Anika Tahsin Meem

Curriculum Vitae

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Bashundhara R/A - Dhaka,Bangladesh

Linkedin Google Scholar

WORK EXPERIENCE

Research Assistant

North South University, Dhaka, Bangladesh

Advisor: **Md. Mamun Molla** | **Research Group**: Center of Applied and Computational Science at NSU

Aug 2023 - Present

Forced Convection of Non-Newtonian Fluid Flow over Two Heated Elliptic Cylinders in a Channel

- Co-authored the research proposal for fund management, collaborating with corresponding professor to secure funding for this project
- Optimized engineering systems like heat exchangers and reactors, improving heat transfer, mass transport, and flow stability in non-Newtonian fluids.

Nov 2023 - July 2024

Numerical Simulation of Pulsatile Non-Newtonian Blood Flow with Gold Nanoparticles in a Bifurcated Artery with an Aneurysm under a Bio-Magnetic Field *(Submitted to Physics Scripta)*

- Developed mathematical models of human blood flow incorporating nanofluids.
- Utilized the finite element method (FEM) to analyze bio-convection and heat transfer in aneurysmal arteries with gold nanoparticles under a magnetic field.
- Contributed to research optimizing therapeutic strategies in cardiovascular medicine.

IT Coordinator

International Study Destination (ISD), Dhaka, Bangladesh

Jan 2023 - Oct 2023

- Front-end Development • Illustration • Poster Design • SOP review
- Operations & Marketing • Meeting Conduct • Video Editing

Software Development Intern (Remote)

GaoTek Inc., New York

Oct 2021 - Feb 2023

- Team Leader • Website Maintaining • Digital Marketing

EDUCATION

2022

Bachelor of Science in Computer Science and Engineering

North South University, Dhaka, BangladeSh

CGPA: **3.43/4.0**

RESEARCH INTERESTS

- Data Science,
- Medical Image Processing,
- Computer Vision,
- Computational Psychology,
- Time-Series.
- CFD

BACHELOR THESIS

Developed an AI-powered healthcare platform

The main goal of this project is to develop a multi-disease detection system using deep learning image processing and AI techniques to support a fast, accurate healthcare system. The platform enables diagnosis of six diseases—pneumonia, malaria, melanoma, brain tumor, breast cancer, and lung cancer—with 88%-99% accuracy through deep learning and CNNs. Integrated a Django-based web system with telemedicine features, including video consultations and online prescriptions, to provide accessible, cost-effective healthcare solutions.

DIRECTED THESIS

Predicting Cryptocurrency Price Drops Using Time-Series Analysis and Deep Learning

Developed a Deep Learning Stacking Ensemble Model to predict cryptocurrency price drops well in advance, focusing on assets like Bitcoin, Ethereum, and Dogecoin. Leveraged CNN, LSTM, BiLSTM, and GRU algorithms to analyze twenty key market parameters, achieving high prediction accuracy with RMSE values between 0.0089 and 1.3229—significantly outperforming existing models. This approach empowers investors to make proactive, informed decisions in a volatile market.

RESEARCH WORK

Gastrointestinal Cancer Image Semantic Segmentation

Implemented an advanced Binary and Multi-Class image semantic segmentation model for gastrointestinal cancer using an improved Vision Transformer architecture, integrating Swin Transformer blocks, EfficientNetB7, and CBAM with ASPP. Achieved superior performance metrics with a training BCE loss of 0.0716, DICE score of 0.9350, and IoU of 0.9218, while validating with scores of 0.9109 and 0.9022, respectively. Implemented Grad-CAM and Grad-CAM++ techniques for transparent visual explanations, enhancing model reliability. Integrated the model into a Django-based web platform, enabling users to upload medical images and receive real-time segmentation results, effectively highlighting cancerous regions in the GI tract for timely detection and improved patient care.

