

# Charles Hetterich

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*Software Engineer now focused on AI-Research. I am passionate to leverage deep learning to push the cutting edge forward, and am deeply committed to its ethical and equitable development.*

**Languages:** Python, R, C++, SQL/CQL, TypeScript, JavaScript, Java, Golang, C#, Swift

**Frameworks:** PyTorch, Tensorflow, CUDA, Git, Docker, LaTeX, Cassandra, React/React Native

**Key Skills:** Deep Learning, Reinforcement Learning, Natural Language Processing, Machine Vision, Data Management, Code organization, Entrepreneurship, Communication, Leadership

## Education

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**University of Texas at Austin** | *Masters of Science in Data Science*

2022 - 2023\*

**University at Buffalo** | *Bachelors of Science in Computer Science*

2017 - 2020

## Research Projects

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**Point Cloud Network: An Order of Magnitude Improvement in Linear Layer Parameter Count**

*Submitted to Neurocomputing journal September 2023 [arXiv:2309.12996] | Python, PyTorch, CUDA, LaTeX*

- Conducted extensive model training using cloud RTX 4090 GPUs and PyTorch on *CIFAR-10* and *CIFAR-100* datasets
- Contributed open-source code and detailed implementation guidelines for the Point Cloud Network architecture
- Developed experimental CUDA kernels to be integrated within PyTorch's Autograd feature

**\*(WIP) Robust 3D Brain Extraction Tool (BET) Using 3-Dimensional Morphological Geodesic Active Contours**

*To be submitted to Society of Imaging Informatics in Medicine (SIIM) 2024 conference | Python, Tensorflow, