

Taufiq Ahmed

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[LinkedIn](#) | [GitHub](#) | [Google Scholar](#)

Research Objective

Aspiring researcher in computer science and engineering, specializing in artificial intelligence, machine learning, computer vision, and edge computing. Dedicated to contributing to cutting-edge research initiatives and pursuing doctoral studies.

Education

Master of Science (M.Sc.) in Computer Science and Engineering

University of Oulu, Finland

Aug 2023 – May 2025

CGPA: 4.33/5.00

Thesis Topic: Long-Tailed Object Detection on UAVs (Grade: 5.00/ 5.00) – [Paper Link](#)

Developed and evaluated Exponentially Weighted Instance-Aware Repeat Factor Sampling (E-IRFS) to enhance rare-class detection in UAV-based object detection. Optimized YOLOv11 models for real-time deployment on resource-constrained UAV platforms through model quantization.

Bachelor of Science (B.Sc.) in Computer Science and Engineering

Daffodil International University, Bangladesh

Jan 2018 – Feb 2022

CGPA: 3.89/4.00

Professional Experience

Project Researcher

Center for Machine Vision and Signal Analysis (CMVS), University of Oulu

Mar 2025 – Present

Promoted from Research Assistant. Research on Digital Twins for robotics and Integrated Sensing and Communication (ISAC). Supervisor: Praneeth Susarla.

Research Assistant

UBICOM (Interactive Edge), University of Oulu

Jun 2024 – Dec 2024

Developed AI models for UAV path planning and deployed real-time decision-making models on edge devices. Supervisor: Dr. Abhishek Kumar.

Research Assistant

Daffodil International University

Jan 2021 – May 2022

Conducted research in natural language processing and recommendation systems. Supervisor: MD. Abdus Sattar.

Research Funding and Grants

- Contributed to the *Finland Fireman Project*, advancing AI-assisted UAV search and rescue operations.
- Working on *CONVERGE Project*, funded under the European Union's Horizon Europe research.

Publications

- **Ahmed, T.**, Kumar, A., Casado, C. A., Zhang, A., et al. (2025). *Exponentially Weighted Instance-Aware Repeat Factor Sampling for Long-Tailed Object Detection Model Training in UAV Surveillance*, arXiv preprint. arxiv.org/abs/2503.21893
- Das, R., Hossain, M. F., **Ahmed, T.**, et al. (2022). *Classification of Product Review Sentiment by NLP and Machine Learning*, in *Proceedings of ICAECT 2022*, IEEE.
- **Ahmed, T.**, Akhter, L., Talukder, F. R., Rahman, H., Sattar, A. (2021). *Restaurant Recommendation System in Dhaka City Using Machine Learning Approach*, in *Proceedings of SMART 2021*, IEEE.

Projects

- **AI-Assisted Dynamic Waypoint Selection Using UAV** – [GitHub](#)
Developed optimized AI models for dynamic waypoint selection in UAV-based search and rescue missions.
- **Twitter Emotion Analysis** – [GitHub](#)
Categorized emotional content in Twitter datasets utilizing machine learning techniques.
- **Customer Segmentation for Targeted Marketing Strategies** – [GitHub](#)
Built customer segmentation models using K-means clustering and Random Forest algorithms.
- **Bengali Emotion Recognition** – [GitHub](#)
Applied deep learning methodologies for emotion detection in Bengali textual data.

Technical Skills

Programming Languages: Python (Advanced), C++ (Intermediate), Bash scripting

Computer Vision and Object Detection: OpenCV, Ultralytics, TensorFlow, PyTorch

Robotics and Digital Twin Technologies: ROS2, Gazebo, RViz

Edge AI Deployment: TensorRT, NVIDIA Jetson platforms, Model Quantization

Machine Learning and AI: Scikit-learn, XGBoost, Deep Learning (CNNs, Transformers)

Data Science and Analytics: Pandas, NumPy, Matplotlib, Seaborn

Databases and Cloud Technologies: PostgreSQL, MySQL, AWS (Basics)

Awards and Honours

- Published three peer-reviewed IEEE conference papers in AI/ML domains. One paper accepted in IROS 2025.
- Selected for competitive research assistant positions in Finland and Bangladesh.