winnie xu

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SKILLS

LANGUAGES | Python, Golang, Java, C/++, Bash, R, JavaScript

FULL STACK | HTML/Bootstrap, Django, SQL, Mongo, Android, iOS, Git, Unix/Linux

ML & CLOUD | NumPy, PyTorch, Tensorflow, scikit-learn, Azure, Google Cloud, Conda, HPCC (cluster OS)

CREATIVE | CAD, Adobe Suite, Microsoft Office

AWARDS

1st Place + Axelrad Award for Best Computer Science Research | 2018

Princess Margaret Cancer Research Studentship for best undergraduate research | 2018

British Columbia Provincial Achievement Scholarship | 2018

Silver Medal + Top 20 @ Canada Wide Science Fair | 2017

1st Place Honours @ Sanofi Biogenius Challenge | 2017

EDUCATION

UNIVERSITY OF TORONTO

2021

COMPUTER SCIENCE
&& STATISTICS
&& MATH (MINOR)

CS: 3.91/4.0
cGPA: 3.53

CS Core | Machine Learning (audit), Probability, Linear Algebra, Algs + Data Structures, Software Design, Object-Oriented Programming, Computational Theory

Life Science (2017-18) | Evolution, Biology, Chemistry, Genetics

EXPERIENCE

SOFTWARE ENGINEERING INTERN — Summer 2019

GOOGLE | CLOUD BUILD TECH INFRASTRUCTURE

- Optimized **Google Cloud Compute Engine** for remote build execution by migrating current API to use **Bazel** to build **hermetic Docker containers** in **Go, C++ & Python**
- Extended support for both **legacy** & new (**V2.2 + multi-OS**) Docker Image Schemas

SOFTWARE ENGINEER | OBJECT DETECTION — 2019-Present

AUTORONTO | U OF T AUTONOMOUS VEHICLE DESIGN TEAM

- Designed state-of-the-art **ML classification** models for **pedestrian detection** trained on open source datasets via **SqueezeDet** & other modern research techniques
- Worked **collaboratively** to deploy software for **SAE Autodrive Challenge** (1st in '18/'19)

MOBILE APP DEVELOPER | NLP + CHATBOT — 2019-Present

HIRIDE INC.

- Student **carpooling service that replaces ride share events** on social media and incorporates **secure** ride tracking + payment for safe, efficient, interactive travel
- Developed **ride-matching** component with interactive **chat bot & search** to **reduce 90%** of manual ride-matching coordination & extend service to a variety of demographics

RESEARCH

COMPUTER SCIENCE RESEARCH INTERN — Summer 2018

MACHINE LEARNING RESEARCH GROUP | MICHAEL HOFFMAN

- Developed **epigenetic annotation pipelines** & adapted **unsupervised ML** (**Segway** + **SciKit Learn**) techniques to **quantify and predict** key cancer-linked proteins from **20+** high-res next generation sequencing datasets, validating **2 new ChIP-seq** technologies
- Visualized generated **insights on data resolution utility** with **R** and **Seaborn**
- Results saw improved epigenetic **annotation specificity by 60%** compared to baseline

BIOMEDICAL ENGINEERING RESEARCH INTERN — 2018- 2019

IBBME/CHEM ENG. | PENNEY GILBERT + ALISON MCGUIGAN

- Created **ImageJ macros** combining **Gaussian blurring** algorithms to **automate** the detection and measurement of **> 8 K muscle fibres** in **confocal microscopy images**
- **Reduced** manual analysis time **by 75% (> 1000+ hrs), accelerating** experimentation
- Contributed microfluidic device (**TRACER**) validation figure to **publication** (under review)

PROJECTS

DOC: Digital On-Call-Healthcare Consultant — BCGxGoogle GE Week 2019

- Built a **javascript** powered front-end interfaced with **mixed-Gaussian** statistical model that mapped health data to symptom diagnosis via real time **NLP** of speech transcript
- Won **1st Place Award** out of select top 40 teams across all Canadian universities

ICLR REPRODUCIBILITY CHALLENGE | Team Co-lead — 2018

- Implemented I*nitialized Equilibrium Propagation, a* ***back-propagation-less*** **deep learning** algorithm, using **Pytorch/Numpy** along with full coverage **unittests**
- Contributed to **peer review** process leading to paper **acceptance** on **OpenReview**

SOCIALBIT — HackMIT 2018

- Real-time '**social Fitbit**' that tracks social interactions at the micro-scale and then visualizes the frequency of encounters with location details using **D3.js** & **Firebase**
- Implemented **facial recognition algorithm** with **OpenCV/dlib + YOLOv3** that detects select acquaintances in live video from a glasses-mounted **Raspberry Pi** camera