

MD AMINUL ISLAM

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LinkedIn, Medium, Skype

RESEARCH INTERESTS

- Data Science & Causal Inference
- Machine Learning
- Software/User Data Security

EDUCATION

PhD Student in CS, University of Illinois at Chicago Jan. 2023 to present
CGPA : 4.0/4.0
B.Sc. in Computer Science & Engineering Jul. 2014 to Oct. 2018
Bangladesh University of Engineering and Technology(BUET), Dhaka, Bangladesh
CGPA : 3.57/4.0 (Last 3 terms : 3.85/4.0)
Concentration : Artificial Intelligence & Machine Learning

RESEARCH EXPERIENCE

Scene Reconstruction from Multiple Static CCTV Cameras Nov. 2017 to Oct. 2018
We developed an automated system that can detect and track an input object, and present it to user by analyzing videos from multiple sequential or partially overlapping static CCTV data from area of interests. We also developed a prediction algorithm which finds an approximate movement direction of the input object in the place where camera is unavailable inside the area of interests. The algorithm uses the input object's movement data from different cameras to determine the movement direction. [Thesis Book](#)
Advisor : [Dr. Md. Monirul Islam](#) Collaborator : [Anwar Hossain](#)
Tools : MATLAB, SURF(Speeded Up Robust Features), Object Detection & Tracking Algorithm, Image Segmentation, Image Matting, Polyfit

- worked for detecting, tracking and presenting the input object in different cameras, and determining its movement data in different cameras
- developed the prediction algorithm using the input object's data(e.g movement) in different cameras, and also presented the predicted movement to user in the place of unavailable camera inside the area of interests

WORK EXPERIENCE

Software Engineer, Ridmik Labs, Dhaka, Bangladesh Nov. 2018 to Dec. 2022

1. **Bangla Article Summarizer:** Bangla article summarizer outputs an extractive Bangla summary of a given Bangla news article which is currently being used to generate automated Bangla summary of news articles for [Ridmik News](#) app.
Tools : Python, NLTK, Beautiful Soup, k-means Clustering, our prepared Bangla Words Dataset with POS Tag, our prepared Bangla Stemmer rules, Bangla Punctuation and Stop Words, TF-IDF, and Sentence Ranking
 - contributed for finding and implementing methodology for this Bangla article summarizer through sentence scoring using the TF-IDF and mentioned tools, and also evaluated performance on different news articles with varying numbers of clusters
2. **RidmikChat :** RidmikChat is an XMPP based secured messaging and social platform application for Android.
Tools : XMPP, Signal Protocol, ejabberd, AES, Android Studio, Java, Kotlin, SQLite
 - developed XMPP based one-to-one and group messaging, end-to-end encrypted messaging in client side using Signal protocol, different security issues to protect sensitive user app data in android device, and also some other features in user's feed
3. **Boitoi(Android) :** [Boitoi](#) is a JavaScript based secured Android e-book and short story reader with digital in-App book store.
Tools : Android Studio, Java, Kotlin, C, AES/CBC decryption, C Java Native Interface(JNI), SQL, JavaScript, HTML, CSS, XML, RadiumSDK
 - developed the secured e-book reader with the book store, short story reader and editor, authentication, book payment, book streaming and many other features

- contributed to finding books encryption and decryption policy based on Android versions, and implemented some portions of decryption policy using C and JNI
 - developed books content privacy protection for writers in Android devices
4. **Boitoi(iOS) : Boitoi** is a JavaScript based secured e-book reader for iOS with book store.
Tools : Xcode, Swift, Objective-C, C++, JavaScript, AES/ECB, iOS keychain, HTML, CSS, GRDB, StoryBoard, RadiumSDK
 - worked for the whole development of secured e-book reader with in-app book store and all other features
 - contributed to finding books encryption and decryption policy using iOS keychain, and implemented the whole decryption policy using C++ and CommonCrypto API
 - developed system using iOS keychain to prevent making a pirated copy of the books
 5. **Ridmik Keyboard : Ridmik Keyboard** is a Android keyboard in Bangladesh with Bangla phonetic keyboard, English, and Arabic layout which has many millions of users.
Tools : Android Studio, Java, Kotlin, C, Speech Recognizer, Java Native Interface(JNI)
 - contributed to voice typing, changed some keyboard layouts, emojis, and themes, added new theme customization, stickers, GIF, store, subscription, and payment
 6. **Ridmik Account Kit Library** : User can login to any Ridmik app in android or iOS devices using a single Ridmik account through this library.
Tools : Android Studio, Java, Xcode, Swift, Android Content Provider, iOS Keychain
 - developed login and secure inter-app authentication maintaining user's data privacy

Programmer of AIST Project, Department of CSE, BUET May 1, 2021 to July 31, 2021

1. **AIST Project : AIST Project** is a web application for users to visualize the predictions of **AIST** (An Interpretable Attention-based Deep Learning Model for Crime Prediction) model and analyze the predicted and actual crime data in different locations.
Tools : Django, Python, REST API, SQLite, Javascript, jQuery, HTML, CSS, tkinter
 - designed database, developed backend, REST API, full website, data visualization, and an admin panel for uploading crime data in server predicted by AIST model

ACADEMIC PROJECTS (SELECTED)

1. **Multivariate Stock Price Prediction** Jul. 2018 to Aug. 2018
A model is trained using LSTM on multiple attributes of share market data which can predict the starting price for next day share market.
Tools : Python, Panda, Keras, Tensorflow, LSTM, one year share market data
2. **Stay Safe(Android App)** Apr. 2017 to August. 2017
Users can report for crimes in police station, connect with nearby police station or friends in emergency, get notification alert, see verified crimes in an area and police can see reported crimes, connect with victims and verify crimes, make an area as danger prone. [Code](#)
Tools : Android Studio, Java, Firebase Database, Google Map API, SQLite, Push Notification

More Projects (Other Academic and Independent Projects)

SELECTED COURSEWORK

- Artificial Intelligence
- Machine Learning
- Pattern Recognition
- Digital Image Processing
- Mathematical Analysis for CS
- Operating System
- Database
- Software Engineering & ISD
- Computer Networks
- Computer Graphics

SKILLS

Programming Languages : Java, Python, Kotlin, Swift, C, C++, Assembly(80X86)
Scripting Languages : JavaScript, HTML, CSS, MATLAB, Shell Scripts
Mobile Application Development & Frameworks : Android, iOS, Django
Database : SQL, Oracle
Security : AES(CBC & ECB), CommonCrypto API, iOS Keychain
Tools & Others : Pandas, NLTK, REST API, Beautiful Soup, Seaborn, Google ML Kit & Vision API, Tensorflow, Google Map API, Firebase, JNI, JavaFX, L^AT_EX, tkinter