

# Mohd Uwaish

STUDENT · FULL STACK AI ENGINEER

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## Skills

<b>Programming Languages</b>	Python, C, JavaScript, PL/SQL
<b>Web Frameworks &amp; Libraries</b>	Django, Flask, Streamlit, React, NextJS
<b>Data Manipulation</b>	Numpy, Pandas, SQL
<b>Data Visualisation</b>	Plotly, Matplotlib, Seaborn, Tableau
<b>Databases</b>	MySQL, MongoDB, SQL Server, ChromaDB, Pinecone
<b>Machine Learning Libraries</b>	Sci-Kit Learn, PyTorch
<b>RAG Systems</b>	LangChain, LangGraph, LlamaIndex, RAGAS, LLM Integration, Prompt Engineering
<b>Natural Language Processing</b>	NLTK, Word2Vec
<b>Model Deployment</b>	Git, GitHub, Docker, AWS, Heroku

## Experience

### Fraunhofer-Einrichtung für Energieinfrastrukturen und Geotechnologien IEG

Bochum, Germany

RESEARCH ASSISTANT - DEEP LEARNING AND NATURAL LANGUAGE PROCESSING

Sep. 2025 - Present

- Researching AI for Energy and Electricity demand prediction, focusing on news and public sentiment analysis for predicting energy consumption patterns using deep learning techniques.
- Conducting comprehensive literature research on state-of-the-art techniques for sentiment analysis and energy consumption prediction.

### Georg-August-Universität Göttingen

Göttingen, Germany

STUDENT ASSISTANT - DEPARTMENT OF ECONOMICS

01/02/2024 - Present

- Developing user friendly economics experiments using the frontend technologies and django based **oTree framework**.
- Developed **oTree Proxy server** connecting the experiment system with **Prolific** to launch the experiment with scalability.
- Implementing **chat and video communication** features to enhance facilitating participant interaction, experimental realism and data collection.
- Conducting **data analysis** for the experiments, employing statistical methods and visualization techniques to derive insights.

### Niedersächsische Staats-und Universitätsbibliothek Göttingen

Göttingen, Germany

STUDENT ASSISTANT - SOFTWARE DEVELOPER

01/09/2024 - 30/08/2025

- Developing the **DFG-funded digital library** web portal for **Bibliothek der Neologie** platform using Next.js, implementing hybrid critical edition features for scholarly research and bilingual (German/English) content management.
- Performed detailed **pull request reviews** to ensure code quality, maintainability, and adherence to project standards, facilitating seamless collaboration and reducing integration bugs.
- Authored and maintained** clear and structured technical documentation component usage, and project workflows, significantly improving team productivity and knowledge transfer.
- Utilizing version control (Git) and collaborating through GitLab, while working with CI/CD pipelines to streamline the development process and ensure code quality.

### Tata Consultancy Services Private Limited

New Delhi, India

DATA ANALYST AND SOFTWARE ENGINEER

08/09/2021 - 10/04/2023

- Developed** full-stack data analytics solutions for the PENALTY module of the Income Tax Business Application (ITBA) using Java, PL/SQL, Oracle Database, Tableau, and react.JS, resulting in a **23% increase** in user engagement and a **17% reduction** in processing time.
- Designed and optimized ETL pipelines and PL/SQL workflows to transform large-scale tax data for Tableau dashboards, achieving a **62% improvement** in report generation time and **18% faster** database response through advanced query tuning.
- Collaborated with cross-functional teams to implement predictive segmentation logic and migrated legacy components toward a modern, cloud-ready architecture, contributing to **9 successful** change requests and mentoring peers to reduce bug rates by **30%**.

## Education

### Georg-August-Universität Göttingen

Göttingen, Germany

MASTER OF SCIENCE - MS IN APPLIED COMPUTER SCIENCE WITH SPECIALIZATION DATA SCIENCE

01/04/2023 - PRESENT

- Grade: 2.1 (Till now)

- Completed the degree with 8.01 CGPA out of 10.
- Thesis: Eth-Ocracy : Ethereum Blockchain based Voting System

## Projects

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### GeoRAG: Text Information Extraction from Geochemical Research Papers

*Math Information Retrieval Seminar*

GITHUB LINK

27/11/2025 – Present

- Designed and implemented a novel Hybrid Retrieval-Augmented Generation (GeoRAG) system combining vector-based semantic retrieval with graph-based structured knowledge extraction
- Developed a dynamic query classification mechanism to optimize retrieval strategies based on query intent, improving contextual accuracy by 23% over baseline methods
- Engineered a Neo4j knowledge graph pipeline capturing geochemical relationships between elements, isotopes, and minerals for enhanced reasoning capabilities
- Implemented comprehensive evaluation framework with 11 metrics assessing both retrieval quality and response generation
- Demonstrated significant improvements in factual correctness, semantic similarity, and noise reduction for complex scientific queries compared to traditional RAG systems

### Google Chrome Extension

*Web Browser Extension*

GITHUB LINK

23/11/2024 - Present

- Built a cross-platform Chrome extension (ReactJS + Chrome APIs) for real-time sensitive image detection on Facebook, Instagram, and X (Twitter).
- Developed a Flask-based backend hosting a fine-tuned BEiT model (F1 score: 77.48%) trained on 12K+ labeled images from the SensitivAlert Pic dataset.
- Integrated frontend-backend via Base64 image encoding and REST API, with asynchronous communication using Chrome's messaging system.
- Designed interactive UI with prediction results, override dialog, and feedback form; user feedback stored in MongoDB for model improvement.
- Implemented auto-retraining pipeline triggered at 50+ flagged samples using active learning and augmentation (cropping, color jitter, rotation).

### Universität Kompass: AI-Powered University Program Recommendation Tool

*AI/NLP-based Web Application*

GITHUB LINK

03/2024 - PRESENT

- Developed a AI web application using Python, Streamlit, FAISS, BeautifulSoup and MongoDB to recommend best-matching German university programs based on user-uploaded resumes.
- Built a web scraping pipeline to extract and normalize program data, contacts, and deadlines from DAAD and official university portals.
- Integrated OpenAI GPT-4 and NLP techniques to extract structured information from PDF resumes for personalized matching.
- Implemented semantic search and ranking using FAISS for efficient program retrieval and scoring.
- Enabled users to view personalized program suggestions with detailed info, contact data, and application deadlines via a dynamic Streamlit interface.

### Meeting Summarization Testbench

*NLP Evaluation and Analysis Project*

GITHUB LINK

25/11/2023 - 31/03/2024

- Developed a comprehensive testbench for evaluating and analyzing the performance of meeting summarization models on transcripts.
- Implemented a dataset augmentation pipeline utilizing Hugging Face and open-source models to diversify the training data with 17 different augmentation techniques.
- Designed a full stack system using Django Rest framework and HTML, CSS, Javascript allowing users to upload summarization models via Hugging Face links for detailed evaluation.
- Conducted metric evaluation including ROGUE, BLEU, BERTscore, and linguistic analysis such as type-token ratio, Coleman Liau index, and coverage to assess summary quality.
- Utilized visualization techniques including histograms and charts to present evaluation results in an easily interpretable format.
- Integrated user-friendly interface for seamless interaction, enhancing usability for researchers and practitioners in the NLP domain.
- Implemented with Python libraries such as Hugging Face, Pandas, and Plotly, ensuring scalability and flexibility for future enhancements.
- Contributed to advancements in meeting summarization research, with potential applications in decision-making and knowledge dissemination across various sectors.

More projects at my homepage: [mohamaduwaish.com](https://mohamaduwaish.com)

