

Nahin Hossain Uday

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Software engineer with hands-on experience building **agentic AI systems**, **RAG pipelines**, and **AI-powered applications**. Strong backend foundation in Python with production experience in **LLM integration**, **workflow automation**, and **scalable API systems**.

Technical Skills

- **Languages:** Python, C++, R, SQL, Matlab, JavaScript.
- **Tools & Frameworks:** Numpy, Pandas, TensorFlow, Tableau, Sci-kit learn, Flask, Django, PostgreSQL, Duck DB, MySQL, Docker, Kubernetes, Linux, Git, CI/CD. FastAPI, REST APIs
- **Expertise:** Full-Stack Development, Database Management, API Development, Machine Learning Integration, Workflow Automation, Cloud Deployment, Data Visualization, Neural Networks, Version Control

Professional Experience

Research assistant

[University of Wuppertal](#)

September 2024 - Present

Wuppertal, Germany

- **Built and deployed a production RAG chatbot used by 6+ users**, handling 200+ queries/week with consistent document-grounded responses.
- **Reduced response latency by ~35% (to <1.5s avg) by optimizing vector search**, query routing, and context selection.
- **Improved answer accuracy by ~40% by implementing hybrid search** (vector + BM25) and relevance-based filtering.
- **Processed and indexed 1,000+ document chunks** from PDFs, enabling fast semantic retrieval across large datasets.
- **Designed scalable REST APIs using FastAPI**, supporting concurrent multi-user sessions with persistent chat history.
- **Increased system reliability by implementing fallback strategies** (LLM-first + retrieval validation), reducing failed or irrelevant responses.
- **Containerized and deployed the system using Docker**, reducing environment setup time by ~60% and ensuring reproducible deployments.
- **Structured and optimized data pipelines for ingestion and embedding**, reducing document processing time by ~30%.

Software Engineer - WS

[Aptiv GmbH](#)

May 2024 - October 2024

Wuppertal, Germany

- **Designed and deployed Django REST APIs for automotive telemetry systems**, integrating ADAS and GPS data streams to enable real-time vehicle analytics.
- **Developed and optimized a PostgreSQL data warehouse handling 12K GPS records per table**, improving query performance by 40% through advanced indexing, caching, and data normalization.
- **Built an interactive ReactJS visualization dashboard for vehicle route mapping**, increasing analytical accuracy.
- **Automated GPS route ingestion and preprocessing for 45 km test trips with Python-based parsers**, reducing manual data handling time by 30%.

- **Collaborated with hardware and embedded software teams** to align data ingestion protocols, schema design, and visualization standards for unified system integration.

Education

Master's: Smart Materials and Systems, University of Wuppertal, Germany

April 2026 - Present

Bachelor of Science: Computer Science and Engineering, American International University, Bangladesh

2017 - 2020

Projects & Extra

Chatbot

October 2025

Created a controlled-access educational chatbot with Python, FastAPI, and Next.js, integrated with ChatGPT API. Implemented prompt guardrails, secure admin monitoring, and compliance filters for 6+ active users.

Road Simulator

September 2025

Developed a full-stack traffic optimization app for the German Autobahn using Python, Flask, React, and R. Built containerized ETL pipelines and REST APIs for real-time and historical congestion analysis, reducing data latency by 40%.

Text recognition AI

January 2023

Built a feed-forward neural network in MATLAB for handwritten text recognition using matrix-encoded pixel data. Implemented custom preprocessing and feature extraction, achieving high OCR-style accuracy on noisy datasets.

From Nature to UAV

December 2023

Conducted swarm-flight behavior research on 120+ bee flight videos, extracting trajectory data and modeling avoidance dynamics. Applied Swarm Intelligence principles to propose a bio-inspired UAV coordination model for autonomous drone swarms.

Deep Learning

May 2020

Completed a 5-course Coursera certification (20+ hours each) covering Neural Networks, CNNs, and Sequence Models. Gained practical experience through structured ML projects and coding labs in Python and TensorFlow.

Languages

- **German:** Intermediate Proficiency
- **English:** Fluent Proficiency

References

Stefan Becker,

ASUX team manager, Aptiv GmbH

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Prof. Dr.-Ing. Dominic May

Professor of Technology Didactics, University of Wuppertal

Email: dmay@uni-wuppertal.de