

# Soham Khisa

 Github |  LinkedIn |  Email |  Google Scholar |  +880-1890311264

## RESEARCH INTEREST

---

Machine Learning, Human-Computer Interaction, Data Science

## PUBLICATION AND PREPRINT

---

- Aunabil Chakma\*, Aditya Chakma\*, **Soham Khisa\***, Chumui Tripura\*, Masum Hasan, and Rifat Shahriyar, "ChakmaNMT: A Low-resource Machine Translation On Chakma Language". [EMNLP2024 @ Workshop on Asian Translations] [[Preprint](#)]
- **Soham Khisa**, Avijoy Chakma, "Enhancing Performance in Addressing Data Distribution Heterogeneity for Human Activity Recognition" [*under double-blind review* @ **PerCom2025**]

## RESEARCH PROJECT

---

- Low-resource Machine Translation On Chakma Language Oct 2021 - Sept 2024
  - Core contributor in training **BanlgaT5** with back-translation
  - Achieved BLEU of **17.8** & **4.41** in CCP-BN & BN-CCP on the test-set (**strong initial results in translating a previously unexplored low-resource language pair**)
  - Collabs: A. Chakma (University of Arizona), A. Chakma, C. Tripura, Prof. R. Shahriyar (BUET), and M. Hasan (University of Rochester)
- Addressing Data Distribution Heterogeneity in Human Activity Recognition via Wearable Devices Nov 2023 - Sept 2024
  - Outperforms baselines by **3-15%** across different data distribution heterogeneities.
  - Proposes a novel approach that combines probabilistic mapping with self-supervised learning.
  - Collab: Prof. A. Chakma (Bowie State University)
- Investigating Privacy Implications of LLMs in Smart Home Environments Oct 2024 - Present
  - Collabs: A. Dewan (BUET), Prof. A. Chakma (Bowie State University)
- Knowledge Graph-Based Categorization of Newspaper Articles in a Newspaper Corpus Apri 2022 - May 2023
  - Collab: I. B. Mahmud (BUET)

## PROFESSIONAL EXPERIENCE

---

### Research Assistant (Remote)

Sept 2023 - Present

Bowie State University, MD, USA (Remote)

I'm currently working with [Dr. Avijoy Chakma](#) at Bowie State University, focusing on machine learning for ubiquitous computing. I also explore applied machine learning and AI fields, including computer vision and LLMs. My responsibilities include:

- Conducting literature reviews
- Processing and analyzing data
- Implementing research ideas
- Assisting with research experiments
- Attending research meetings and discussions
- Contributing to research publications

## EDUCATION

---

### – Bangladesh University of Engineering and Technology (BUET)

2018 - 2023

BSc in Computer Science and Engineering

**Thesis:** Knowledge Graph-Based Categorization of Newspaper Articles in a Newspaper Corpus [[PDF](#)]

**Advisor:** Dr. Muhammad Masroor Ali

## UNDERGRADUATE LAB PROJECTS (SELECTED)

---

- **CNN From Scratch**

Deep Learning Project

- **Libraries:** numpy, opencv, matplotlib, tqdm, pandas, pickle, scipy
- **Architecture:** Convolutional Neural Network (LeNet)
- Developed a CNN-LeNet architecture from scratch without using any machine learning frameworks like Tensorflow or PyTorch. The model was trained and evaluated on the MNIST dataset. [\[Code\]](#)

- **Retinal Disease Classification**

Deep Learning Project

- **Frameworks & Libraries:** numpy, matplotlib, pandas, PyTorch
- **Architecture:** Restricted Boltzmann Machine, Convolutional Neural Network (AlexNet)
- The project's objective is to use retinal images to recognize and classify various retinal illnesses, including age-related macular degeneration and diabetic retinopathy. [\[Code\]](#)

- **Auc-dais**

Software Development Project

- **Frameworks & DBMS:** Spring Boot, React, Bootstrap, PostgreSQL
- This is a web application for an online auction platform system that allows users to list items for auction, and bidders can browse and select the items they wish to bid on. [\[Frontend-Code\]](#) [\[Backend-Code\]](#) [\[Video\]](#)

## ACHIEVEMENTS AND AWARDS

---

- Technical **Scholarship** by Bangladesh Government (2018-2023) for **outstanding results** in Higher Secondary School.
- Chittagong Hill Tracts Development Board Scholarship in 2021
- Rangamati Hill District Council Scholarship in 2020
- Finalist - MIST Inter-university ICT Innovation Fest, 2021
- Finalist - HackNSU season 3, 2021

## SKILLS

---

- **Programming Languages:** Python, Java, C, C++, C#, Assembly
- **Machine Learning Frameworks/Libraries:** PyTorch, TensorFlow, NumPy, scikit-learn, Pandas, Keras
- **Database Management:** SQL (Oracle, Postgres, MySQL, SQLite)
- **Software Development:** Django, Spring Boot, React, JavaFX, Bootstrap
- **Version Control:** Git, GitHub
- **Operating Systems:** Linux, Windows, Mac
- **Scripting:** L<sup>A</sup>T<sub>E</sub>X, HTML, Shell Script(Linux)

## CERTIFICATION

---

- **Workshop on AI in Public Health** at [CHRF](#), organized by [Dr. Yogesh Hooda](#) and [Dr. Senjuti Saha](#), supported by the [Gates Foundation](#). June 1, 2024  
[\[Certificate\]](#)
- **Deep Learning Specialization** by [DeepLearning.AI](#) on [Coursera](#) Oct 30, 2020  
[\[Certificate\]](#)
- **Machine Learning Foundations: A Case Study Approach** by the University of Washington on [Coursera](#) [\[Certificate\]](#) May 29, 2020

## CO-CURRICULAR ACTIVITIES

---

- Active Member of DRMC Science Club 2015 - 2017
- Member of Entrepreneurship Development Club, BUET 2018 - 2019
- **Speedcubing Contests**
  - 3×3 Rubik's cube competition, Dhaka Spring Open 2018, **Semifinalist**
  - Rubik's cube competition, DRMC 9th National Science Carnival-2016, **2<sup>nd</sup> position**
  - Rubik's cube competition, Holy Cross 13th Inter College Science Festival 2015, **2<sup>nd</sup> position**
  - Rubik's cube competition, SAGC Science Festival 2015, **3<sup>rd</sup> position**

## REFERENCE

---

- [Dr. Avijoy Chakma](#) (Research Advisor)
- [Dr. Muhammad Masroor Ali](#) (Undergrad Thesis Advisor)