Aditya Chakma

+8801610505120 adityachakma199@gmail.com
Linked-in Github Kaggle Portfolio

RESEARCH INTEREST

My primary research interest lies in Computer Vision, Computer Security and applied Machine Learning. More specifically in medical imaging, design and improvement of machine learning architectures, build sophisticated machine learning algorithms and empherical analysis of visual-language models. Additionally, I also have interest in LLMs and AI content water-marking. Nevertheless, I am interested and open to new ideas.

EDUCATION

Bangladesh University of Engineering and Technology (BUET) — July 2021 – Present

*Masters in CSE - **3.75/4*** — *Dhaka, Bangladesh*

Related Courses: Advanced Digital Image Processing, Neural networks, Bioinformatics algorithms, Network Security, Programming languages and Systems

Thesis: Tanyabi: Chakma Handwritten Characters Dataset and Handwritten Characters Recognition

Bangladesh University of Engineering and Technology (BUET) — February 2016 – February 2021

*Bachelor in CSE - **3.30/4*** — *Dhaka, Bangladesh*

Related Courses: Artificial Intelligence, Pattern Recognition, Machine Learning, Data Structures and Algorithms I & II, Operating System, Computer Security

Thesis: Study of Spanning Trees with Maximum Number of Leaves

RESEARCH EXPERIENCE

Study of Spanning Trees with Maximum Number of Leaves — February 2020

Aditya Chakma, Md. Abdur Rouf, Dr. Md. Saidur Rahman, BUET

- Finding MLST is an APX-Hard problem. By successfully finding MLST, we can obtain the backbone of a network and which can be used to reduce the cost of the network
- Studied different approaches to find MLST. Provided a bottom-up heuristic algorithm

Tanyabi: Chakma Handwritten Characters Dataset and Chakma Handwritten Characters Recognition — March 2020–Present

Aditya Chakma, Aunabil Chakma, Dr. Rifat Shahariar, Dr. Md. Sohel Rahman, BUET,
Dr. Avijoy Chakma, Bowie State University (BSU)

- The chakma language is a low resource language and is declared endangered by UNESCO
- Provided a novel multipurpose dataset, a baseline model and statistical analysis
- Collected 113, 834 handwritten characters and obtained 98% macro averaged accuracy with state-of-the-art CNN models on test data, whereas the actual accuracy was 93%. Working with U-Net, GAN and Visual Transformers(VT) for baseline model.

Multilingual machine translation for Chakma language — August 2021 – Present

Aunabil Chakma, Aditya Chakma, Dr. Rifat Sahariar, Dr. Md. Sohel Rahman, BUET,
Dr. Avijoy Chakma, BSU

- Provided a novel monolingual and bilingual corpus dataset
- Collected data from old documents and crowd sourcing
- Collected over 13, 000 sentences and experimented with LSTM, Attention and Transformer blocks, and various statistical and NN models. Statistical machine translation models provided the best result since the data set is very small

Android Malware Detection and Feature Elimination — July 2021

Aditya Chakma, Aunabil Chakma, Dr. Md. Shohrab Hossain, BUET

- Reverse engineered APKs to source code
- Extracted features and ran recursive features elimination and PCA
- Used imports, method invocations, and method parameters as features. Used tree-based classifiers and ran feature importance and found that method signature based features are the most important

PROFESSIONAL EXPERIENCE

Therap (BD) Ltd.
Dhaka, Bangladesh

Therap (BD) Ltd. is a sister concern of the USA-based software company Therap Services LLC. Here, we provide SaaS to government and private organizations that provide services to people with intellectual and developmental disabilities.

Associate Software Engineer ***March 2021 - April 2022***

- Worked with senior developers to meet tight schedules and timely deliver of products
- Worked with PHI data and maintained HIPAA policy
- Worked on Spring MVC, Spring Core, Servlet, Hibernate, JDBC, Mysql, Git, Java 8 to build Scalable, Reliable and Secured web services.

