winnie xu

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SKILLS

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

FULL STACK | HTML/Bootstrap, Django, SQL, MongoDB, 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

COMPUTER SCIENCE && STATISTICS && MATH (MINOR) — 2021 — **ComSci GPA: 3.91/4.0**

CS Core | Machine Learning, 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 INFRASTRUCTURE

- Designed, tested, and released **4 new binaries + Skylark container rules** on **Google Cloud Registry,** providing **backwards compatibility** to the **rules-docker open source** repository
- Migrated **Python backend** to **Go** & incorporated **Bazel** to build **hermetic Docker containers**
- Implemented specifications for **legacy** & new **V2.2/multi-OS** Docker Image Schemas
- **10% Project (Google Serve):** Kitchener-Waterloo Art Gallery touchscreen display software

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 place in '18 & '19)

MOBILE APP DEVELOPER | NLP + CHATBOT — 2019-Present

HIRIDE INC.

- **Student carpooling startup** that replaces ride share events on social media and incorporates **secure** tracking + payment for safe, efficient travel; built with **React.js**
- Used **Dialogflow** to build interactive **chat bot** to **save 90%** of manual rider-driver coordination

RESEARCH

MACHINE LEARNING STUDENT RESEARCHER — 2019 - Present

VECTOR INSTITUTE & FOR.AI | JIMMY BA (VECTOR), SHANE GU (GOOGLE BRAIN)

- Model-based **deep reinforcement learning** involving **architecture search** and **meta-learning**
- Improving **neural network** training and data efficiency with **progressive growth** optimization

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

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**

SOCIALBIT — HackMIT 2018

- Real-time '**social Fitbit**' that tracks social interactions at the micro-scale and then visualizes the frequency of encounters with location tracking 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