Iftekhar Mahmud

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Academic Projects

2D Game Design – Platformer Game:

C++, OpenGL

Developed a 2D side-scrolling platformer game featuring custom-designed levels, character animations, and interactive gameplay mechanics. Implemented collision detection, enemy AI behaviors, and scoring systems to enhance player engagement. Focused on optimizing game performance and ensuring a smooth user experience across different devices.
Project Link: 2D Game Design

3D Animation with OpenGL – Animated Scene:

C++, OpenGL

Created a 3D animated scene using OpenGL, incorporating complex transformations, lighting effects, and camera movements. Designed and animated 3D models, implementing rotation, scaling, and translation to simulate realistic motion. Applied principles of computer graphics to achieve smooth animations and visual realism.
Project Link: 3D Animation with OpenGL

E-Clinic – Clinic Management System:

Laravel, PHP, MySQL, Bootstrap, JavaScript, HTML, CSS

Developed a comprehensive web-based clinic management system to streamline administrative and clinical operations. Implemented features such as patient registration, appointment scheduling, medical record management, and billing. Utilized Laravel framework for backend development and Bootstrap for responsive frontend design. Collaborated in a team of five to ensure modular code structure and efficient database design.
Project Link: GitHub Repository

Crop Price Prediction Web Application:

Streamlit, Scikit-learn, Pandas, PyDeck, Geopy, Matplotlib

Developed an interactive web app using Streamlit to forecast retail and wholesale crop prices based on region, market, and date input. Applied Decision Tree Regression models on cleaned and preprocessed historical crop price data across various Bangladeshi regions. Integrated geolocation mapping using PyDeck and Geopy to visualize market locations interactively. Designed a user-friendly interface for selecting commodity types, market locations, and visualizing predicted prices with real-time model inference. Utilized One-Hot Encoding, IQR-based outlier removal, and Pipeline architecture for efficient preprocessing and model training.
Project Link: GitHub Repository

E-Wholesale Management System:

MySQL, HTML, CSS, JavaScript, PHP

Developed a comprehensive web-based application to streamline wholesale business operations. The system manages inventory, sales, purchases, and customer information, enhancing efficiency and accuracy in wholesale management.
Project Link: GitHub Repository

Technical Skills

Language: Python, C/C++, PHP, HTML, CSS, Java, SQL, Excel
Frameworks/Libraries: Matplotlib, Seaborn, Numpy, Pandas, Scikit- Learn, Tensorflow, Streamlit, Laravel, Django
OS: Linux, Windows
Technical Writing: Latex
CMS & Tools: Power BI, Visual Studio, DataGrip, PyCharm, Jupyter Notebook, Git, Github, PostgreSQL

Research Experience

United International University   Dhaka, Bangladesh
Undergraduate Thesis   January 2024 - October 2024

- **Thesis Title:** Predicting Crop Prices using Machine Learning Algorithms for Sustainable Agriculture.
- Explored several regression and time series models and implemented for price forecasting.
- Worked on data preparation, handled imbalance data and worked on model training and produced result, worked on visualizing the results using multiple machine learning libraries in python.
- **Thesis Publication:** I. Mahmud, P. R. Das, M. H. Rahman, A. R. Hasan, K. I. Shahin, and D. M. Farid, *"Predicting Crop Prices using Machine Learning Algorithms for Sustainable Agriculture,"* *2024 IEEE Region 10 Symposium (TENSYMP)*, New Delhi, India, 2024, pp. 1–6.
  DOI: 10.1109/TENSYMP61132.2024.10752263
  Journal Submission (In Progress): An extended version of the thesis is currently being prepared for submission to a reputed peer-reviewed journal.

United International University   Dhaka, Bangladesh
Undergraduate Student   January 2024 - December 2024

- Worked with multimodal dataset for emotion detection using deep learning approach.
- Conducted image processing and worked with multiple image models, fine tuned and retrained the models appropriately for the research need.
- **Publication:** I. Mahmud, P. Das, N. Rifa, I. Hossain, R. Rahman, and D. M. Farid, *"Multimodal Emotion Recognition Using Visual and Thermal Image Fusion: A Deep Learning Approach,"* *27th International Conference on Computer and Information Technology (ICCIT)*, 2024.
- **Award:** Received *Best Technical Presentation Award* at IEEE 27th ICCIT 2024.
  DOI: 10.1109/ICCIT64611.2024.11022356

Education

United International University   Dhaka, Bangladesh
Bachelor of Science in Computer Science and Engineering, Thesis GPA 4.00/4.00   2024
Awards and Honors:

- Received 50% and 25% scholarships in multiple trimesters for being in the top 10% of the department.
- Best Technical Presentation Award at IEEE 27th ICCIT 2024.
- Champion, Group Presentation Competition organized by IQAC, UIU, 2018.

EXTRACURRICULAR ACTIVITIES

UIU Computer Club   2022 - 2024
General Member
Participated on multiple events hosted by the club and worked as a volunteer.

REFERENCES

- **Prof. Dr. Dewan Md. Farid**
  Dean of School of Science & Engineering, Professor of Computer Science & Engineering, Southeast University, Email: dean.sse@seu.edu.bd, dewanfarid@seu.edu.bd
- **Raiyan Rahman**
  Lecturer (on leave), United International University, Postgrad Student, University of Portsmouth, Email: raiyan@cse.uiu.ac.bd, Raiyan.rahman@myport.ac.uk
- **Habib Al Saki**
  Data Engineer - AI Strategy & Development - Information Technology Division , Grameenphone Ltd (Dhaka, Bangladesh), LinkedIn: linkedin.com/in/habibalsaki
- **Dr. Suman Ahmmed**
  Head & Associate Professor, Department of Computer Science & Engineering; Director, Centre for Development of IT Professionals (CDIP), United International University (Dhaka, Bangladesh), Email: suman@cse.uiu.ac.bd, suman@uiu.ac.bd