MICHAEL LU

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Education

Massachusetts Institute of Technology, Cambridge, MA *Class of 2023*

- Candidate for Bachelor of Science in Computer Science and Electrical Engineering.
- Coursework: Intro to Machine Learning, Intro to Algorithms, Mathematics of Computer Science, Intro to Game Design, Circuits and Electronics, Toy Product Design, Physics Electricity and Magnetism.

Work Experience

Electrical and Software Engineering Intern, ABB, Richmond, VA *Jun - Aug 2020*

- Collaborated with electrical engineers to create a cross-platform computer application with Qt (C++) to configure and read data from ABB's Power Distribution Unit (PDU) logic boards.
- Implemented a dynamic queue to store Modbus RTU communication queries between the application and the PDU logic boards, which sped up communication speeds and data refresh rates by 53%.
- Created a graphical user interface to generate configuration script files for the PDU logic board.

Full Stack Software Engineer (Part Time), Build-It-Yourself, Cambridge, MA *Mar - Aug 2020*

- Created a space-themed web game where users would upload and share technology project portfolios.
- Designed and implemented a navigation system in ReactJS where users would travel in a spaceship between galaxies and star systems to find other user's project portfolios, which were hosted on planets.
- Integrated AWS Amplify, Cognito, S3 and DynamoDB functionality with the app frontend to store user data.
- Led the standardization of software version control and bug reporting among team developers and beta testers, accelerating the project workflow to meet tight deadlines.

Full Stack Software Intern, IBM Research, Cambridge, MA *Jan 2020*

- Developed an online word association game where users played against a Natural Language Processing AI.
- Created a dynamic landing page with ReactJS, Flask, and PostgreSQL that displayed a user's gameplay.
- Collaborated with UI designers to create wireframes and paper prototypes for the dynamic landing page.
- Conducted several rounds of user testing to refine the dynamic landing page designs.
- Integrated the Twitter and Facebook API into the game for users to share their experience on Facebook and Twitter with social media cards that displayed an image of their gameplay.

Machine Learning Intern, Department of Energy Brookhaven National Lab, Upton, NY *Jul - Aug 2018*

- Wrote a data analysis program in Python to pinpoint and graphically visualize bottlenecks in Uber's distributed deep learning framework, Horovod.
- Analyzed the performance of the deep learning frameworks Apache MXNet and TensorFlow by running deep learning algorithms (Resnet-110) on the lab's supercomputer cluster.
- Co-authored a research paper that discussed methods to improve the performance and scalability of deep learning algorithms running on large GPU clusters. Paper accepted at the New York Scientific Data Summit.

Technical Projects

Software Projects

- Trained a TensorFlow Transformer deep learning model on personal text messages to build a Facebook chatbot with my speech habits to converse with friends.
- Created a web application with ReactJS and Google Cloud machine learning where users could take pictures of their food to get its macronutrients. Won "Best Use of Google Cloud" at Hack Princeton 2019.

Hardware Projects

- Built a robot that used machine learning for facial detection (Android OpenCV) and speech processing (CMU PocketSphinx). Presented the robot at 4 elementary schools, resulting in a local news article.
- Programmed Amazon Alexa to control Arduino microcontrollers over the Internet through HTTP requests.

Leadership Experience

Computer-Aided Design Sub-Team Leader, Great Neck South FIRST Robotics Team *Sep 2015 - Jun 2019*

- Led a team of 5 students to design robot mechanisms with 3D computer models in Autodesk Inventor.
- Created an online summer course to teach Long Island high school students Computer-Aided Design.
- Won 3 regional competitions and competed at 3 international competitions.

Skills & Interests

Programming: Python (TensorFlow, Flask, Beautiful Soup, Selenium), HTML, CSS, JavaScript (ReactJS, Node.js), C++ (Qt, Arduino), Java (Android), C# (Unity), MATLAB
French: Intermediate
Cross Country Running: Captain of high school team
Volunteer Firefighting: Firefighter for the Manhasset-Lakeville Fire Department, NY State Firefighter I certified