



## Contact

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<https://github.com/uddipan77>

<https://huggingface.co/Uddipan107>

<https://hub.docker.com/repositories/uddipanbb>

## Technical Skills

### Programming Languages & Databases

- Python, SQL, Unix Shell Scripting, TypeScript

### Machine Learning & Deep Learning Frameworks

- PyTorch, PyTorch Lightning, Scikit-learn, XGBoost, statsmodels

### Data Validation, Model Serialization

- Pydantic, ONNX

### LLM/NLP/AI Tools & Libraries

- Hugging Face Transformer, LangChain, LangGraph, GroqCloud, LLaMA-Factory, NLTK, spaCy, vLLM

### Cloud & High Performance Computing

- Azure Machine Learning, Azure AI Foundry, Azure OpenAI, Azure Blob Storage, HPC

### Experiment Tracking, MLOps, HPO

- MLflow, Weights & Biases (WandB), Tensorboard, Optuna, ZenML

### Web Frameworks & Deployment

- Docker, GitHub Actions, Streamlit, Fast API, Flask

### Data Visualization & BI

- PowerBI, Power Automate, Power Apps

# Uddipan Basu Bir

M.Sc. Data Science

## Academic Experience

Oct 2022 - Present **Friedrich-Alexander-Universität Erlangen-Nürnberg**  
Erlangen, Germany  
M.Sc. Data Science, specialization in AI & ML

### Courses

- Deep Learning – 2.7
- Pattern Recognition – 1.3
- Advanced topics in Deep Learning – 1
- Machine Learning in Signal Processing – 1.7
- Machine Learning in MRI – 1.3

### Master Seminar Project

Analysis of Continuous Manufacturing Sensor Data for polymer extrusion process – 2.0  
REHAU & FAU

### Main Activities :

- Forecasting key process parameters.
- Detected anomalies using Autoencoders
- Analysis of relationship between sensor parameters.
- Used Python, XGBoost, ARIMA, LSTM (TSAI), Autoencoders, Flask

### Master Thesis (Ongoing)

Structured Text Extraction from Images using Vision-Language Models

Fine-tuning multimodal and OCR-based VLMs (with PEFT - LoRA, QLoRA, Unsloth) to extract text in a structured manner from historical handwritten and printed industrial records; conducting comparative model analysis.

Jun 2014 – Jul 2018 **Maulana Abul Kalam Azad University of Technology**  
Kolkata, India  
Bachelor of Technology,  
Computer Science & Engineering , Grade : 1.95 (180 ECTS)

### Bachelor Thesis

- <https://github.com/uddipan77/Emotion-Detection-Through-Facial-Expressions>

## Work Experience

May 2025 – Current **Working Student – Applied AI Engineer**  
**Siemens AG**  
Germany

### Responsibilities :

- Currently developing an AI agent capable of performing question answering directly from Excel data.

**Tools & Technologies :** Azure Machine Learning, Azure OpenAI, LangChain, PyTorch, Azure Cosmos, Azure AI Search

# Awards & Achievements

Times NIE Science Project Competition - 2012  
*Secured third position representing my school for the competition*

# Certifications & Courses

- The Data Science Course: Complete Data Science Bootcamp, Udemy.
- JAVA training Project by IIT Bombay,2016
- Generative AI Fundamentals, Databricks

# Hackathons

AI Natives Hackathon 2024  
Iba GmbH & BEST Erlangen  
Objective  
➤ Anomaly Detection in time series sensor data  
➤ Development of end to end AI enabled web application

# Language

- English - Fluent
- German – A2
- Bengali - Native

June 2024 – April 2025

**Working Student - Data Analyst**  
*Schaeffler*  
Germany

- Responsibilities :
- Development of interactive Microsoft PowerBI dashboards for BOM and Financial Data.
  - Data wrangling , preprocessing and data modeling.
  - Creation of power automate flows integrated with Microsoft 365 (including Microsoft PowerApps).

Sep 2021 – Jun 2022

**Data Engineer**  
*Tata Consultancy Services*  
Kolkata, India

- Responsibilities :
- Connect raw data sources and develop scalable ETL/ELT workflows
  - Use Python, SQL, and Airflow to develop reliable data pipelines

**Tools & Technologies** : Airflow, GitHub Actions, Python, Unix, Autosys, Ab-initio, SQL Indexing, Window Functions, CTEs, SQL Procedures, ServiceNow, PowerBI

Sep 2018 – Aug 2021

**Data Analyst**  
*Tata Consultancy Services*  
Kolkata, India

- Responsibilities :
- Design and maintain efficient data pipelines, dashboards, and analytics solutions to support decision-making.
  - Experienced in financial data analysis including MRR, ARR, and P&L reporting.

# Projects Involved

**1. AI Application Research Project, Computer Vision – Institute for Factory Automation and Production Systems (FAPS Lab), June 2025 – June 2026**

Developed a multi-modal multi-view multi-task deep learning pipeline for classification of quality monitoring in industrial manufacturing.  
**GitHub** - <https://github.com/uddipan77/AI-FAPS-Multi-Modal-View-Task-Pipeline>

A Comparative Assessment of Self- and Semi-Supervised Learning as well as Combined Approaches for Deep Learning Based Image Classification in Industrial Visual Inspection of Electrical Motor Manufacturing.  
**GitHub** - <https://github.com/uddipan77/ai-faps-self-semi-combined-dl-pipeline-industrial-inspection>

**2. Optical Character Recognition Based Document Image Machine Translation of Inventory Management Data - International Conference on Document Analysis and Recognition & Friedrich-Alexander-Universität Erlangen-Nürnberg**

Reordered OCR-extracted inventory management text into proper reading order and translated it to Chinese, evaluating translation quality with BLEU score.  
**GitHub** - <https://github.com/uddipan77/OCR-to-Machine-Translation>

**3. Local LLM-based RAG System for Your Personal Documents**

*Tools and Technologies used* : Ollama, OpenSearch, Hybrid Search, Docker, Streamlit, OCR  
**GitHub** - [https://github.com/uddipan77/local\\_rag\\_talk\\_with\\_your\\_docs](https://github.com/uddipan77/local_rag_talk_with_your_docs)