Eimran Hossain Eimon

Curriculum Vitae

My GitHub
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https://eimran-eimon.github.io/cv/

RESEARCH INTEREST

- Computer Vision
- Multimedia Signal Processing (Video Coding)

PROGRAMMING SKILLS

- Python
- OOP (C++, Java)
- Video Codecs (AVC, HEVC)
- JavaScript (Angular, NodeJS)
- Machine Learning **(Accomplishment Certificate)**
- Android Application Development
- Computer Vision (OpenCV, OpenVINO, MobileNetSSD, YOLOv3)

EDUCATION

- (2014 – 2019)
  Bachelor's degree
  Computer Science & Engineering
  Rajshahi University of Engineering & Technology
- (2011 – 2013)
  HSC, Science
  Notre Dame College, Dhaka

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

Project: "Superpixel Based Inter-Frame Prediction for Video Coding"

In this research, we examined the use of arbitrary shaped spatially correlated superpixels instead of the fixed-size block to find the homogeneous motion region of the current frame. The advantage over the homogeneous motion discovery idea is, during motion estimation and compensation arbitrarily shaped superpixels are used, not the fixed-size blocks, which in result improved our prediction of the current frame.

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.

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

NOV, 2019 - MAR, 2020

Business Accelerate BD Ltd.
Computer Vision Engineer

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

- Generate a heatmap using customer's trajectories.
- Find the average time spent by a customer in a zone.
- 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).
- 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 purposes, I have used the "dlib correlation tracker". I have also utilized the "Intel OPENVINO" library for the Age-Gender-Emotion detector.

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.
    - Database: MySQL
    - Back-end: PHP, JavaScript
    - Server Environment: NodeJS
    - Front-end: HTML, Bootstrap, JQuery
2. Developed a social networking site called "Deshi Social Connection".
    - API: ExpressJS
    - Database: MongoDB
    - Server Environment: NodeJS
    - Front-end: HTML, Bootstrap, JQuery
    - **Messenger was developed using Socket.IO (NodeJS)**
    - 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 the use of LCC (Leaf Color Chart).
    - Minimize production cost. **See More**
    - Application Link
2. Try New:
    - E-commerce type application. **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 using the Augmented Reality technology. **See More**
    - YouTube Link
    - Application Link

Machine Learning (Python) :

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

Video Coding (C, C++) :

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

Design Patterns (JAVA) :

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