Brady Berg bergbrae@msu.edu | linkedin.com/in/brady-berg/

Education

Bachelor of Science, Computational Data Science *September 2019 - December 2023*

Michigan State University **GPA: 3.98**

Experience

Automation Engineer *April 2024- Present*

Merit Laboratories

- Automated various lab tasks, significantly enhancing operational efficiency and reducing manual workloads.
- Developed Python-based tools to collect and process data from lab equipment, generating comprehensive PDF reports.
- Created a user-friendly React application for organizing and generating lab reports.
- Observed lab workflows to identify automation opportunities and presented detailed improvement proposals to supervisors.
- Implemented approved automation projects, leading to substantial improvements in data accuracy and process efficiency.
- Collaborated with cross-functional teams to seamlessly integrate automated solutions into existing workflows.

Machine Learning Engineer *August 2023- December 2023*

Blueflite

- Led the creation of a novel machine learning model that integrates data-driven optimization with fundamental principles of physics to accurately predict a drone's center of gravity during flight.
- Established a propeller and motor test bench to collect data and characterize the efficiency and propulsion of drone components. This initiative provided valuable insights into the performance characteristics of different propeller and motor configurations.
- Collaborated closely with cross-functional teams to design and implement comprehensive visualizations and reports.
- Engaged in brainstorming sessions with engineers to blend domain expertise with data-driven methodologies, resulting in innovative solutions that leveraged the best of both worlds for improved drone performance and operational efficiency.

Lead Software Engineer *March 2022- December 2023*

NASA University Student Research Challenge

- Engineered advanced software enabling drones to autonomously land, latch, and charge on public transportation vehicles, enhancing operational efficiency and reducing the need for manual intervention.
- Spearheaded the development of a sophisticated flight planning algorithm, integrating live transit data to produce real-time, adaptive flight plans, ensuring timely and accurate drone deliveries.
- Led the design and implementation of a cutting-edge system for in-flight drone charging using high-powered lasers. Developed and optimized algorithms for precise drone tracking and dynamic flight motion control, significantly advancing the capabilities of autonomous drone operations.

Student Research Scientist *September 2023- February 2024*

Research group on Human-AI Interaction, MSU

- Spearheaded research initiatives employing Large Language Models (LLMs) to delve into the nuances of human-AI interaction dynamics.
- Conceived and engineered a cutting-edge interactive application designed to meticulously capture, record, and analyze patterns in which individuals engage with LLMs.
- Expertly integrated Docker for container management, coupled with Azure cloud services, ensuring seamless deployment and scalability of the application in real-time environments.

Data Science Intern *May 2022 – August 2023*

Delta Dental (Roosevelt Innovations)

- Conducted innovative research into embedding system rules into vector representations, facilitating easier management of a complex decision management system.
- Utilized computer vision and natural language processing models to analyze document contents, enabling automated mapping of contractual policies.
- Developing Large Language Model (LLM) applications to interpret and generate logic in the language of the decision management system, streamlining system upgrades and modifications.

Student Research Scientist *May 2021 – May 2022*

Michigan State University Civil and Environmental Engineering Department

- Devised an innovative method for generating synthetic residential appliance energy demand loads, significantly enhancing grid-wide residential demand response case study outcomes.
- Leveraged advanced time-series modeling, visualization, and numerical estimation techniques for effective data analysis and strategic planning.

Publications

- Berg et al. (2023). *Enhancing Knowledge Management in Healthcare....* The Int. FLAIRS Conf. Proceedings. Link
- Jahanbani et al. (2022). *2050 Power Grids: Control Through Demand*. IEEE PESGM. Link
- Berg et al. (2022). *Occupant-Driven End Use Load Models for Demand Response....* Link
- Berg et al. (2022). *Impact of the COVID-19 Pandemic on Single Family Homes' Electricity Consumption....* Link

Technical Skills

ML: PyTorch, TensorFlow, HuggingFace, Sklearn, ONNX, SHAP, Large Language Models, Fine Tuning, Deep Learning, OpenCV, Object Segmentation/Detection/Classification

Databases: MongoDB, MySQL, SQLite, Vector Search, Blob Storage

Optimization: Scipy, Pulp

Languages: Python, SQL, JavaScript, Lua

Tools: REST API, Docker, Azure

Front-end: React, JavaScript, html, CSS, bootstrap

Drones: Ardupilot, PX4, QGroundControl, Kalman Filters, PID Control