NAZIA AFREEN

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RESEARCH INTEREST

Network Security, Human Computer Interaction, Software Engineering, Application of Machine Learning

EDUCATION

Bangladesh University of Engineering and Technology   Feb 2017 - May 2022
BSc in Computer Science and Engineering

- **CGPA**: 3.90/4.00
- **CPGA in CS Courses**: 3.95/4.00

Viqarunnisa Noon College   2014 - 2016
Higher Secondary Certificate

- **GPA**: 5:00/5:00

Viqarunnisa Noon College   2014
Secondary School Certificate

- **GPA**: 5:00/5:00

RESEARCH EXPERIENCE

Cross City Deep Transfer Learning Model for Crime Prediction   2021 - 2022

- **Summary**: Predicting crime ahead of time can enable law enforcement authorities to take preventive measures and save people from unwanted events. However, in cities where crime data is scarce, undocumented, and inadequately collected, relying on historical data for crime prediction is not feasible. The goal of out thesis is to develop a cross-city deep transfer learning model for crime prediction. For this purpose, we transfer the knowledge from a city with accessible crime data to another city where crime data is unavailable.

  A novel region similarity learning technique is developed to learn the similar regions based on crime pattern. Several auxiliary data like taxi flow, road network, demographic data, and points of interest (e.g., shopping centers,entertainment centers) are considered as the benchmark of region similarity. For a particular crime category, the model finds out the m most similar regions from the source city and predicts the number of crime events for that target region in a specific time step. Extensive experiment using real datasets is performed to show the effectiveness of the model.

- **Supervised by**: Tanzima Hashem
- **Tools**: Autoencoder, Attention Mechanism, Spatio-temporal Deep Learning Model

PROJECTS

Who's the Pokemon | Keras, Siamese Neural Network

Deep Learning   Project Link

- In this project, the model is trained to classify category of pokemons from one image training dataset.
- A meta learning paradigm- 'One Shot Image Recognition' is implemented to do one-shot classification.

Learn Math | ReactJS, NodeJS, ExpressJS, PostgreSQL

Software Development   Project Link

- It is a Math learning platform where students can practice, watch tutorials and give quizzes.
- Instructors create Rubric-based written questions and tutorials. item[•] There are moderators to check the quality of the contents.

ICMP Attacks Against TCP | C, Wireshark, Virtual Machine

Network Security   Project Link

- In ICMP Blind Connection Reset attack,the attacker forges a hard error message to reset an arbitrary TCP Connection.
- In ICMP Blind Throughput Reduction Attack, The attacker forges choke packet to blindly reduce the throughput of a TCP connection.

Cross-Site Scripting (XSS) Attack | JavaScript, Elgg in Ubuntu VM Image

Network Security   Project Link

- A malicious JavaScript program that forges HTTP requests directly from the victim's browser to make the attacker a friend, modify the victim's profile, posting on behalf of the victim.
- A self-propagating Worm is designed.

Trip Management System | PHP, PostgreSQL, HTML
Database   Project Link
- This platform is built to help a tourist planning her trip.
- Users can surf through hotels, flights, tourist attractions using refined filtering.

Line of Action | Java, Slick2D
Artificial Intelligence   Project Link
- A game is designed using adversarial search with alpha-beta pruning.
- It supports both Human vs Human and AI vs Human game mode.

Dino Run | ATmega-32, LED Matrix, Joystick, Sound Sensor
Micro-controller and Microprocessor   Project Link
- This game features of Google Chrome's offline game, well known as Dinosaur game.
- Movement of dinosaur is controlled by Joystick.
- It has an extra feature to shoot objects driven by sound sensor.

WORK EXPERIENCE

BRAC University   May 2022 - Present
Department of Computer Science and Engineering
- Conducted theory courses including Programming Language I, Programming Language II, and Data Structures.
- Conducted sessional courses Programming Language I, Programming Language II, and Data Structures.
- Designed Data Structures Sessional materials.
- Followed Outcome-Based-Education (OBE) concepts while designing new course materials

TECHNICAL SKILLS

Programming	C, C++, JAVA, Python, JavaScript, MATLAB, Assembly8086, BASH, SQL, PL/SQL
Development	CSS, Bootstrap, ExpressJS, NodeJS, ReactJS
Libraries	OpenGL, Numpy, Pandas, Scikit-learn, Matplotlib, Keras, Tensorflow
Tools	Git, Latex, Figma

LANGUAGE PROFICIENCY TEST SCORE

IELTS	8 (Listening: 8.5, Reading: 8.5, Writing: 7, Speaking: 7.5)	Oct 2023

GRADUATE STANDARDIZED TEST SCORE

GRE	323 (Quant: 169, Verbal: 154)	Oct 2023

AWARDS AND ACHIEVEMENTS

Dean's List, BUET	All completed levels of undergraduate program
University Merit Scholarship, BUET	All completed levels of undergraduate program
HSC Talentpool Scholarship	2017-2021
SSC Talentpool Scholarship	2015-2017