JOHAIL GERARD

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EXPERIENCE

Dialog Axiata PLC Software Intern

June 2021 - Aug 2021 Colombo, Sri Lanka

Geographical Mapping Phase

- Developed Python software with GeoPandas to map citizens to the nearest COVID vaccination centers across Sri Lanka
- Building the back-end for an API that facilitated this mapping.

Route Mapping Phase

- Optimized route mapping algorithms to reduce travel time (Djikstra's), enhancing the efficiency of the nationwide vaccination campaign.
- Worked closely with a small team and two supervisors, with oversight on code and progress, as part of a private company commissioned by the government to create the software

Hindustan Unilever Intern - Predictive Inventory Forecasting

May 2024 - Aug 2024 Mumbai, India

Cloud Computing Optimizations

- Led advanced cloud computing optimizations for ML-based prediction system
- Drastically reducing costs (by about 65%) by implementing spot VMs, innovative startup scripts and optimized scheduling of system operations.
- Conducted thorough research on forecasting models (Naive Bayes, SARIMA, RNNs and CNNs) for inventory stocking
- Enhanced predictive accuracy (by around 3%) through model and EDA changes

Project Involvment and Communication

- Played a key role in workshops by proposing and implementing data segmentation strategies to efficiently test hypothesized performance improvements; streamlined operations
- Coordinated closely with the design team, co-founders, manager, and stakeholders on a weekly basis to ensure project success.

PROJECTS

johailg2/Chess-Engine Chess Engine w/ GUI [C++ & Python]

May 2024 - Ongoing

Chess Board Representation & Evaluation

- Implemented efficient chess board representation using advanced data structures (BitBoards and Zobrist Hashing) for rapid state evaluation and move generation (Lookup Tables and Magic Numbers!!).
- Implemented search algorithms (min max with pruning) including null move pruning and other optimizations to improve engine performance.
- Implemented custom evaluation functions, including piece-square tables and mobility heuristics, to dynamically assess board positions.
- Optimized the engine's performance by integrating material, positional, and structural evaluations for both middle and endgame phases.
- Currently working on ML based algorithms for learning on GM games for better performance.

GUI

- Created a playable GUI utilizing pygame which enabled click and drop movement of pieces.

johailg2/Wireless-RC-Car Wireless RC Car [C]

- Designed and built a wireless vehicle control system using two Arduinos, XBee RF modules, and a custom motor controller.
- Coded from scratch to enable real-time control of vehicle movement with PID control and braking via RF communication.

EDUCATION

University of Illinois Urbana-Champaign

BS Aug 2022 – May 2026

- Computer Engineering Major
- Math and Micro-Economics Minors

Overseas School of Colombo

IB Diploma Aug 2020 – May 2022

ACHIEVEMENTS

- Dean's List : Fall 2023
- Accepted into HKN, ECE Honour Society

OTHER EXPERIENCE

Eta Kappa Nu (HKN) Active Member

Ongoing Urbana, USA

- Active member of the IEEE-Eta Kappa Nu (HKN) honor society, contributing to community service projects, professional development activities
- Tutoring peers on classes such as Discrete Structures and Analog Signal Processing
- Led midterm review sessions for Eta Kappa Nu (HKN) at UIUC, providing academic support and in core engineering and computer science courses.

RELEVANT COURSEWORK

- Data Structures, Machine Learning, Parallel Programming
- Graph Theory, Number Theory, Abstract Linear Algebra
- Analog Signal Processing, Digital Signal Processing, Digital Systems*
- Int. Microeconomic Theory

OTHER PROJECTS

Automatic Light Switch [C]

- Designed and built an automatic light switch for my room; utilized two SONAR sensors for detecting enter-exit actions
- Coded from scratch to flick servo motors up and down to mechanically turn light switch on and off

SKILLS

Python | C | C++ | CUDA* | Git | Pandas | Pytorch | SystemVerilog*

*These are currently being studied and will be completed by the end of this semester.