CHARLES HETTERICH

CHETTERICH.COM

Fullstack software engineer specialized in data pipelines, data science & artificial intelligence.

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SKILLS

Python	Rust	R	Java
Golang	Typescript	Javascript	SQL
C++	C#	Swift	CQL
Pytorch	Docker	AWS	Cassandra
CI/CD	Product Design	Figma	Collaboration
Entrepreneurship	Leadership	Management	Communication

EXPERIENCE

May 2024 – July 2024
AI Research Contractor, *OCAI LTD.*

- Acquired and refined large-scale dataset for training AI models using a custom data ingestion pipeline leveraging Python, FFmpeg, and Pytorch
- Conducted comprehensive research on modern generative video & talking-head model techniques, reporting key insights of technical ideas to non-technical management

January 2024 – May 2024
Learning Facilitator, *UT CS Department*

- Led a pod of 40 'Ethics in AI' students, facilitating and grading discussion
- Encouraged critical thinking and ethical reasoning among students through curated feedback, providing broad technical and ethical context, enhancing students' understanding of ethics in AI

March 2022 – September 2022
Research Assistant, *Dell Medical*

- Delivered multiple interactive computer activities to be used in trials with participants after a guided psychedelic experience, collecting performance data
- Revamped development process for quick deployment/accessibility across devices

March 2021 – January 2022
Software Engineer, *E Source*

- Led development of product delivering comprehensive storm insights to clients on an hourly basis, with a live data pipeline used to collect, analyze, clean, and transform raw weather data
- Improving query speeds of existing data pipelines by an order of magnitude with batched queries
- Enabled rapid development of python packages by formalizing our python CI/CD pipeline with Jenkins and writing comprehensive development documentation including best practices
- Orchestrate multiple microservices across docker containers and various AWS technologies
- Formalized Figma UI/UX process and unified designs from recently acquired startup

September 2019 – January 2021
Founder & App Developer, *Table Date*

- Entrepreneurial dating app venture focused on human connection through text-based speed dating, positioned as a competitor to swiping based app such as Tinder, Bumble, and Hinge
- Designed UI/UX and built React Native app with backend hosted across AWS services such as EC2 and S3
- Formed short/long term business plans and delivered product presentations at pitching competitions to VC's

October 2018 – June 2019
Software Engineer Intern, *MBMS*

- Made application more robust with end-to-end automated UI tests written in C# and Javascript
- Added features for clients to view/edit data by writing SQL queries fetched on Javascript frontend
- Enhanced codebase readability by writing thorough technical documentation

September 2017 – December 2017
Teaching Assistant, *UB CS Department*

- Strengthened student understanding of C++ and other programming concepts taught in 'Data Structures and Algorithms' in weekly recitations
- Graded exams and assignments with feedback for approximately 250 students
- Answered a variety of students questions during weekly office hours

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PROJECTS

December 2023 – January 2024
SenNet + HOA - Hacking the Human Vasculature in 3D

- Built and trained novel neural network architectures for segmentation of 3D kidney blood vessels scans
- Developed comprehensive analysis of medical training data with custom visualization and numerical toolage

May 2023 – September 2023
Point Cloud Network: An OOM Improvement in Linear Layer Parameter Count

- Wrote research paper that discusses an alternative architecture to MLP linear layers, and presents experimental results (arXiv:2309.12996)
- Trained variant of AlexNet with 99.5% less linear parameters than the original
- Developed experimental CUDA kernels to be integrated within PyTorch Autograd
- Contributed open-source code and detailed implementation guidelines for Point Cloud Network architecture

August 2023 – December 2023
3D Brain Extraction Tool Using 3D Morphological Geodesic Active Contours

- Collaborated with medical peer to develop toolage for brain segmentation on CT scans with SOTA performance and speed
- Refactored processing steps and core algorithm to leverage GPU acceleration to achieve over 20x speed up

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EDUCATION

January 2022 - December 2023
Masters of Science in Data Science, *University of Texas at Austin*

January 2017 - May 2020
Bachelors of Science in Computer Science, *University at Buffalo*