SADMAN KABIR

Brooklyn, New York | (718) 593 2041 | kabirs@bu.edu | https://linkedin.com/in/mdskabir | https://github.com/corndog-overflow |

EDUCATION

BOSTON UNIVERSITY

B.S, **Computer Engineering**.   Expected May 2025
Concentration in **Machine Learning.**

EXPERIENCE

Research Intern
Boston University, China Historical Christian Database (CHCD)   (Sept 2024 – Present)

- Focusing as technical intern on **migrating backend** from **neo4j database to PostgreSQL.**
- Translated portions of legacy codebase from cypher & Neo4j to SQL.
- Reworked legacy queries to implement **more accurate data retrieval.**
- Currently working toward implementing **custom API** and integrating into production.

Software Engineering Teaching Assistant   (May 2023 – August 2023)
Giant Machines Software (now part of Deloitte Digital)

- Mentored and instructed externs and fellows representing **Citadel Securities, Bank of America and MasterCard.**
- Lectured students on **python, web development using HTML, CSS, Flask, MongoDB, and Bootstrap.**
- Fostered good interview etiquette, taught essential **algorithms, data structures and computer science theory.**

PROJECTS

Semi-Autonomous Robotic Ground Convoy
Capstone project for Boston University and The Charles Stark Draper Laboratory.

- **Co-led robotic perception** team for the automatic detection and tracking of designated field targets.
- Leveraging **SLAM algorithms for obstacle avoidance**, working toward **swarm behavior.**
- Programming **ROS2** perception nodes in python, with various computer vision methods from **semantic segmentation** to **neural nets**.
- Retrained object detection models through transfer learning a curated and annotated dataset of > 20 thousand samples.

Songbird: A deep learning model for expressive jazz and blues music composition.

- Architected **19 million parameter model** and several prior iterations for the task of jazz music composition.
- Integrated **intelligent optimization and regularization techniques** to maximize training efficiency and reduce over-fitting.
- Implemented **reinforcement learning** fine-tune through REINFORCE algorithm to update weights.
- Trained several model iterations through **supercomputing cluster**, utilizing CUDA and maximum hardware utilization strategies.

FPGA Video Game

- **Designed RTL circuit** in **Verilog**; integrated 7 Segment Displays, switches, and buttons to create **2 Player FPGA game.**
- **Wrote numerous testbenches** in Xilinx Vivado, and **fit to FPGA**, passing **100% of test cases on board.**
- Demonstrated proficiency in implementing **FSMs**, **behavioral, and structural Verilog**, and **verification techniques**.

SKILLS

Languages, design abilities:

- C++, C, C#, SQL, Verilog, Electronic/Digital Circuit Design, Python, JavaScript, Java,
- UI/UX Design, Full-stack Application Development, Embedded Systems development.

Tools/Libraries:

- TensorFlow, PyTorch, OpenCV, ROS2, Xilinx Vivado, .NET Frameworks, OnShape,
- MATLAB, Jupyter Notebooks, WireShark, UNIX, Bootstrap, REACT Native, Electron,
- Visual Studio, Flask, NodeJS, Express JS, MongoDB, PostgresSQL, SQLite, Figma.

RELEVANT COURSEWORK

- Electric Circuits, Digital Logic Design, Embedded Systems, Robotics, Machine Learning, Deep Learning, Cybersecurity.
- Calculus I, II, III; Physics I, II; Statics; Probability and Statistics; Signals and Systems; Computer Organization; Algorithms and Data Structures.