



# Mst. Moushumi Khatun

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## ABOUT ME

AI Engineer with expertise in Machine Learning, Deep Learning, NLP, and Data Science, specializing in Europe-relevant applications across maritime & fisheries AI, healthcare, autonomous systems, and multilingual legal automation. Experienced in building end-to-end AI solutions—from data preprocessing and model development to deployment in production environments. Published in ACM and Springer, with a strong portfolio of real-world projects targeting sustainable technology, healthcare innovation, and public service automation.

## WORK EXPERIENCE

### ADVANCE MACHINE INTELLIGENCE RESEARCH LAB – DHAKA, BANGLADESH RESEARCH ASSISTANT – 01/09/2022 – CURRENT

- Trained CNN models for crop disease detection with 92% accuracy.
- Applied computer vision and image processing to real-world datasets.
- Contributed to research and published in ACM and Springer.

### BRITSYNC – WALES, UNITED KINGDOM SENIOR INSTRUCTOR-REMOTE – 01/08/2025 – CURRENT

- Designed and developed AI and Data Science courses for students and professionals
- Mentored junior team members and guided learners to achieve practical competency in AI/ML.
- Created curriculum outlines, coding exercises, and project-based assessments aligned with international AI standards..

### BUSINESS AUTOMATION LTD – DHAKA, BANGLADESH TRAINEE SOFTWARE DEVELOPER – 20/07/2024 – 04/09/2025

- Developed and maintained web modules using Laravel (PHP), HTML, CSS, and JavaScript.
- Participated in SQA processes including test case creation and bug reporting.
- Worked in Agile teams and managed code via Git.

### BRITSYNC – WALES, UNITED KINGDOM JUNIOR DATA SCIENTIST-REMOTE – 01/07/2024 – 31/07/2025

- Developed and optimized machine learning models for AI projects. Conducted EDA to extract actionable insights, improving decision-making efficiency.
- Performed data preprocessing, cleaning, and feature engineering for diverse datasets.
- Deployed predictive Solutions Using AWS EC2 ans Containerized Applications.

### SKILL SERVICE LTD – DHAKA DATA ANALYST – 01/02/2023 – 30/06/2024

- Collected, cleaned, and organized **5,000+ image datasets** for computer vision model training.
- Performed image preprocessing (resizing, normalization, augmentation), improving model accuracy by **20%**.

- Annotated images using **LabelImg**, **CVAT**, **Roboflow**, ensuring high-quality bounding boxes and segmentation masks.
- Collaborated with the AI team to build training datasets for **object detection and classification models (YOLO, CNN)**.

## SKILLS

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Languages: Python, PHP, JavaScript, SQL, HTML, CSS | ML/DL Frameworks: TensorFlow, PyTorch, Keras, scikit-learn, XGBoost, LSTM, CNN | NLP & RAG: LangChain, Hugging Face Transformers, spaCy, NLTK, Translation Models | Data Tools: Pandas, NumPy, Matplotlib, Seaborn, Power BI, Excel | Cloud & DevOps: AWS (EC2), Docker, Kubernetes, Git, Flask, Streamlit | Other: Agile/Scrum, SQA, Manual Testing, REST API development

## PROJECTS

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06/06/2025 – 07/06/2025

### Multilingual Norwegian Constitution Chatbot (NLP + RAG)

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Chatbot answering queries from Norwegian legal documents in Bengali, English, and Norwegian using retrieval-augmented generation and translation models.

**Link** <https://github.com/moushumpriya/Norwegian--Chatbot>

06/07/2025 – 07/07/2025

### Norwegian Fish Movement Prediction (ML + LSTM)

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AI model forecasting fish movement in Norwegian coastal waters using environmental data (temperature, salinity, depth) for sustainable fisheries management.

**Link** <https://github.com/moushumpriya/Norwegian-Fish-Movement-Prediction-Using-LSTM-ML>

### Norway-HydroPowerRL-Reinforcement-Learning-for-Hydro-Reservoir-Management

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HydroPowerRL is a reinforcement learning project designed to optimize water release decisions in a hydroelectric reservoir. The goal is to maximize electricity generation revenue while maintaining reservoir safety by avoiding floods and droughts.

This project uses a Deep Q-Network (DQN) agent trained on synthetic hourly inflow and electricity price data to learn effective reservoir management strategies.

