Saeefa Rubaiyet Nowmi

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EDUCATION

University of Texas at El Paso — January 2023 - May 2025 (expected)
Master's in Computer Science — *Current GPA: 3.6/4.0*

Bangladesh University of Engineering and Technology — February 2017 - May 2022
Bachelor of Science in Civil Engineering — *CGPA: 3.38/4.0*

COURSEWORK

Courses Completed: Artificial Intelligence, Machine Learning, Advanced Algorithm, Theory of Computation, Computer Networks, Computer Security, Computational Cognitive Modelling, Object-Oriented Programming, Data Structures & Algorithms

Courses to be Taken: Deep Learning, Software Construction, Data Mining

STANDARDIZED TESTS

GRE: 317 — Verbal: 155, Quant: 162, AWA: 3.5
TOEFL: 105 — Reading: 28, Writing: 28, Speaking: 23, Listening: 26

RESEARCH INTEREST

Computer Security, Cryptography, Network Security, Human Factors, Cognitive Modelling, Machine Learning, Deep Learning, Artificial Intelligence, Data Science

TECHNICAL STRENGTH

Languages: Java, Python, C/C++, R, HTML, CSS, JavaScript, MATLAB
Skills: Data Analysis and Visualization with Python and R, Machine Learning with PyTorch and Tensor Flow, Natural Language processing with NLTK and spaCy, Cognitive Modelling with PyIBL
Tools/Software: Git/GitHub, VS Code, PyCharm, TensorFlow, Google Colab

PUBLICATIONS

- *P Aggarwal, **S Rubaiyet Nowmi**, Y Du, C Gonzalez*, Evidence of Cognitive Biases in Cyber Attackers from An Empirical Study, HICSS 2024, Hawaii, United States, https://hdl.handle.net/10125/106491

- *T Bhattacharjee, **SR Nowmi**, MH Bhuiyan, S Ahmed* A Comparison Study on Characteristic Behaviour of Hot-Rolled Beams of Carbon Steel and Stainless Steel Under Standard Fire

AWARDS AND SCHOLARSHIPS

Women in Cyber Security Conference, 2024, Nashville, Tennessee
Scholarship for Poster Presentation

EXPERIENCE

Graduate Research Assistant at PsyberSecurity Lab at UTEP — Jan. 2023 – Present

- **Experienced in Experiment Design:** Designed Experiment fully on my own to capture cognitive biases in cyber attackers. The main biases I worked with are - Default effect bias, Choice Overload, Sunk Cost Fallacy, Serial Position bias etc. Working on designing an experiment that simulates covert network attacks to capture cognitive biases and the adaptive decision-making behavior of the human attackers.

- **Skilled in Developing Cognitive Models:** Developed cognitive models to capture human behavior in different cyber scenarios.

- **Expert in Data Analysis and Visualization:** Analyzed data of human participants from experiments (related to cyber deception) to detect and quantify cognitive biases in human behavior in various cyber scenarios.

PROJECTS

Stock Market Analysis and Prediction with LSTM

- Developed a stock market forecasting model using Recurrent Neural Networks (RNN) with Long Short-Term Memory (LSTM) units to predict stock prices. Employed historical data, scaled inputs, and utilized a 64-day input sequence for precision. Trained and compared models with varying architectures to enhance prediction accuracy. Demonstrated superior performance over traditional forecasting methods through comprehensive testing on various company stocks.

Connect Four Game Playing with Monte Carlo Algorithm

- The Connect Four game was meticulously developed to facilitate gameplay against three distinct algorithmic opponents: a random player, a pure Monte Carlo algorithm, and a Monte Carlo UCT (Upper Confidence bounds applied to Trees) algorithm. This implementation was executed using Python, emphasizing interactive and strategic play.

FlipIT Game with PyIBL and comparison with human participants

- Two types of FlipIT games were modeled: one versus a random defender and one against a strategic defender. Attributes and similarity functions were applied appropriately for the strategic defender. However, no traits or similarity function were applied for the random defender. Data from human participants was available for both types of games. The goal of this experiment was to determine how well IBL models capture human behavior and playing patterns.
- The one against the strategic defender produced patterns, behaviors, and results that were strikingly comparable to those observed in human participants. Both models were cognitive models in nature. This project was done as a part of CS 5390- Computational Cognitive Modelling course.

Exploring the RFID-based Authentication System in a Budget

- Investigated and addressed security vulnerabilities in RFID-based authentication systems used in various public settings, aiming to identify and exploit these vulnerabilities to assess security levels. Developed and analyzed practical countermeasures, resulting in a comprehensive ranking of RFID cards based on security and providing recommendations for secure authentication methods for institutional adoption.

Interactive Program for UTEP Eats

- Created an interactive software that allows users to order meals from UTEP Eats. It can take orders, select pick-up/delivery, add tips, and make payments, among other things. This project was completed as part of the CS 1101 course. The program was written in Java.

Match Pairs Game

- Created a matching pairs game. There was an array comprising pairs of integers. The player must choose the indices of the corresponding integers. This game had two modes: 1) limited trials and 2) unlimited trials. The player may select either of these two options. This project was completed as part of the CS 1101 course. The program was written in Java.

Pokemon Go Game

- Created a Pokemon Go game using a linked list. While in the box, Pokemons are stored in a 2D array. And the player can add any pokemon to the party based on their criteria (types, levels, and generations of the pokemons). Pokemons were added to the party as nodes in a linked list. In the game, players can do things like add or remove pokemons from their party or box, view their statistics, and so on. This project was also done as part of the CS 1101 course. The program was written in Java.

REFERENCES

Dr. Palvi Aggarwal
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