XIAORUI HUANG

Solve all that fascinate me

Availability: From July 2023

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xiaorui-richard-huang

EDUCATION

University of Toronto

Candidate for B.Sc. in Computer Science

a 2019 – Now (Exp 2024)

Toronto, ON

Relevant Courses

- CSC413 Deep Learning 96% Pytorch, Language Models, CNN, Interpretability, Optimization, RNN & Attetion, Transformers, GAN, VAE, GNN, Q-Learning. Conducted original research on optimization strategy as final course project. ♠ RolandGao/pycls
- CSC317 Computer Graphics 97% Ray Tracing, Mass Spring Systems, Bounding Volume Hierarchy, Meshes processing, Forward & Inverse Kinematics, Shader Pipeline with OpenGL Shading Language. Implemented graphics algorithms using C++ assisted by Eigen and libigl libraries.

Other Courses

Linear Algebra, Statistic and Probability, Multivariate Calculus, Algorithm Design and Complexity

EXPERIENCE

Machine Learning Engineer

Qualcomm

May 2023 − August 2023 Markham, ON

- Machine Learning Engineer working on Neural Architecture Search (NAS) and as apart of the edge AI (eAI) R&D team.
- Designed and implemented a NAS framework for optimizing any generic model, against any generic hardware m.
- Employed PyTorch and torch.fx extensively to design and optimize various machine learning models.
- Facilitated weekly lab meetings, aligning the team on research directions, findings, and breakthroughs.
- Acquired a robust understanding of model quantization, ensuring optimized model deployment on edge devices.
- Collaborated closely with interdisciplinary teams, ensuring alignment of machine learning initiatives with overarching company goals.
- · Assisted in the mentoring and onboarding of junior engineers, fostering a culture of continuous learning and knowledge sharing.
- Demonstrated proactive problem-solving by identifying potential areas of improvement in the NAS workflow and proposing actionable solutions.
- Kept abreast of the latest developments in the machine learning space, ensuring Qualcomm remains at the forefront of technological advancements.
- Presented research findings and model improvements to senior management, influencing the strategic direction of machine learning projects.

PROJECTS

Woodoku Learn

Reinforced Learning Model

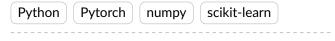
- Jul 2022 C EdwardHaoranLee/WoodokuLearn
- Designed and implemented the mobile game Woodoku in the CLI using python.
- Woodoku could be played by human users and by a gameplaying algorithm through game environment APIs.
- Actively implementing the game-playing algorithm using Q-Learning, a Reinforce Learning algorithm, with Pytorch to beat the Woodoku leader board.
- Practiced agile software development, CI testing and static type checking, achieved through GitHub Action, GitHub Pull Request and code review process, pytest, mypy.

Pytorch python mypy Agile

Eedimator

Online course performance predictor

- 苗 Nov 2021 🞧 Xiaorui-Huang/Eedimator
- · A predictor of students' ability to answer questions, based on previous answers and other students' answers allowing online education platforms to provide tailored assistance.
- Used Machine Learning algorithms such as Neural Networks, Matrix Factorization, Item Response Theory, and K-NN to create an ensembled prediction model.
- Based on NeurIPS 2020 Education Challenge and uses realworld data collected on **(** eedi.com



Boomba — Run-away Alarm

New Hacks 2020 — Hackathon 2nd Place Overall

- March 2020 Boomba on devpost.com
- A moving alarm secured with a puzzle to snooze, built with Arduino and Raspberry Pi.
- The user is required to chase down the alarm, solve puzzles, then give the correct voice commands to snooze the alarm.
- Configured Google Speech-to-Text API, developed voice command feature in python and implemented motor and puzzle logic in C++.

Python Arduino Raspberry Pi Google Cloud API

SKILLS

Programming Languages

Python C/C++ C# Java **TypeScript** HTML&CSS PowerShell SQL Bash Scripts

Other Frameworks & Development Environments

Vue.is **Pytorch** React Django MongoDB tailwindcss Vim **VSCode** WSL Express.js

Idiomatic in English and in Mandarin Chinese

RPA Backend Developer Intern

IBM

- Markham, ON
- Backend software development working on IBM Robotics Process Automation (RPA).
- Increased IBM RPA's WAL programming language usability by developing reflection feature similar to Java and C#.
- Reduced 10% customer issues and product defects per release through collaboration with multi-disciplined teams.
- Conducted agile development process, demonstrated independent and teamwork ability through both remote and onsite work environment.
- Presented and communicated novel solutions to RPA senior architect and product teams.

C#

Visual Studio

Agile

RESEARCH

Linearly Explored Learning Rate Scheduler

- We proposed the Linearly Explored Learning Rate Scheduler (LES) to help automate and optimize the resource and time consuming task of learning rate tuning.
- LES achieves a final error rate of 8% compared to other commonly used optimizer and schedulers on pycls code base without the need for learning rate tuning.
- Implemented and tested custom **SGD** with momentum algorithm for LES, allowing the team to explore different backpropagation approaches when developing LES.
- Implemented visualization tools and authored parts of experiment and discussion section.