John Mihal

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Education

Rochester Institute of Technology Rochester, NY

Bachelors of Science in Computer Science, Minor in Quantum Information Science and Technology *2020 - 2024*

Technical Skills

Languages: Java, Python, MatLab, C, C++, C#, SQL, HTML, CSS, JS, Perl, AWS (Amazon Web Service); Lambda, CloudFormation, S3, API Gateway, State Machine

Concepts: Agile, SRCUM, Databases, ML/AI, Embedded Programming, Optics, Quantum, Computer Vision

Experience

Machine Learning Engineer Intern May 2024 – Present

Penn State Applied Research Laboratory *Washington, DC*

- Researched and implemented ML/AI models which operated on nautical geospatial data.
- Developed a ResNet50 model in PyTorch, leveraging the Barlow Twins method for self-supervised learning, resulting in a robust foundation model with multiple heads for both classification and forecasting tasks.
- Cleaned and prepared geospatial data using SQL (pgAdmin4) and Python.

Research Assistant September 2023 – May 2024

RIT Quantum Imaging Laboratory *Rochester, NY*

- The Quantum Imaging Laboratory focuses on designing and testing integrated photonics chips.
- Simulated light propagation on a star coupler component, using the Meep Python library.

Research & Pre-clinical Development IT Coop January 2023 - August 2023

Regeneron Pharmaceuticals *Tarrytown, NY*

- Worked to create integrations between scientific systems such as BioBank, Clarizen, and other laboratory information management systems (LIMS) using Python and AWS Lambda.
- Designed and implemented a internal SwaggerHub replacement using AWS S3, AWS API Gateway, SwaggerUI and JS which saved over $20,000 in yearly licensing costs.
- Translated business requirements to develop a Dotmatics to CoreLIMS molecule synchronization system and coordinated testing with Senior Developers, Principal Business Analysts and Consultants.
- Deployed continuous integration and continuous deployment (CICD) pipelines by configuring Jenkins CloudBees and installing Jenkins shell scripts in repositories using Perl.

Projects

AI Language Model | *Python, TensorFlow* Fall 2023

- Generated 4 language models trained off of scripts from the show "My Little Pony".
- Models used were LTSM, RNN, Two Layer Linear Model, Single Layer Linear Model, these were evaluated using perplexity, and cosine similarity between related words.

Clash Stats | *JS, Node.js, MongoDB, Express, Pug, Clash Royale API, Bootstrap CSS* Summer 2023

- Created a website where users can make sharable dashboards to view and compare live in game statistics with friends for the mobile game Clash Royale.

Meal Hub | *SQL, Relational Databases, Java, Java Fx, Gluon Scene Builder, R, Kaggle, Indexes* Spring 2022

- Designed and implemented a SQL database and Java database management application.
- The application allowed users to manage a virtual pantry, search recipes and receive recommendations.

Extracurriculars

Multidisciplinary Robotics Club: Designing and building a robot to autonomously navigate a set course. The robot uses LiDAR, a camera and a Nvidia Jetson computer for navigation. *Fall 2023 - May 2024*

Additional Projects

Servo Drivers | *C, HAL, STM32 Nucleo-L476RG Microcontroller, Oscilloscope, Servo, PWM* Winter 2024

- Designed a system to feed two PWM servos rotation instruction sets and user input instruction commands which can pause the instruction sets and modify the servos directly.

Dice Counter | *Matlab* Winter 2024

- Produced a Matlab project which received pictures of dice on a table and counted the number of dice.

Sticky Site | *JS, Python, Flask, MongoDB, Jinja2* Winter 2024

- A public sticky note board where users can draw a sticky note and post it to the site for all to see.

AI Number Classifier | *Python, TensorFlow* Fall 2023

- Implemented 8 different models (Single vs Double Layer, Linear vs Convolution, ReLU, maxPool variants and combinations) to classify pictures of handwritten numbers from the MNIST dataset.

Frequency Reader | *C, HAL, STM32 Nucleo-L476RG Microcontroller, Oscilloscope, Wave Generator* Winter 2024

- Wrote code which enabled the microcontroller to receive a wave and count the period of the wave with microsecond accuracy before outputting a histogram of period times.

Weather Web App | *JS, HTML, CSS, API's* Summer 2022

- Learned JS to formulate and develop a JS web app where users can look up the weather of a city.