Software Engineer ***April 2022 - Present***

- Lead core projects: Salesforce live chat integration, Roll-up dashboard
- Used jira for tracking agile development
- Worked on cross team development projects and reviewed pull request. Collaborated with senior developers on projects and supervised junior developers
- Worked with RESTful APIs, Spring Security, Spring Data, Shell scripting for deployment, and Python in a sub project

CERTIFICATIONS

- Deep Learning Specialization - Coursera
- Machine Learning - Coursera
- Natural Language processing with Classification and Vector spaces - Coursera
- Game Theory - Coursera
- R Programming - Coursera
- The Data Scientiest's toolbox - Coursera

TECHNICAL SKILLS

Programming Languages: C, C++, C#, Java, Python, R, Matlab, JavaScript, SQL

BigData and Machine Learning: Matlab, R, Python(tensorflow, keras, pytorch, sklearn, skimage, numpy, mtplotlib, pandas, XGBoost, seaborn)

Data Science and Miscellaneous Technologies: AutoML, Data pipeline, Time Series analysis, Recursive feature elimination (RFE), PCA, CNN, RNN, linux, shell scripting, git

PROJECTS AND COMPETITIONS

Course Projects (Selective)

- **Environmental micro-organism segmentation using LRU-Net** (Python, tensorflow, EMDB-5) |Solo project
  Implemented the LRU-Net, enhanced version of the U-Net and used the network to segment environmental microorganisms from the EMDB-5 database.
- **Dx-Ball** (C, iGraphics) |Solo project
  Using iGraphics, designed 5 levels in the game including lives and scoring system.
- **Blood Bank** (Java, JavaFx) |Solo project
  Built a desktop app to maintain a database for blood donors and facilitate the donation system by registering donors. Included a notification system to notify available donors upon request for blood from geographically closer users.
- **Hospital Management** (Php, Mysql) |Group project
  Implemented a full-scale hospital management system. Provided features for booking and release of cabins, payment, doctor and staff registration, appointment and prescription system.
- **Travel mate** (Laravel, Mysql, Python) |Group project
  Implemented a website for tour management. Provided a search and booking system for hotels and vehicles, including a payment and release system and a recommendation system.
- **ARP Cache poisoning** (C++) |Solo project
  Built an attack tool using C++ and raw socket programming to hack the victim's ARP cache table and sniff the incoming packages.
- **Miscellaneous:** Jikes RVM, 4 bit computer, Remote controlled car with arduino, FPS game with AI bots, Ray tracing, xv6 memory management.

Competitions (Selective)

- **IUT hackathon 2017**
  Position: finalist out of 50 teams
- **Dhaka AI - Dhaka Traffic detection**
  Position: top 30 out of 230 teams
- **Bengali.AI - AI for Bangla**
  Position: top 30 out of ≈ 2000 teams
- **SMIM-ISIC Melanoma Classification**
  Position: top 50% out of ≈ 2000 teams
- **PetFinder.my - Detect specific pets**
  Position: top 50% out of ≈ 2000 teams

LANGUAGES

- Bengali (Native)
- English (Working proficiency)

EXTRACURRICULAR ACTIVITIES AND HOBBY

Problem solving, E-sports, Traveling, Photography, Music, Movies, Game Development

RECOMENDATIONS

Dr. Rifat Shahriar
Professor, Department of CSE
Bangladesh University of Engineering and Technology
rifat AT cse DOT buet DOT ac DOT bd

Prof. Dr. Md. Saidur Rahman
Professor, Department of CSE
Bangladesh University of Engineering and Technology
saidurrahman AT cse DOT buet DOT ac DOT bd

Dr. Md. Sohel Rahman
Professor, Department of CSE
Bangladesh University of Engineering and Technology
msrahman AT cse DOT buet DOT ac DOT bd

Md. Al Mubin Sultan
Team Lead (System Team)
Deputy Director of Software Engineering
Therap Services LLC.
mubin AT therapservices DOT net