Tajuar Bhuiyan

347-280-7446 tajuarb@umich.edu linkedin.com/in/tajuarb github.com/tajuar2001 US Citizen

Education

University of Michigan, School of Engineering **Sep. 2020 - June 2024**

Bachelor of Science in Computer Engineering, with a focus on Software. (GPA 3.68) *Ann Arbor, MI*

Experience

Viasat Inc. **Carlsbad, California**

Software Engineering Intern *May 2023 - August 2023*

- Engineered an adaptive detection model using K-Means Clustering and Isolation Forest algorithms, achieving a 52% reduction in anomalous client behaviors and enhancing system resilience
- Spearheaded the setup of an anomaly detection system via an API, which outperformed previous solutions by identifying 76% more irregular behaviors, providing valuable insights into usage patterns and system vulnerabilities, and averting potential losses of up to $1 million.
- Crafted a feedback system that enabled clients to validate or negate flagged anomalous behaviors, resulting in a 30% improvement in model accuracy and providing a tailored experience for each unique client.

Carrier Global **Indianapolis, Indiana**

Software Engineering Intern *May 2022 - August 2022*

- Optimized and extended an existing AWS infrastructure for Ecobee's data protection and security, by reconfiguring AWS and Lambda functions, saving the company an estimated $500,000 annually.
- Devised a CI/CD pipeline using Jenkins, Python 3.7, and Shell scripts, which automated routine unit testing for Carrier's 2023 Smart Thermostat by 43%, thereby replacing the Carrier Comfort Network (CCN). This reduced the time-to-market by 15%.
- Collaborated with hardware teams to integrate FPGA modules with custom PCBs for 12 projects, which ensured seamless system operation and reduced system integration time by 25%.

RippleMatch **Manhattan, NY**

Leadership Development Intern *January 2022 - May 2022*

- Implemented growth strategies that expanded the user base by 136% and boosted brand awareness within the campus community through social media, presentations, and networking with peers and faculty members. This led to a 50% increase in platform sign-ups and a 30% increase in active users.

Shopno Inc. **Bronx, NY**

Software Engineer Intern *May 2021 - August 2022*

- Authored over 2,500 lines of structured Python code, which achieved a 37% reduction in transaction processing time. This improved efficiency led to a 15% increase in daily transactions, boosting revenue by an estimated $60,000 annually.
- Partnered with a team of 3 engineers to develop software that automatically extracted financial data of goods from a wholesaler's API, by assigning specific tasks.

Personal Projects

Lazy Tune | *Python 3.11, C/C++, RTOS, DSP, PJRC, Tinker* **December 2023**

- Implemented real-time autotune and vocoder algorithms using spherical harmonic analysis, phase vocoder, and digital filter design techniques on the Teensy 4.1 microcontroller with PJRC libraries. Developed a GUI on a Raspberry Pi with Tinker library to control the audio effects and communicate with the Teensy 4.1 via serial connection. Achieved high-performance and low-latency audio processing with a delay of less than 11ns.

Genre Guru | *PyTorch, NumPy, matplotlib, Librosa* **November 2023**

- Constructed and refined CNN-based models for song genre classification, achieving 78% accuracy across 10 genres. Optimization was attained through experimentation with audio data representations like Mel-Spectrograms and MFCCs. Performance was enhanced by applying training methodologies like cross-validation and metric-based dynamic training.

MiniTwit | *Python, HTML, CSS, Shell, AWS* **July 2023**

- Created MiniTwit, a Flask-based platform, showcasing full-stack development. Integrated AWS VPC for enhanced security, providing isolated computing resources, encrypted data storage, and secure user data handling.

Chess Engine | *Python3, Stockfish, TensorFlow* **April 2022**

- Engineered an efficient chess-game engine using techniques like mega-max, alpha-pruning, and Monte Carlo Tree Search for optimal move selection. Leveraged Stockfish for high Elo-ranking AI moves to continuously refine algorithms.

Skills

- **Languages**: C++(up to C++17), C, Python, Rust, Go, Verilog, ARM, Java, Matlab
- **Technology**: Linux, Git, Vim, Jira, Docker, Jenkins, AWS, Grafana, Kibana, PostgresSQL
- **Libraries and Tools**: Pytorch, Scikit-learn, Pandas, Numpy, CMake, OpenCV, NLTK, Apache Spark, YAML, NGINX
- **Organizations**: BSA, LSA, ASA, Michigan Hackers, MRover, Badminton, Volleyball, Archery