Vikram Meyer

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Education

M.S. Computer Science 2022 – 2024
Vanderbilt University *3.93 GPA*

B.S. Computer Science 2020 – 2024
Vanderbilt University *3.87 GPA*

Relevant Coursework: Artificial Intelligence, Machine Learning, Advanced Optimization, Deep Learning, Transformers, Numerical Methods, Nonlinear Optimization, Algorithms, Data Structures, Software Design

Skills

Proficient: Python, PyTorch, NumPy/Pandas/matplotlib/scikit-learn, Julia, Robot Operating System (ROS & ROS2), Git, Unix/Linux, LaTeX

Familiar: GCP, Azure, Docker, C++, Rust, Go, OpenCV, SQL, C#, JavaScript, TypeScript, HTML/CSS

Industry Experience

SURE Research Fellow Jun. 2023 – Aug. 2023
University of Southern California
- Developing graph neural networks (GNNs) for improved traffic speed prediction using federated learning over multiple data sources
- Utilizing: *Python, PyTorch*

Software Engineering Intern May 2022 – Aug. 2022
Microsoft
- Built cloud service to capture recordings of event livestreams and store them in the cloud so an in-house stream quality monitoring service can use these recordings and replace the existing and expensive 3rd party solution
- Developed web-app to let video engineers easily search through event stream recordings and download them for further analysis
- Utilized: *Python, Flask, HTML/CSS, JavaScript, ffmpeg, Docker, Azure, Git*

Software Engineering Intern May 2021 – Aug. 2021
Total Quality Logistics
- Developed 8 of 12 endpoints on a new REST API to quickly setup large customers worth $1.8+ billion in annual revenue with our automated EDI systems.
- Wrote unit and integration tests to reach 97% code coverage on the API
- Utilized: *C#, SQL, Angular, Typescript/JavaScript, HTML/CSS, Git*

Data Intern June 2020 – Aug. 2020
Food Forest App (Startup)
- Designed and developed data collection tools to extract up to date pricing, nutrition, and similar data from numerous websites and APIs for the 13,000 products in our catalog
- Updated our database with the collected data while maintaining data integrity to provide customers with the most accurate and up-to-date product information
- Utilized: *Python, Selenium, MySQL, Postman, Git*

Frontend Development Intern June 2018 – Aug. 2018
10XTS (Startup)
- Built out a new product's dashboard with a coworker from a wire-frame mock-up to a minimum viable product
- Utilized: *Angular, Typescript/JavaScript, HTML/CSS, Git*

Leadership Experience

Software Lead May 2021 – May 2022
Vanderbilt Robotics Team
- Led a team of 10 in developing autonomy software for lunar mining robot to perform in NASA Lunabotics competition (did not get to attend due to COVID-19 constraints)
- Designed autonomy stack tying together the perception, localization, planning, and control systems using behavior trees
- Documented codebase and important robotics concepts on a new documentation website resulting in more efficient new member onboarding and passing of knowledge from year to year
- Utilized: *Robot Operating System 2 (ROS2), Python, C++, Git*

Localization Sub-Team Lead Sep. 2020 – May 2021
Vanderbilt Robotics Team
- Led team of 4 in developing a computer vision algorithm to localize the robot based on fiducial marker in feature sparse environment
- Our localization algorithm was stabler than previous solution, allowing better navigation in challenging mock-lunar environment
- Utilized: *Robot Operating System (ROS), Python, C++, OpenCV, Git*

Project Experience

Deep Learning Assisted Motion Planning Sep. 2021 – May 2023

Independent Research advised by Prof. Forrest Laine

- Setup non-convex trajectory optimization problem with vehicle dynamics model to generate collision-free trajectories for an autonomous vehicle
- Trained fully connected neural networks to predict warm-starts that speed up trajectory optimization solvers so problems can be repeatedly solved in real-time in a model predictive control (MPC) loop onboard the robot
- Achieved 5x speed improvement in solve time using warm-starts from model trained with novel loss function using the solver in the loop compared to MSE loss
- Generated collision-free autonomous vehicle trajectories in an environment with static obstacles using conditional diffusion model trained to model distributions of trajectories conditioned on the obstacles in the environment
- Utilized: *Python, PyTorch, GCP, Git*

Machine Learning Article Writing June 2020 – Aug. 2020

Team volunteering project through Discovery Lab Global

- Wrote explanations for common supervised learning algorithms such as linear regression, logistic regression, and neural networks. Also wrote an introduction to artificial intelligence for beginners
- Integrated my 4 team members' sections into a 100 page document to introduce and explain AI & ML for interested high school students
- Utilized: *LaTeX, BibTeX*