**Link** <https://github.com/moushumpriya/Norway-HydroPowerRL-Reinforcement-Learning-for-Hydro-Reservoir-Management>

### Medical Chatbot (LLM + RAG)

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A user-friendly Streamlit-based chatbot that answers medical questions by extracting information from your own PDF documents.

**Link** <https://github.com/moushumpriya/Medical-Chatbot1>

08/08/2025 – 09/08/2025

### Norway Snowfall Prediction using LSTM.

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This project predicts upcoming snowfall in different regions of Norway using LSTM (Long Short-Term Memory), a powerful deep learning model for time series forecasting. The dataset includes historical snowfall data, temperature, humidity, and other weather variables.

**Link** <https://github.com/moushumpriya/Norway-Snowfall-Prediction-using-LSTM>

## PUBLICATIONS

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2025

### Self-Supervised Representation Learning for Human Activity Recognition Using Inertial Sensor Data

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**Authors:** Mst. Mousumi Khatun; Mohammad Shafat Ahsan; Md Al Amin; Arifa Akter Eva; Anika Sayema; Sabiha Firduus | **Journal Name:** 2025 International Conference on Quantum Photonics, Artificial Intelligence, and Networking (QPAIN) | **Publisher:** IEEE

2025

### DeepUNet24: A Deep Learning Model for Lane Segmentation in Autonomous Vehicles Navigation

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**Authors:** Hashibul Ahsan Shoaib, Mst. Moushumi Khatun, Md. Golam Rabbani Abir, Adit Ishraq, Sabiha Firdaus, Kamruddin Nur, M. Firoz Mridha | **Journal Name:** ICCA '24 | **Volume, Issue and Pages:** Pages 406 - 413 | **Publisher:** ACM

2025

## **Multi-Sense Attention Network (MSANet): Enhanced Human Activity Recognition Using Deep Learning Architectures with Self-Attention Mechanisms**

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**Authors:** Hashibul Ahsan Shoaib, Arifa Eva, Mst. Moushumi Khatun, Adit Ishraq, Sabiha Firdaus, Dr. M. Firoz Mridha | **Journal Name:** ICCA '24 | **Volume, Issue and Pages:** Pages 362 - 369 | **Publisher:** ACM

2024

## **Yoga Posture Image Classification Using Big Transfer(BiT)**

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**Authors:** K.M Nafiur Rahman Fuad; Uland Rozario; Hashibul Ahsan Shoaib; Mst. Moushumi Khatun; Md Raisul Islam; M. F. Mridha | **Journal Name:** 2024 IEEE International Conference on Computing, Applications and Systems (COMPAS) | **Publisher:** IEEE

2025

## **Deep Learning Algorithms for Detecting Banana Leaf Spot Diseases**

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**Authors:** Hadiur Rahman Nabil, Md. Golam Rabbani Abir, Mst. Moushumi Khatun, Md. Eshmam Rayed & Md. Abdul Hamid | **Journal Name:** Machine Vision in Plant Leaf Disease Detection for Sustainable Agriculture | **Volume, Issue and Pages:** Chapter pp 155-167 | **Publisher:** Springer

2025

## **MoraleTrack: A Dual-Phase Transformer-Based Framework for Sentiment-Aware Team Morale Forecasting in Agile Project Environments -Accepted**

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**Journal Name:** 3rd International Conference on Artificial Intelligence, Blockchain, and Internet of Things

2025

## **Multi-View Federated Learning for Cybersecurity Threat Detection Using Network and User Behavior Data – Under Review.**

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**Journal Name:** 28th International Conference on Computer and Information Technology

2025

## **A Dual-Stream Deep Learning Architecture for Business Impact Scoring and Alert Escalation- Under Review**

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**Authors:** Mohammed Saad Javeed; Mst. Moushumi Khatun; Jobayar Alom; Rahomotul Islam; Hashibul Ahsan Shoaib | **Journal Name:** PLOS ONE

## **EDUCATION AND TRAINING**

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13/10/2018 – 22/12/2022 Dhaka, Bangladesh

**B.S.C. ENG IN COMPUTER SCIENCE & ENGINEERING** Bangladesh University of Business and Technology(BUBT)

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**Website** <https://www.bubt.edu.bd/>

## **CERTIFICATIONS**

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IT Training BD, 01/06/2024

**Hands-on SQA and Cyber Security**

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**Mode of learning:** Online