

# SWATI KAR

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## SUMMARY

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- 3 years of hands-on experience with cutting-edge data science, machine learning, deep learning, computer vision, and reinforcement learning model development and deployment (AWS) to solve real-life problems.
- Extensive experience in Python, SQL, PySpark, Scikit-Learn, Power BI and Microsoft Excel.
- Team player with strong communication skills and specializing in transforming complex business problems into actionable tasks.

## EDUCATION

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Clarkson University, Potsdam, New York

Jan 2023 - Dec 2024 (expected)

- **Master of Science**, Department of Electrical & Computer Engineering
- **Thesis:** Deep Reinforcement Learning for Autonomous Drone Navigation

Rajshahi University of Engineering & Technology, Rajshahi, Bangladesh

Mar 2014 - Nov 2018

- **Bachelor of Science**, Department of Computer Science & Engineering
- **Thesis:** Comparative Analysis of Mining Fuzzy Association Rule using Genetic Algorithm.

## RESEARCH INTERESTS

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- Data Science, Data Analysis, Machine Learning, Deep Learning, Reinforcement Learning & Generative AI

## SOFTWARE SKILL HIGHLIGHTS

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- **Languages:** Python, MATLAB, SQL, C, C++, R, Shell Scripting
- **AI Tools:** Tensorflow, Keras, PyTorch, OpenAI (ChatGPT), LangChain, Huggingface, Llama2, CUDA
- **Data analysis tools:** Power BI, PySpark, NumPy, Pandas, Matplotlib, scikit-learn, MongoDB, MS Excel
- **Image Processing Tools:** OpenCV, ImageJ(Fiji), YOLO, PIL
- **Web Development Tools:** HTML, CSS, Streamlit, Flask, AWS (SageMaker, S3 bucket, Glue, Athena, Lambda), Databricks, Snowflake
- **Project management:** Git, JIRA, Agile Project Management System, MS Office Suite
- **Soft skills:** Communication, Presentation, Teamwork, Financial Market Analysis

## PROFESSIONAL EXPERIENCES

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Teaching Assistant, Clarkson University, NY

Jan 2023 – May 2024

- Teaching Assistant for EE 567 (Software System Architecture), EE 262 (Introduction to Object-Oriented Programming & Software Design), and ES 100 (Introduction to Engineering & Computer Use with Matlab)

Front-end developer Intern, Shurjomukti Ltd., Dhaka

Jan 2021 – Apr 2021

- Worked on an ERP software focusing on Shurjomukhi inventory management using Vue.js, Node.js, and MySQL.

## RESEARCH & PROJECT EXPERIENCE

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GetTaxi (GETT) Order Cancellation Analysis to Enhance Ride Experience [[Link](#)]

- Conducted an in-depth analysis of uncompleted taxi orders on the GETT platform, identifying key patterns to improve customer ride experience and reduce cancellation rates through statistical analysis and data visualization.
- Technologies: Python, Matplotlib, Pandas, h3, folium

### **Time Series Forecasting with ARIMA** [\[Link\]](#)

- Implemented ARIMA model using Python's statsmodels library to forecast time-dependent 'Tractor Sale' data, enhancing strategic decision-making by analyzing trends and tuning parameters for optimal predictions.
- Technologies: Python, Statsmodels, Matplotlib, Hypothesis testing, Time forecasting.

### **Amazon Stock Price Prediction using Machine Learning** [\[Link\]](#)

- Developed a pipeline for data cleaning, feature engineering and applied Logistic Regression, Decision Tree and Random Forest to compare the result on AMZN stock price dataset collected from yahoo finance.
- Technologies: Python, Matplotlib, Pandas, Machine Learning algorithm, Scikit-Learn, yfinance

### **Cloud-based Movie Recommendation System** [\[Link\]](#)

- Developed a scalable movie recommendation system using the Factorization Machine approach with Amazon SageMaker, preprocessing the MovieLens dataset and training the model to predict user preferences.
- Technologies: Python, Pandas, NumPy, Scikit-Learn, AWS S3, Amazon SageMaker, Boto3, AWS IAM roles, and SageMaker Python SDK.

### **PCA Algorithm Implementation for Bike Sharing Data Analysis** [\[Link\]](#)

- Developed a Python script for Principal Component Analysis (PCA) to reduce dimensionality and enhance model performance in bike-sharing data, including preprocessing and normalization to extract and transform key features.
- Technologies: Python, pandas, scikit-learn, matplotlib, boto3, Sagemaker, XGBoost

### **Indian Premier League (IPL) Data Analysis Using PySpark** [\[Link\]](#)

- Developed a PySpark-based data cleaning and transformation pipeline to extract statistical insights and generate visualizations, enhancing the understanding of player and team performances across various seasons.
- Technologies: PySpark, Databricks, Pandas, MySQL, Matplotlib, Seaborn.

### **Analyzed eCommerce sales data with Power BI** [\[Link\]](#)

- Developed an interactive dashboard to analyze monthly profits, sub-category performance, quantity by category, and sales by state, enabling dynamic quarter and regional performance assessments from product sales data.
- Technologies: Power BI, SQL, DAX.

### **University Management System** [\[Link\]](#)

- Developed a comprehensive University Management System to enhance operational efficiency and improve accessibility of academic resources for administrators, instructors, and students, ensuring high security and reliability.
- Technologies: MySQL, Django, Flask, HTML, CSS.

### **A Privacy-Preserving Web Service for User Credential Retrieval** [\[Link\]](#)

- Developed a Python-based system that securely hashes and stores user credentials (email and password) in a MySQL database, utilizing a function to hash string data with the SHA-256 algorithm.
- Technologies: MySQL, Django, HTML, CSS.

### **Emergency Medical Service (EMS) Analysis using GenAI** [Ongoing]

- Enhanced EMS response by automating medication suggestions based on patient demographics, improving treatment accuracy utilizing generative AI technology.
- Technologies: Python, Pandas, SQLAlchemy, MySQL, Llama Index, and OpenAI API

## **RELEVANT COURSE WORK AND CERTIFICATIONS**

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- **Database Systems(Spring 2024):** Obtained 94% marks
- **Deep Learning(Fall 2023):** Obtained 97% marks
- **Stochastic Process(Fall 2023):** Obtained 94% marks
- **AWS ML Course:** AWS Certified Machine Learning Specialty MLS-C01 [2024] [\[Link\]](#)
- **Gen AI:** Completed courses on RAG, Prompt Engineering, Finetuning from Deeplearning.AI website. [\[Link\]](#)