A Cost-Effective ML and DL Solutions for Predicting Arsenic Contamination in Groundwater

Presented a cost-effective predictive solution for arsenic contamination using 14 machine learning and deep learning models (ANN, MLP, Stacking Ensemble, GAN). Leveraged readily available geological and environmental data—including latitude, longitude, well depth, and lithology—to create models that reduce reliance on costly post-digging water testing. The research focused on assessing current arsenic levels in groundwater and enhancing detection accuracy through a phased approach, utilizing six parameters in Phase 1 and 13 parameters in Phase 2. Developed a Django web application enabling users to input parameters and receive instant feedback on arsenic contamination risk.

JUNIOR DESIGN PROJECT

Covid-19 Detection

Proposed a deep learning-based image processing system utilizing custom CNN to predict COVID-19 from chest X-ray images, achieving remarkable results with 96.43% classification accuracy and 98.33% validation accuracy. Created an intuitive web application that enables both medical professionals and the public to effortlessly detect COVID-19 from chest X-rays, significantly improving timely and cost-effective patient screening during the pandemic.

PROJECT EPERIENCE

Deep-Learning Based on MRI Brain Tumor Classification Using CNN and Autoencoder.

Machine Learning AI Fake News Detection Using Naive Bayes.

Machine Learning Identifying Socially Isolated People Using LSNS6.

Software Engineering Web-Based Lost and Found System.

Database Direct From My Kitchen (Food App).

JOURNAL PAPER

Published Meem, Anika Tahsin, Mohammad Monirujjaman Khan, Mehedi Masud, and Sultan Aljahdali. "Prediction of Covid-19 Based on Chest X-Ray Images Using Deep Learning with CNN." Computer Systems Science & Engineering 41, no. 3 (2022).

Under Review Numerical Simulation of Pulsatile Non-Newtonian Blood Flow with Gold Nanoparticles in a Bifurcated Artery with an Aneurysm under a Bio-Magnetic Field.

CERTIFIED COURSE

Pantech Solutions Master Class of Machine Learning and Artificial Intelligence.

Open Weaver Build an AI Fake News Detection.

Udemy Google Data Studio A-Z for Data Visualization and Dashboards.

Udemy Professional Adobe Photoshop CC Course with Advance Training

SCHOLARSHIPS

Tuition Waiver **North South University** ***Course**: Mat112, Eng102*

General Scholarship Junior School Certificate - 2011

OTHER ACTIVITIES

Assisted in Peer Review of Published Research

Assisted my research supervisor in reviewing multiple journal articles, providing insights on methodologies and key findings.

- International Journal for Numerical Methods in Biomedical Engineering
- Journal of Nanomaterials, Nanoengineering and Nanosystems
- Multidiscipline Modeling in Materials and Structures
- Modern Physics Letters B

Interests

Poetry enhances my analytical and expressive abilities, while Painting cultivates patience and attention to detail, both of which enrich my creative thinking.

LANGUAGES

English	Professional	***Duolingo**: 115 (nblt 95)*
Bangla	Native	

LINKS

Email 2	meemanika70@gmail.com
Portfolio Website	My Portfolio
Skype	live:.cid.e82f986f516d5924
ResearchGate	Anika-Meem
Github	AnikaMeem
Instagram	_dear_anomaly_

REFERENCES

1. **Mohammad Monirujjaman Khan**
   Associate Professor | Department of Electrical and Computer Engineering
   North South University, Dhaka, Bangladesh
   Phone: +8801779006296
   Email: monirujjaman.khan@northsouth.edu
2. **Shahnewaz Siddique**
   Associate Professor | Department of Electrical and Computer Engineering
   North South University, Dhaka, Bangladesh
   Email: shahnewaz.siddique@northsouth.edu
3. **Mahdy Rahman Chowdhury**
   Associate Professor | Department of Electrical and Computer Engineering
   North South University, Dhaka, Bangladesh
   Phone: +8801931451259
   Email: mahdy.chowdhury@northsouth.edu