# Akib Mohammed Khan

*Computer Science Engineer, Ph.D. Student*

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## EDUCATION

**PhD in Imaging Science,** *Rochester Institute of Technology (RIT)* 2023 – present
Rochester, NY, USA
- CGPA: 3.96 out of 4.00
- Research Interest: Computer Vision, Few-Shot Learning, Bayesian Inference, Continual Learning

**B.Sc. in Computer Science and Engineering,** *Islamic University of Technology (IUT)* 2018 – 2022
Gazipur, Bangladesh
- CGPA: 3.95 out of 4.00
- Ranked 3rd out of 69

## WORK EXPERIENCE

**AI/ML Developer (Remote),** *MRIMath LLC* 05/2025 – present
Vestavia, AL, USA
- Develop, implement, and validate advanced machine learning algorithms for medical image segmentation across multiple imaging modalities.
- Conduct research to refine AI models, established rigorous experimental protocols, and ensured robust algorithm performance suitable for clinical environments.
- Collaborated closely with cross-functional teams, maintaining compliance with company standards throughout product development.

**Graduate Assistant,** *Rochester Institute of Technology* 08/2023 – present
Rochester, NY, USA
- Research Assistant in MLVision Lab, Center for Imaging Science under Dr. Bartosz Krawczyk
- Working on developing robust and trustworthy machine learning algorithms for computer vision applications
- Teaching Assistant for the courses 'Imaging Science Fundamentals' and 'Probability and Statistics in Imaging'

**Lecturer, Dept. of Computer Science and Engineering,** 01/2023 – 08/2023
*Bangladesh University of Business and Technology (BUBT)* Dhaka, Bangladesh
- Conducting and developing undergraduate level theory and lab courses.
- Active research in the field of Machine Learning and Computer Vision.
- Performing various administrative duties.

**Machine Learning Engineer (Intern),** *Pioneer Alpha Ltd.* 01/2021 – 08/2021
Dhaka, Bangladesh
- Research and implement appropriate ML algorithms and tools
- Develop machine learning applications according to requirements
- Select appropriate datasets and data representation methods

## PUBLICATIONS

**AttResDU-Net: Medical Image Segmentation Using Attention-based Residual Double U-Net,** *IEEE* 06/2023
**Akib M. Khan**, Alif Ashrafee, Fahim S. Khan, Md. Bakhtiar Hasan, Md. Hasanul Kabir
10.1109/IJCNN54540.2023.10191528 (IJCNN 2023)

**Rethinking Cooking State Recognition with Vision Transformers,** *IEEE* 12/2022
**Akib M. Khan**, Alif Ashrafee, Reeshoon Sayera, Shahriar Ivan, Sabbir Ahmed
10.1109/ICCIT57492.2022.10055869 (ICCIT 2022)

**Real-time Bangla License Plate Recognition System for Low Resource Video-based Applications,** *IEEE* 01/2022

Alif Ashrafee, **Akib M. Khan**, Mohammad Sabik Irbaz
10.1109/WACVW54805.2022.00054 (WACVW 2022)

## PROJECTS AND CURRENT RESEARCH

**Robust Bayesian Vision Transformer for Image Classification** Ongoing

- Develop a Bayesian Vision Transformer framework to quantify output uncertainty associated with prediction.
- Propagate the first two moments of the variational posterior distribution over the model's parameters across the transformer encoder and non-linear activations.

**On the Behavior of Experience Replay Under Data Poisoning in Continual Learning** Ongoing

- Conduct a systematic study on the impact of single-task poisoning attacks on rehearsal-based continual learning methods.
- Provide empirical insights and evaluate multiple prominent rehearsal-based methods, showing degradation to backdoor attacks.

**Uncertainty-Aware Few-Shot Learning via Robust Probabilistic Modeling** Ongoing

- Explore the intersection of Few-Shot Learning and uncertainty estimation in deep learning, focusing on building trustworthy models.
- Propose a robust Few-Shot Learning architecture using Bayesian convolutional neural networks to improve resilience to adversarial attacks.

**Real Time License Plate Recognition Web App** 01/2021 – 08/2021

- Python, OpenCV, Flask, Pytorch
- User can upload a video feed that passes through a 2-stage detection module comprising Cascade Classifiers and MobileNet-SSD that detects license plates from frames. Subsequently, the plate information is extracted using VisionAPI OCR in real-time.

**JumpyCat AI** 07/2021 – 09/2021

- Approximate Q-Learning
- Teach a cat agent the game of jumping across buildings. Game environment and animations created from scratch.
- Using the classic Bellman equations, an exploration vs exploitation strategy was implemented to maximize the cat's expected utility at each step.

## KEY COMPETENCIES

**Applied Machine Learning** — Linear/Logistic regression, SVM, Decision Trees, Clustering, Bayesian Statistics, Variational Inference • **Data Science** — Data preprocessing, Model analysis, visualization, training, fine-tuning, optimization techniques • **Computer Vision and Image Processing** — Classification, Recognition, Object Detection, GANs, Vision Transformers, Few-Shot Learning

## SKILLS

**Machine Learning libraries & frameworks** — PyTorch, TensorFlow, Keras, Numpy, Pandas, OpenCV, XGBoost | **Programming Languages** — Python, C/C++ | **Databases** — MySQL, Oracle | **Others** — Matlab, Octave