BRIAN HE

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EDUCATION

Rutgers University, School of Engineering New Brunswick, NJ
Bachelor of Science in Computer Engineering, Minor in Computer Science *May 2024*
- GPA: 3.95/4.00 | Summa Cum Laude | Dean's List | Tau Beta Pi Engineering Honor Society | IEEE VEXU Robotics
- Relevant Coursework: Analog Electronics, Digital Systems Design, Information & Network Security, Software Engineering, Software Methodology, Programming Languages, Computer Algorithms, Data Structures, Computer Systems, Computer Architecture, Discrete Mathematics, Probability, Linear Algebra, Multivariable Calculus, Differential Equations, Statistics

PROFESSIONAL EXPERIENCE

Rutgers Blueprint New Brunswick, NJ
Software Engineering Fellow *February 2023 – May 2023*
- Worked closely with mentors to build websites through diverse projects, adhering to industry coding standards through the design and implementation of scalable and maintainable code structures using **HTML**, **JavaScript, React,** and **Material UI**
- Led a team of 2 other fellows to design and develop a custom webpage, using integrated external APIs to streamline development and improve site functionality, and presented the project to a panel of 20+ industry professionals

Robert Wood Johnson University Hospital New Brunswick, NJ
Data Analytics Intern *September 2021 – December 2021*
- Collaborated with the project team to develop data-cleansing algorithms that support variable filtering and outlier detection to remove irrelevant, incorrect, or invalid information, reducing provided survey data size by 25%
- Created **Python** scripts using **pandas**, **NumPy**, and **Matplotlib** to generate visualization models and interactive analysis reports, directly aiding 10+ pediatricians in interpreting patient and caregiver preferences in treating inactive juvenile idiopathic arthritis

PROJECT EXPERIENCE

Photo Application, *01:198:213 – Software Methodology* *March 2024 – May 2024*
- Partnered with a classmate to design and deploy a multi-user photo storage and management application using **JavaFX** and **FXML,** porting it to Android Studio using **Java**, and leveraging **Git** and **GitHub** for version control and collaboration
- Implemented data persistence using Singleton design pattern and **Java** object serialization, ensuring reliable storage and retrieval of photos and associated metadata across user sessions, enhancing data integrity and consistency with zero data loss
- Sustained a modular codebase by adhering to the Model-View-Controller (MVC) architecture, which involved integrating scene switching techniques for declarative UI design, alongside managing inheritance and delegation design decisions and leveraging polymorphism to improve code maintainability

motorVision, *14:332:448 – Capstone Design ECE* *December 2023 – May 2024*
- Collaborated with a team of 4 colleagues to develop and test a system that enhances road hazard detection for motorists, contributing to data sourcing, quality assurance, and training of AI/ML algorithms, with involvement in hardware integration
- Included controlled variability into training dataset to the **YOLOv8** algorithm using **PyTorch** in **Python** within Google **Colab**, employing QA practices and establishing quality metrics to optimize detection adaptivity with an 86% average precision rate

Analog Circuit Design Project, *14:332:463 – Analog Electronics* *October 2023 – December 2023*
- Designed and simulated a high-performance two-stage op-amp using IBM CMOS 7RF technology in **Virtuoso**, **Cadence**
- Computed design equations to estimate DC currents and transistor sizes, followed by fine tuning and optimization of circuit parameters via simulation to meet required design specifications and achieve a 15% increase in operational efficiency

RBuild, *14:332:452 – Software Engineering* *January 2023 – May 2023*
- Partnered with 9 other teammates to build a website that recommends PC parts based on users' preferred specifications
- Integrated **Stripe API** to simulate secure payment processing and conducted thorough API testing with **Postman**
- Led as the frontend developer on the team, which involved designing the user experience, troubleshooting UI bugs, and implementing a real-time chat feature using **socket.io**, **JavaScript**, **HTML**, and **CSS**

Accessory, *Personal Project* *July 2022 – December 2022*
- Developed a website using **Python** and **HTML** that stores and provides easy access to users' essential and frequently referenced information, reducing information search time and enhancing user productivity by 50%
- Established a back-end storage system for secure user login information to ensure data confidentiality using **SQL**
- Improved user experience with cross-platform accessibility and site responsiveness using **CSS** and **JavaScript** libraries

SKILLS

Languages: Java, JavaFX, MATLAB, C, JavaScript, HTML/CSS, FXML, SQL, Python, OCaml, VHDL, Verilog, SystemVerilog
Frameworks & Libraries: React, Cypress, Artillery, Bootstrap, Material-UI, Tailwind CSS, pandas, NumPy, Matplotlib, PyTorch
Technologies: Git, Postman, Node.js, Cadence Virtuoso and Spectre, Quartus, FPGA, VS Code, Android Studio, Agile, Microsoft