Anton Liu

liuantonliu@gmail.com | Linkedin.com/in/liuanton | Github.com/liuantonliu | Antonliu.com | 647-588-1568

Skills

- **Machine Learning:** Python (PyTorch, TensorFlow, LangChain, Scikit-learn, NumPy, spaCy, OpenCV, pandas, pytest)
- **Data:** Google Cloud Platform (GA4, GTM, BigQuery), Database (PostgreSQL, MySQL, MongoDB), Power BI
- **Web Development:** JavaScript (TypeScript, Node.js, Express.js, Next.js, React), Flask, HTML, CSS
- **Other Tools/Languages:** Azure, AWS, C, C++, R, Git, Kubernetes, Docker, Jenkins

Experience

Machine Learning Software Developer | **Honeybee Trials**, Toronto May 2021 – Apr 2022

- Built a recommendation engine with Python and MongoDB to suggest research studies to 25,000+ participants, delivering results via automated weekly newsletters and boosting study click-through rates by 90%
- Implemented a comprehensive data analytics workflow to save 10+ hours weekly, using GCP to track user journeys and conversion rates, and building APIs to populate dashboards (Next.js, Retool) with important KPIs
- Eliminated data over-fetching by converting TypeScript website from REST to GraphQL
- Practiced Agile principles by refining user stories in Jira, facilitating sprints, and ensuring timely feature completion

Machine Learning Data Developer | **Orkestra SCS**, Toronto May 2020 – Apr 2021

- Predicted shipment delays with 91% accuracy with custom PyTorch RNN model, using worldwide ocean vessel trajectory and ocean conditions data, and demoed MVP to business teams to improve supply chain management
- Created robust automated ETL processes (Python, PostgreSQL, Microsoft Azure) for external clients' data

Data Engineer | **Schweitzer Engineering Laboratories**, Toronto May 2019 – Aug 2019

- Conducted A/B tests and time series analysis for machine maintenance protocols to decrease operational costs
- Leveraged IoT device data to detect real-time faults in electrical grid, and wrote pytest unit tests with 98% coverage

Projects

Efficient and Adversarially Robust Object Detection | Graduate Thesis

Developed robustness-aware CNN pruning pipeline and novel DeepLIFT initialization technique, compressed YOLOv3 model under PGD adversarial attack, and yielded 2x robust mAP with 0.5x inference time at 65% pruning ratio

Pediatric Bone Age Estimation (SAIL conference) | Undergraduate Capstone

Streamlined workflow of radiologists at Trillium Health Partners by approximating bone age through patient X-rays with a CNN model deployed on AWS EC2, and displayed results with Explainable AI via Grad-CAM in custom dashboard

Lossy Video Compression with Deep Learning: Universal RDP Representation | Undergraduate Thesis

Developed deep learning models (autoencoder, GAN, VAE) to compress videos 500x smaller, with extensive experiments

Education

M.Sc. Computer Science, Image Processing & Computer Vision, University of Western Ontario, 2023 –2024

- Teaching assistant: CS3340 - Analysis of Algorithms, CS3342 - Organization of Programming Languages

B.A.Sc. Engineering Science, Machine Intelligence, University of Toronto, 2018 - 2023

- 2D Object Detection Team Lead - aUToronto, Braking System Team Lead - UofT Hyperloop Team