Nicholas Sullivan

nickdsullivan@gmail.com / 914-708-6143 / https://github.com/nickdsullivan
https://www.linkedin.com/in/nicholas-sullivan-660011203/

EDUCATION

Washington University in St. Louis, McKelvey School of Engineering
Master of Science in Computer Science — Dec 2024
Bachelor of Science in Computer Science & Economics (3.8 GPA) — May 2024

RELEVANT EXPERIENCE

Comcast | remote – Graduate Intern in AI Technologies — Jun - Aug 2024

- Developed AI-based products to lower customer service costs by improving the accuracy of chatbot responses in online customer interactions despite lack of real customer data
- Created novel synthetic data generation methods using LLMs for chatbot testing by mimicking a broad range of real customer linguistic patterns via fine-tuning and controlling the path of conversation via chain-of-thought prompting
- Developed metrics to evaluate the level of similarity between real and synthetic customer data
- Collaborating with senior researchers to write a paper about the project for an NLP journal

Spectrum/Charter Communications | St. Louis, MO - Product Management & Development Intern — Jun - Aug 2023

- Enhanced the controlled testing environment for software upgrades
- Conducted competitive analysis of cellular networks, reviewed existing product portfolio, and made product recommendations for key product refreshes

MDDriven | St. Louis, MO - Full Stack Software Engineering Intern — Jun - Aug 2022

- Created new PC, web, and IOS mobile applications to enable the recording, sharing, and analyzing of patient data from cardiac and pulmonary monitoring and assessment devices
- Developed system requirements for software architecture, logic design, coding standards, and hardware components
- Designed and built the appearance, functionality, and operational characteristics of each software application and a database that met all current user requirements and anticipated future changes

TEACHING & RESEARCH POSITIONS

Washington University in St. Louis
Machine Learning Research Assistant (NLP group with Professor C. Wang) — Jan 2024 – present

- Develop innovative methods to prevent catastrophic failure in MLLM, including using teacher-student architecture along with stable diffusion to generate pseudo datasets that improve MLLM's performance on NLU tasks

Lead teaching assistant for graduate level NLP and undergrad intro computer science courses — Jan – May 2024

- Created and graded assignments and assessments and managed team of 3 other TAs

Machine Learning Research Assistant (Applied Game Theory group with Professor Y. Vorobeychik) — Jun 2023 - Dec 2023

- Implemented novel neural network architecture derived from stochastic game theory to find optimal pitch sequence for one inning of baseball

Economic Research Assistant (with Professor G. Aryal) — Feb 2023 - May 2023

- Collaborated with faculty on a project analyzing inefficiencies in the oil industry; collected, tested, maintained, and documented original research datasets
- Analyzed OPEC data to summarize how the bloc and its individual members influence the global oil market

OTHER PROJECTS — Sep 2020 – Present

- Created a 3-D visualization of the volatility smile over time using 4 years of historical option data
- Found inefficiencies in online sports betting using Python (pandas, NumPy) to statistically analyze large datasets
- Performed a sentimental analysis of social media posts about homelessness by modifying TF-IDF while serving as digital chair of Heart for the Unhoused, a non-profit
- Utilized waveform collapse to generate two-dimensional terrain

TECHNICAL SKILLS: Java, Python, (PyTorch, TensorFlow, NumPy, pandas, selenium, sklearn, etc.), C++, C, Git, GitHub, UNIX, Machine Learning, NLP, Time Series Analysis, Statistical Modeling, Game Theory, Computer Vision, Reinforcement Learning

INTERESTS: Math club, log rolling, marathon running, wood carving, camping, and playing the tin whistle