Anton Liu

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Skills

- **Machine Learning:** Python (PyTorch, TensorFlow, OpenCV, pytest, NumPy, spaCy, pandas, Matplotlib)
- **Data:** Google Cloud Platform (GA4, GTM, BigQuery), PostgreSQL, MySQL, MongoDB, Firebase, MATLAB
- **Web Development:** TypeScript, Node.js, Express.js, Next.js, React, Flask, GraphQL, HTML, CSS
- **Other Tools/Languages:** Azure, AWS, Java, C, C++, R, Unix, Git, TeamCity

Experience

Machine Learning Software Developer @ Honeybee Hub, Toronto May 2021 – Apr 2022

- Built recommendation engine that suggests research studies to potential participants using Python and MongoDB. Results are used in automated weekly newsletters to 25k+ users, increased study click through rate by 380%
- Engineered complete data analytics flow to save 10+ hours a week, from using Google Cloud Platform (GCP) to track user journeys and conversion rates, to building APIs for populating 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 – Aug 2020

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

Data Engineer @ Schweitzer Engineering Laboratories, Toronto May 2019 – Aug 2019

- Improved fault detection speed by 12% by refactoring Python pipeline, and wrote pytest unit tests with 98% coverage
- Applied statistical analytical models (predictive value, time series analysis, A/B testing) for machinery maintenance

Projects

Efficient and Adversarially Robust Object Detection - Graduate Thesis

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

Pediatric Bone Age Estimation - Undergraduate Capstone

Worked with Trillium Health Partners to approximate bone age through patient X-ray with a CNN model deployed on AWS EC2, and used explainable model results in custom dashboard to speed up radiologist workflow

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

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

SAE AutoDrive Challenge II - aUToronto

Trained competition-winning 0.65+ mAP-50 YOLOv5 model with nanodet & PyTorch Lightning for autonomous driving

Education

M.Sc. Computer Science, Image Processing & Computer Vision, Western University, 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

- Braking System Lead - UofT Hyperloop Team, Engine Subsystem Member- UofT Formula Racing Team