Charles Hetterich

chetterich.com

SUMMARY

Multidisciplinary software Engineer specialized in building data pipelines, data science & artificial intelligence. Passionate about taking ownership over my work and designing robust novel solutions to difficult problems.

HOBBIES

Bass, Oil Painting, Swimming, Photography, Traveling, Hiking, Digital Art, Sewing

COURSE WORK

Deep Learning | Reinforcement Learning | Data Structures & Algos | Probability & Inference | Data Visualization | Optimizations | Adv. Models | NLP | Comp. Theory | Software Engineering

EDUCATION

MASTERS OF SCIENCE
DATA SCIENCE
University of Texas at Austin
2022-2023

BACHELORS OF SCIENCE
COMPUTER SCIENCE
University at Buffalo
2017-2020

SKILLS

Python | R | Golang | Swift | TypeScript | Java | SQL/CQL | JavaScript | C++ | C# | PyTorch/TensorFlow | Docker | Cassandra | React/React Native | Kubernetes | Product Design | Figma | AWS

WORK EXPERIENCE

2024
Remote

OCAI LTD | *AI/ML Research Contractor* — Python | PyTorch | RunPods

- Conducted comprehensive research on modern generative video & talking head model techniques, synthesizing and reporting key insights
- Built large-scale data ingestion pipelines to download, clip, crop, and compress samples across several talking head datasets

2024
Austin

UT CS Department | *Learning Facilitator* — Ethics

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

2022
Austin

DELL MEDICAL | *Software Contractor* — Python | PsychoPy

- 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

2021 - 2022
Buffalo

E SOURCE | *Software Engineer* — Python | Java | AWS | Cassandra | Docker

- Lead development of Storm Insight product for critical real-time storm forecasting
- Refactored data pipeline, improving query speed by an order of magnitude
- Formalized guidelines and CI/CD pipelines to rapidly create, develop, test, and deploy python packages/services, enabling faster/cleaner development from team
- Developed and orchestrate multiple microservices across AWS technologies
- Formalized Figma UI/UX process and unified designs from recently acquired startup

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2019-2021
Buffalo

Table Date | *Founder & App Developer* React Native AWS Public Speaking

- Designed and built React Native app with backend hosted on EC2 and S3 storage
- Formed short/long term business plans and delivered product presentations at pitching competitions to local VC's

2019-2021
Buffalo

Freelance | *Project Manager & Developer* React Native AWS Managerment

- Implemented full-stack mobile applications with thorough API testing suites
- Reviewed and selected among several potential teams to develop client's product
- Maintained AWS environments (EC2 Servers, RDS Databases, and S3 Cloud Storage) and codebases

2017-2018
Buffalo

MBMS | *Software Engineer Intern* C# SQL Javascript

- Created a production ready application used with other MBMS products
- Conducted unit, integrated, customer & regression testing
- Wrote & maintained technical documentation

2017
Buffalo

UB CS Department | *Teaching Assistant* C++ Teaching

- 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

PROJECTS

2024

SenNet + HOA - Hacking the Human Vasculature in 3D

- Trained neural networks for segmentation of 3D kidney blood vessels scans
- Architected novel variants of the UNET architecture & optimized inference pipeline

2023

Point Cloud Network: An OOM Improvement in Linear Layer Parameter Count

- Wrote 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 to use the Point Cloud Network architecture

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

2018-2019

UB Nanosatellite Laboratory

- Responsible for contributing to the design of UBNL's GLADOS flight software system
- Developed & tested software for various parts of the GLADOS flight software system

2016

Pencil — The Game

- Created iOS game written in Objective-C, receiving a 5-star rating in the AppStore
- Recipient of Apple WWDC student scholarship to attend San Francisco conference

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