MD ASHIK KHAN

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RESEARCH INTERESTS

Computer vision · Deep Learning · Representation Learning · Transfer learning · Natural Language Processing · Multimodal Learning

EDUCATION

- **Indian Institute of Technology, Kharagpur** *2021 - 2023*
  Master of Technology in Computer Science and Engineering CGPA : 8.76/10.00
  Thesis: A Large-scale Study of Representation Learning and the Benchmarking in Video Action Recognition
  Supervisor: Dr. Abir Das
- **Bangladesh Army University of Science and Technology, Saidpur** *2015 - 2019*
  Bachelor of Science in Computer Science and Engineering CGPA : 3.35/4.00

RESEARCH EXPERIENCE

- **Video Action Recognition**
  Research Assistant, CVIR Lab, IIT Kharagpur *May 2022 - April 2023*
  - Conducted extensive experiments on representation learning across diverse datasets through multiple learning models
  - Evaluated multiple transfer learning approaches: **full fine-tuning, linear evaluation, and few-shot learning**
  - Created and validated novel **Construction** action dataset comprising 1844 video samples across 13 categories
  - Evaluated models pre-trained on **Kinetics-400** and **MiT** datasets to understand transfer learning effectiveness

PUBLICATIONS

- **Md Ashik Khan**, Abu Saleh Musa Miah, *"Low-Light Aware Framework for 3D Video-Based Human Activity Recognition Using Frozen CLIP with Lightweight Adaptation"*, Under Review, 2025.
- **Md Ashik Khan**, Rafath Bin Zafar Auvee, *"Comparative Analysis of Resource-Efficient CNN Architectures for Brain Tumor Classification"*, Proceedings of the 27th International Conference on Computer and Information Technology (ICCIT), 2024 · Link

TECHNICAL STRENGTHS

Deep Learning Frameworks	PyTorch, MMAction2
Programming Languages	Python, C, C++, JavaScript

RELEVANT COURSEWORK

Machine Learning · Information Retrieval · Artificial Intelligence · Complex Network · Data Analytics · Algorithm Design and Analysis · Scalable Data Mining

RESEARCH PROJECTS

A Large-scale Study of Representation Learning and the Benchmarking in Video Action Recognition
. *July 2022 - April 2023*
IIT Kharagpur *Supervised By **Dr. Abir Das***

- Performed comprehensive analysis of 2D/3D CNNs and Transformer-based architectures in video action recognition
- Evaluated representation transfer learning across 14 target datasets through 6 state-of-the-art action recognition architectures including SlowOnly, TimeSformer and SIFAR and established benchmarks for cross-domain transfer learning effectiveness
- Developed a comprehensive understanding of architecture-specific transfer learning patterns and established correlation between pretraining dataset similarity, downstream performance and identified optimal transfer learning strategies for various action datasets
- Tools/Technology: PyTorch, MMaction2, FFmpeg
- **Document Link:** Thesis-Book

Deep Learning-based Hidden Camera Detection using Synthetic Training Data
. *Spring 2024*

- Developed a novel synthetic data generation procedure to address real-world data collection challenges in surveillance detection
- Creating large training dataset by strategically combining background environments with varied hidden-camera placements
- Fine-tuned ResNet50 and YOLOv8 with custom augmentation strategies
- Tools/Technology: PyTorch, OpenCV

Context Specific Quote Recommendation from Historical Text *Autumn 2022*
IIT Kharagpur

- Developed a context-based quote recommendation system using the Hugging Face DistilBERT model
- Prepared dataset and annotations from Quotation POTUS
- Implemented transfer learning techniques like full fine-tuning for quote phrase learning and evaluation , achieving 82.25% accuracy
- Tools/Technology: Python, PyTorch, Hugging Face.
- **Source Code:** Github

Evidence Retrieval for Fact Verification *Autumn 2022*
IIT Kharagpur

- Implemented classical Information Retrieval methods to collect evidence related to a claim or fact
- Developed approach by creating collated data and measuring the related evidence using tf-idf score and cosine similarity
- Tools/Technology: Python, NLTK, Beautiful Soup
- **Source Code:** Github

Web Crawling and Extraction of COVID-19 News *Spring 2021*
IIT Kharagpur

- Developed a Lex/Yacc-based console application for query-driven COVID-19 data extraction from Worldometer and Wikipedia, covering 55 countries across 5 subcontinents with PLY and Regular Expressions for data parsing and analysis
- Detected Country-wise top closest COVID-19 responded countries according to Jaccard similarity of news and created Word Cloud
- Tools/Technology: Python, PLY, Regular Expression
- **Source Code:** Github

WORK EXPERIENCE

- **Software Engineer, Auptimate** *May 2023 - Present*
  - Developing and maintaining an e-signature platform for creating, managing, tracking and e-signing documents
  - Developing an AI agent integrating NLP and automation to answer customer queries in legal document processing
- **Assistant Programmer, Hovata Technologies** *March 2020 - August 2021*
  - Served as the team lead in designing and implementing features for a cross-platform parking system
  - Developed a platform for petrol pump managers for the monitoring of sales, stocks, expenses and vendor goods

TEACHING EXPERIENCE

- **Teaching Assistant, Department of CSE, IIT Kharagpur**
  Software Engineering *Spring 2022-23*
  Algorithms-I *Autumn 2022*
  Responsibilities: Conducted tutorials, evaluated assignments and mentoring a group of 20 students during lab, supervised multiple student groups during their projects.

TRAINING AND CERTIFICATION

- Fundamentals of Accelerated Data Science, NVIDIA Deep Learning Institute, 2021
- Skill Development for Mobile Game & Application, ICT Division, Bangladesh, 2018

SCHOLARSHIPS AND AWARDS

- ICCR Scholarship for M.Tech at IIT Kharagpur (2021–2023)
- Finalist, BAUST-IEEE idea contest 2018, BAUST
- Secured Board Talent Rank 35th in Secondary School Certificate(SSC) Examination, Dhaka Board, 2012