Eimran Hossain Eimon

Curriculum Vitae

South Kafrul, Dhaka-1206, BD
+8801854206052
mdeimranhossaineimon@gmail.com
My Portfolio
My GitHub
My LinkedIn

RESEARCH INTERESTS

Video Compression (Inter-Frame Prediction, Motion Modeling), Multimedia Signal Processing, Machine Learning, Computer Vision, Data Mining.

EDUCATION

- (2014 – 2019)
  Bachelor of Science in Engineering
  First Class
  Rajshahi University of Engineering & Technology
- (2011 – 2013)
  Science
  Notre Dame College, Dhaka

PROGRAMMING SKILLS

- Java
- Python
- Docker
- JavaScript
- Computer Vision
- Video Codecs (HEVC, AVC)
- Android Application Development
- Machine Learning
  (Accomplishment Certificate)

AWARDS

2016 **IEEE Motivational Award**
IEEE ROBO-DROID Championship. **See More**

COMMUNICATION SKILLS

Oral Presentation at 5th International Conference on Advances in Electrical Engineering (ICAEE) – 2019, **Certificate of Participation.**

MAJOR RESEARCH PROJECT

Research Assistant (Feb 2018 - Oct 2019)
Project: "Superpixel Based Inter-Frame Prediction for Video Coding"

In this research, we examined the use of arbitrary shaped spatially correlated superpixels instead of fixed size block to find the homogeneous motion region of the current frame. The advantage over homogeneous motion discovery idea is, during motion estimation and compensation arbitrary shaped superpixels are used, not the fixed-size blocks, which in result improved our prediction of the current frame. The affine motion model is used instead of the translational model for capturing the complex motion like camera zoom, rotation, deformation of an object and already encoded frame is used for predicting the current frame in this research.

PUBLICATIONS

Md. Eimran Hossain Eimon, Md. Zahirul Islam, Md. Shahid Uz Zaman, Md. Al Mehedi Hasan, Boshir Ahmed. "Superpixel Based Inter-Frame Prediction for Video Coding." *Proceedings of 2019, 5th International Conference on Advances in Electrical Engineering (ICAEE).* **See Full Paper.** doi:10.1109/ICAEE48663.2019.8975508

Md. Zahirul Islam, **Md. Eimran Hossain Eimon**, Boshir Ahmed, Md. Al Mehedi Hasan. "Classification Based Inter-Frame Prediction in Video Compression." *Proceedings of 2019, 5th International Conference on Advances in Electrical Engineering (ICAEE).* **See Full Paper.** doi:10.1109/ICAEE48663.2019.8975416

WORK EXPERIENCE

MAR, 2020 - PRESENT

CoKreates Limited
Full-Stack Software Engineer

As part of its digitalization process, the Bangladesh government has developed Government Resource Planning (GRP), an Enterprise Resource Planning (ERP) solution of its own, to manage office works electronically to optimize and economize assets and expenses. GRP is consists of eleven modules. From which, I have worked on the "**Accounts Module**". Accounts Module is designed to manage all kinds of financial activities records and transactions electronically to facilitate extensive search along with the generation of standard accounting reports.

- Back-end: Java Spring Boot (Microservice Architecture)
- Report Generation Tool: Jasper
- Database: PostgreSQL
- Front-end: Angular

NOV, 2019 - MAR, 2020

Business Accelerate BD Ltd.
Computer Vision Engineer

People Counter: The primary goal of this project is to find some useful business insight using the live CCTV feed of a store. Some of the main goals include:

- Count the number of the person entered in and exited from the store.
- Count the number of the person in a zone (like no. of people playing VR games).
- Find the average time spent by a customer in a zone.
- Generate a heatmap using customer's trajectories.
- Store the age, gender, and emotion of a customer when they are in a specific zone(e.g. when they are seeing a new product or buying a product)

I have used YOLOv3(You Only Look Once), MobilenetSSD(Single Shot Detection), Fast-RCNN for detecting people in real-time. And for tracking, I have used the "dlib correlation tracker", which is based on Danelljan et al.'s 2014 paper "Accurate Scale Estimation for Robust Visual Tracking". I have also utilized the "Intel OPENVINO" library for for Age-Gender-Emotion detection.

Result of my models:

- **Enter-exit count (See Video Demo)**
- **Age-gender-emotion detection (See Video Demo)**

NOV, 2018 - NOV, 2019

E-Horizon IT Ltd.
Full-Stack Software Engineer

Major Accomplishments:

1. Developed a system called "Media Monitor & Archive" for a Govt. Counter Terrorism Agency.
    - Server Environment: NodeJS
    - Back-end: PHP, JavaScript
    - Database: MySQL
    - Front-end: HTML, Bootstrap, JQuery
2. Developed a social networking site called "Deshi Social Connection".
    - Server Environment: NodeJS
    - Back-end: Javascript
    - API: ExpressJS
    - Database: MongoDB
    - Front-end: HTML, Bootstrap, JQuery
    - Project Videos:
        - **Deshi Social Connection (See Video Demo)**
        - **JobBook (See Video Demo)**

HOBBY PROJECTS

Android Application Development :

1. Farmer Assistant:
   IEEE MOTIVATIONAL AWARD-WINNING APP – 2016
    - Ensure the exact amount of N fertilizer in the cultivation of land.
    - Remove the limitations of use of LCC (Leaf Color Chart).
    - Minimize the production cost. **See More**
    - Application Link
2. Try New:
    - E-commerce type application.
    - By using this app you can subscribe to a service, and with that service, you can wear a new shirt every day. **See More**
    - Application Link

Game Development (Unity) :

1. Fly Bird:
    - Developed with Unity.
    - Integrated with Facebook.
    - 25+ missions included. **See More**

Augmented Reality (Vuforia) :

1. 2 TK:
    - Developed with Unity Vuforia.
    - By scanning a 2 Tk note using this app, one can see the history of Bangladesh's national monument on the note.
    - YouTube Link
    - Application Link

Machine Learning (Python, MATLAB) :

1. Implementation of Machine Learning algorithms using MATLAB & Python **(GitHub Link)**:
    - Anomaly Detection and Recommender System.
    - Decision Tree.
    - Genetic Algorithm.
    - K-means Clustering and Principal Component Analysis.
    - K Nearest Neighbor
    - Linear Regression
    - Logistic Regression
    - Multi-class Classification and Neural Networks
    - Perceptron
    - Support Vector Machine
    - Spam Email Detection
    - Chat Bot **(Accomplishment Certificate)**

Video Coding (C, C++) :

- Implementation of Block-based Motion Estimation & Compensation for video compression using C & C++ **(GitHub Link).**

Design Patterns (JAVA) :

- Implementation of most commonly used design pattern e.g. builder pattern, factory pattern, observer pattern etc. **(GitHub Link).**