Luke Griffiths

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Education

Cornell University **Ithaca, NY**

Master of Engineering, Computer Science (GPA: 3.7/4.0) *Dec 2023*

- Specialization: Applied Machine Learning
- Coursework: Large-Scale Machine Learning, Natural Language Processing, Computer Vision

Bachelor of Science, Electrical & Computer Engineering (GPA: 3.5/4.0) *May 2023*

Professional Experience

Computer Vision for Urban Emission Analysis **Ithaca, NY**

Computer Vision Role (Master's project) *Aug 2023 – Dec 2023*

- Spearheaded development of a detection model that monitors street camera feeds and categorizes vehicles by type and weight to predict vehicle emissions at city-block resolution in NYC
- Engineered a robust codebase of methods to process, cleanse, and analyze data, facilitating the creation of error-free datasets essential for model training
- Upgraded model architecture to YOLOv7, utilized transfer learning, fine-tuning, and hyperparameter search and improved classification accuracy to satisfactory levels for all 9 custom classes
- Conducted rigorous analysis on custom datasets, identified labeling errors, and delivered actionable feedback weekly to management for continuous improvement

Blue Origin **Kent, WA**

Avionics Software Development Intern *Jun 2023 – Aug 2023*

- Optimized on-rocket UDP/TCP based networks, ensuring seamless serialization and transmission of critical data among cameras, sensors, and flight computers on the New Glenn rocket
- Enhanced the implementation of error handling software to detect and shut off malfunctioning sensors, mitigating the risk of cascading hardware failures and ensuring the reliability of mission-critical systems

Cornell Mars Rover **Ithaca, NY**

Electrical & Firmware Team Member *Aug 2020 – May 2023*

- Developed firmware in C for high-precision brushless motor control on custom PCBs, adapting swiftly to integrate off-the-shelf controllers with the existing software stack amid supply-chain issues and tight deadlines
- Created Python test software to visualize electrical signal and error message data from PCBs and BLDC motors allowing sensors to be visually debugged by non-technical team members

GE Aerospace **Evendale, OH**

Software Development Intern *May 2022 – Aug 2022*

- Prototyped software to automate defect detection using ultrasound imaging, surpassing the capabilities of the existing human-supervised vision framework which validates 35k+ engine components annually
- Resulted in a true positive rate 6% higher than the existing software and lowered false positive rate from 3/100 parts to 1/100 parts, a savings of $1,800 per part

Academic Experience

Deep Learning Course Development, *Cornell University* *Aug 2023 – Dec 2023*

- Created and piloted course content (structure, lecture material, assignments) for a new course *CS 4782: Intro to Deep Learning* which will be taught to Cornell undergraduates beginning in 2024
- Developed all content for the generative vision (VAEs, GANs, & Diffusion) course module
- Guided peers working on the language (RNN, LSTM, transformer) module to improve content quality

Undergraduate Teaching Assistant, *Cornell University* *Aug 2022 – Dec 2022*

- Instructed 40+ students on utilizing fundamental robotics concepts including state-estimation, motion planning, and control for *CS 4/5750: Foundations of Robotics*
- Hosted weekly office hours to help students apply algorithms such as PID, MPC, LQR, and monte-carlo localization in coding assignments using Python and Robot Operating System (ROS)

Technical Skills

Programming Languages: C++, Python, C, Java, OCaml, SQL, Matlab, Verilog
Technologies: Git, AWS (EC2/S3/IAM), Jira, ROS, Linux
ML: PyTorch, NLTK, OpenCV, NumPy, Pandas, Hugging Face, Gymnasium