

# Swapnil Tukaram Mane

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## EDUCATION

**Binghamton University, Thomas J. Watson College of Engineering and Applied Science** Aug 2023 - May 2025

*Master of Science in Computer Science* | **GPA: 3.71/4.00**

Coursework: Operating System, Design and Analysis of Algorithms, Design Patterns, System Design and Architecture, Data Mining, Data Science, Artificial Intelligence, Machine Learning, Systems Programming, Computer Vision

**Fr. C. Rodrigues Institute of Technology, Navi Mumbai, India**

Aug 2016 - Nov 2020

*Bachelor of Engineering in Electronics and Telecommunication Engineering*

Coursework: Image Processing, Machine Vision, Neural Networks, Computer Architecture, Data Compression and Encryption, Digital System Design, Signal Processing

## TECHNICAL SKILLS

**Programming Languages & Databases:** Python, MySQL, Java, NoSQL, HTML, CSS, C, C++, SAP ABAP

**Tools and Technologies:** Tableau, MATLAB, Git, Microsoft Azure (Azure ML Studio, Azure AI Cognitive Services), Google Cloud Platform (GCP), Amazon Web Services (AWS), React.js, Android Studio, SAP Logon NetWeaver, LabView, Linux

**Frameworks:** PyTorch, PySpark, TensorFlow, Keras, Sci-kit Learn, Hugging Face, OpenCV, Ollama, Hadoop

**AI/ML Algorithms & Techniques:** Deep Learning, Neural Networks, Natural Language Processing, Reinforcement Learning (RL), Generative AI, Fine-tuning LLMs, Data Science, Time Series Forecasting, Predictive modeling, Machine Vision

## PROFESSIONAL EXPERIENCE

**Bridge Green Upcycle Corp, Software Engineering Intern**

Dec 2023 – Dec 2024

Python, Pandas, PySpark, NumPy, Plotly, Matplotlib, Scikit-Learn, MATLAB, Data Science, AI/ML

- Deployed state-of-the-art ML models achieving 5.7% MAE for battery State of Health (SOH) prediction and Remaining Useful Life (RUL) estimation using time-series analysis on historical and real-time battery data
- Optimized a PySpark processing pipeline for 3.25 million records, using its distributed computing and parallelized data operations to reduce resource utilization by 33% while achieving scalable, high-performance SaaS platform integration
- Managed client engagement, product demos and digital platform design during early project phase, securing Memorandums of Understanding (MoUs) for the company's market growth with global equipment handling provider

**LTIMindtree Ltd. (formerly Larsen & Toubro Infotech Ltd.), Software Engineer**

Aug 2022 – Jul 2023

Natural Language Processing (NLP), Python, Scikit-Learn, Azure Machine Learning Studio, Azure AI Cognitive Services

- Led the development of a Natural Language Processing (NLP) solution using Python to automate the classification of historical IT service tickets from unstructured text with skewed class distribution over 70% of the data
- Managed large datasets, performing data cleansing, clustering, classification, and analysis throughout the data science project lifecycle, handling up to 900,000 records, automating workflows and optimizing ML pipelines
- Deployed an ticket classification system using TF-IDF vectorization for feature extraction, achieving 66% classification accuracy with Machine Learning models along with hyperparameter tuning and stopwords filtering

**Larsen & Toubro Infotech Ltd. (LTI), Software Engineer**

Aug 2020 - Jul 2022

Python, Image Processing, Reports, Enhancements, User Exits, BADIs, Interface, ABAP List Viewer (ALV)

- Developed and optimized SAP ABAP programs using AMDP, CDS views, and SELECT optimizations to enhance system performance while implementing User Exits, BAPIs, BADIs, and Enhancements
- Developed a SAP NetWeaver monitoring script using .NET, which reduced manual monitoring time per system by approximately 86% (from 35 to 5 minutes), saving roughly 90% of annual monitoring effort ( 900 minutes annually)
- Created a Python GUI-based user search system with image processing, Tesseract OCR detection and Excel integration, which reduced user search time by 67%, streamlining entity retrieval and reducing manual search efforts

**Navavidha Techsolutions Pvt. Ltd., Junior App Developer**

Jun 2019 - Jul 2019

Git, Github, IoT, Arduino, GPIO, Python, Pandas, NumPy, Tkinter, PySerial, OpenCV

- Developed games and managed device communication using Tkinter and PySerial for HMI in Embedded Systems
- Deployed processed code to embedded system (Arduino, Raspberry Pi, STM32) to enable real-time data acquisition

## PROJECT EXPERIENCE

**Multi-agent LLM text-to-SQL, (GitHub)**

Present

- Built a multi-agent Text-to-SQL system using Ollama LLMs and the Autogen framework to orchestrate collaborative agents that convert natural language queries into optimized SQL, built on Bird.dev database and tested on MySQL

**Conversational ChatBot, (Live Demo)**

Mar 2025

- Deploy a personalized AI chatbot for a portfolio website by fine-tuning LLM models and using contextual retrieval augmentation with vector-enabled relational database

**Data Mining: Dimensionality Reduction, Classification and Clustering, (GitHub)**

Apr 2024

- Implemented PCA and DCT for image dimensionality reduction, a Deep Neural Network with a 76.44% accuracy to enhance classification, and optimized KNN with k=4 using the elbow method for improved clustering

**Thought to Text Conversion Using Deep Learning, (Publication)**

Mar 2020

- Utilized MATLAB and Python for EEG signal processing and trained a supervised learning model to recognize neural activity patterns, achieving 59% accuracy in thought-to-text classification under predefined test conditions