Simon Ho, PhD

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SUMMARY

Over 10 years of experience in AI and related methods, including statistics, deep learning, and data modelling. Expertise in planning and leading data-driven research projects, from developing cloud infrastructure and analytics pipelines, to clearly communicating insights to both technical and non-technical stakeholders.

SKILLS

Technical

Cloud (AWS), IaC (Terraform), data analysis, data cleaning, data visualization, data pipelines, statistics, A/B testing, experimental design, hypothesis testing

Machine learning / deep learning

Supervised and unsupervised learning (classification, regression, clustering), computer vision (CNNs), natural language processing (NLP), dimensionality reduction

Programming

Python, Go, JavaScript/TypeScript, Docker, databases (SQL, DynamoDB), version control (Git)

EXPERIENCE

Sprung Studios - Vancouver, BC

Machine Learning Engineer *April 2024 – Present*

- Spearheaded technical teams, overseeing the architecture and development of internal tools to enhance efficiency across various departments and projects.
- Designed and implemented AWS infrastructure for deploying internal tools and AI models, utilizing Infrastructure as Code (IaC) tools such as Terraform.
- Integrated APIs for seamless interaction with Large Language Models (LLMs), including OpenAI.
- Deployed GraphQL APIs for access to DynamoDB databases from internal tools.
- Frontend development using Vue and TypeScript.
- Developed LLM / NLP tools to:
    - Perform quantitative data analysis using natural language queries.
    - Query company documents using RAG-based techniques.
    - Automatically cluster and analyze qualitative survey responses.
    - Extract pertinent information from videos and articles for later analysis.

User Researcher *April 2021 – April 2024*

- Researched and pioneered new quantitative analytics services.
- Led stakeholder meetings to scope project requirements, develop research plans, and present reports.
- Delivered informative mini-lectures on the integration of AI techniques into user research.

Attentional Neuroscience Lab - Vancouver, BC

Research Scientist *September 2013 – November 2020*

- Extensive training in statistical modelling, with a focus on inferential statistics and hypothesis testing.
- Constructed data pipelines, optimizing data collection, transformation/aggregation, and analysis.
- Created Python dashboards to aid cleaning of structured data. Reduced data cleaning time by 90%.
- Programmed open-source data collection platform to collect experiment data across 9 projects, resulting in 50% faster project completion. Link: GitHub/cognitive-battery
- Created open-source Python package to analyze time-series data. Link: GitHub/sensormotion
- Developed algorithms to extract model features from raw multidimensional sensor data.
- Published results in 7 peer-reviewed journals and gave presentations at 11 research conferences.

Microsoft - Vancouver, BC

Research Scientist (visiting) *December 2019 – April 2020*

- Designed and implemented algorithms for extracting novel spatial metrics from HoloLens 2 sensors.
- Constructed data pipeline to collect, clean, and analyze hardware sensor data.
- Performed exploratory analysis to evaluate the usability of new metrics in different production contexts.
- Presented insights regarding the potential pitfalls of implementing the spatial metrics in production.

UBC Centre for Teaching, Learning and Technology - Vancouver, BC

Data Analyst *November 2016 – July 2019*

- Employed statistics and experiments to help instructors evaluate new teaching methods.
- Analyzed A/B test involving 6000 online students to identify factors that affected engagement.
- Conducted experiments to determine whether the benefits of a novel visualization technique outweighed the cost. Results saved over $2000 in future production cost.
- Used statistical models to streamline a multi-institution survey. Reduced total survey length by 28%.

TECHNICAL PROJECTS

Webcam eye tracker

- Developed a webcam-based eye tracker to predict real-time eye gaze location.
- Programmed data collection pipeline to collect and transform 50k webcam images.
- Built deep learning computer vision architecture to model webcam images.
- Final AI model rivals more expensive infrared-based techniques.

Smartphone walking kinematics

- Technical lead on cross-functional, collaborative research project with the University of Bristol.
- Designed algorithms to compute walking metrics from 60 million data points.
- Method was faster and cheaper than traditional techniques, saving over $7000 in equipment cost.

Game character planner

- Developed web character planner, used by 250,000 players, for a mobile game using JavaScript/React.
- Incorporated GitHub CI/CD pipeline for quick iteration of new site features.

PUBLICATIONS*

Peer-reviewed journal articles

Ho, S., Liu, P., Palombo, D. J., Handy, T. C., & Krebs, C. (2021). The role of spatial ability in mixed reality learning with the HoloLens

Blog posts

Overwatch data visualization

- Exploratory data analysis and visualization of performance data from an online PC game.

(*) Complete list of projects and publications available on my website: simonho.ca/projects

EDUCATION

University of British Columbia

PhD in Cognitive Science and Statistics 2015 – 2020

CERTIFICATIONS

deeplearning.ai

Neural Networks and Deep Learning 2019
Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization 2019
Structuring Machine Learning Projects 2019