framework for harmonization of driving behavior data.
- Implemented an automated processing pipeline for enriching data with open-source map and weather data.
- Developed scripts for road network extraction, maneuver, and scenario detection and classification.
- Conducted evaluation and statistical analysis on driving behavior.

Skills: **Python, MongoDB, OSMnx, Lanelet2, ROS2, Docker**

03/2024 – 03/2025

Aachen, Germany

**Institute for Machine Elements and Systems Engineering, RWTH, *Student Assistant***

- Conducted tribological tests on a roller bearing test bench to evaluate wear and boundary layer formation.
- Developed machine learning models to analyze experimental data and predict tribological behavior.

Skills: **Testing and Simulation, Project Management, Machine Learning, Jupyter Notebook**

12/2022 – 07/2024

Aachen, Germany

**Team Galaxis RWTH, *Team Member* | *Software***

- Development of a ROS node for environment perception by generating semantic image segmentation using SegNet.
- Adaptation of an existing model predictive controller (MPC) to integrate the perception module for optimization of trajectory planning.
- Real-time simulation on test track and Gazebo simulator for code testing and evaluation.
- Involved in low-level system bring-up and hardware-software integration for on-vehicle deployment and troubleshooting.

Skills: **ROS2, Gazebo, Docker, C++, Python, PyTorch, NVIDIA Jetson, jetson-inference, Computer Vision**

01/2018 – 02/2021

Dhaka, Bangladesh

**Rancon Auto Industries Limited, *Executive Engineer***

- Supervision of vehicle production, ensuring efficiency, quality, and regulatory compliance, as well as conducting diagnostics, root cause analysis, and FMEA.
- Development of SOPs and assembly sheets to optimize workflows and efficiency, collaborating closely with teams to maintain safety and industry standards.

Skills: **Project Management, Teamwork, Microsoft 365**

## ADDITIONAL SKILLS

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- MATLAB/Simulink, Git, GitLab CI/CD, VS Code, TensorFlow, Linux, Vector Databases

## LANGUAGES

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- Bengali (Native), English (C1), German (B2)