Jacob Ritchie

Seeking a full-time or contract role as a software developer, researcher, or data scientist. I will be located in Toronto, Canada and am open to remote work.

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EDUCATION

Stanford University, USA
M.S. Computer Science (Expected), Ph.D. Candidate

September 2019 - May 2023

University of Toronto, CA
B.A.Sc. Engineering Science, M.Sc. Computer Science

September 2012 - June 2019\

INDUSTRY EXPERIENCE

Snap Inc., Los Angeles, USA — Research Scientist Intern

June 2022 - September 2022

Implemented a prototype augmented reality system for multi-device collaborative viewing of 3D videos in Javascript. Enabled interactive display on mobile devices by dynamically loading content at runtime.

Assisted with capture and processing of photorealistic 3D content using Snap Spectacles smart glasses and a Kinect RGB-D camera array.

Intel Corporation, San Jose, USA —Software Engineer

June 2015 - June 2016

Developed C++ software tools for modeling signal routing in experimental FPGA semiconductor devices.

Created an HTML5 application for visualization of signal routing connectivity of up to 1 million logic elements, allowing for analysis of complex connectivity problems.

Rocscience, Inc., Toronto, CA —Research Intern

June 2014 - August 2014

Developed C++ software for computer-aided mining engineering design. Implemented several new solver algorithms for the RocSupport tunnel design package. Applied knowledge of finite element analysis and computational rock mechanics.

SCIENTIFIC PUBLICATIONS

I have a strong track record of leading and contributing to scientific research projects, which has resulted in publications in high impact venues like ACM CHI, IEEE VIS, ACM KDD, and Nature Scientific Data. For a complete list see **http://hci.st/jritchie-google-scholar**

LANGUAGES AND TOOLS

Python (Pytorch, Tensorflow, Pandas, HuggingFace transformers, OpenCV, scikit.learn, Flask, Django)

Javascript (Node, React, Typescript)

C++, C# (Unity), C

Java, Android

R (Tidyverse)

Google Cloud Platform

Amazon AWS

Git, Jenkins CI

UNIX, Bash, vi/vim

SKILLS

Applied Machine Learning

Full-stack Web Development

Cross-platform Mobile Development

Data Visualization

Large-Scale Online Data Collection

Data Analysis

Human Subjects Research

UI/UX Design

Prompt Engineering and LLM Chaining

RESEARCH EXPERIENCE

Stanford Human-Computer Interaction Group, Stanford, USA — Research Assistant

September 2019 - May 2023

Developed novel augmented reality interfaces, including custom smart glasses peripherals. Developed context-aware speech agents for audio augmented reality using Amazon Alexa and Google DialogFlow.

Collaborated with Facebook AI Research to develop demo applications for their PlayTorch framework. Finetuned object detection and image classification models in Pytorch. Deployed and tested interactive machine learning-based applications on mobile devices using React, React Native, and native Android code.

Implemented back-end systems with Google Cloud, AWS Lambda and EC2 to support large user studies.

University of Toronto Dynamic Graphics Project, Toronto, CA —Research Assistant

September 2017 - June 2019

Developed animated data visualizations in D3. Ran large-scale online experiments in crowdsourcing and human perception on Amazon Mechanical Turk and conducted rigorous, pre-registered statistical analysis.

Created Unity prototypes for Oculus Rift head-mounted displays to evaluate novel virtual reality interaction techniques. Gained experience with hands-on user testing and human-centered design.

CAMH Computational Neurobiology Lab, Toronto, CA — Research Assistant

September 2016 - August 2017

Performed the first genome-wide transcriptomic characterization of T1-w/T2-w MRI contrast. Learned computational and statistical techniques for data-driven neuroscience.

Used transfer learning with OpenAI's mLSTM sentiment model to detect suicidal intent from forum posts for the ACL CLPSysch Shared Task. Employed meta-learning using TPOT for model architecture search.

EPFL Applied Computing and Mechanics Lab, Switzerland — Summer Research Intern

June 2016 - August 2016

Applied machine learning to improve accuracy of nonlinear structural modeling for a full-scale deployable tensegrity bridge.

Wrote MATLAB code employing pathfinding algorithms to control structural actuation. Used K-NN clustering to identify structural damage.

Intelligent Assistive Technology and Systems Lab, Toronto, CA — Research Student

May 2012 - August 2012

Carried out a pilot study for an accelerometer-based smart blanket breathing rate measurement device and performed data analysis and signal processing in MATLAB.

Created a cross-platform HTML5 mobile application for crowdsourced collection of accessibility data, targeted at senior citizens, in collaboration with a team of occupational therapists.

REFERENCES

James Landay, Professor of Computer Science, Stanford University - **landay@stanford.edu**

Fanny Chevalier, Assistant Professor of Computer Science, University of Toronto - **fanny@cs.toronto.edu**

Additional references available upon request.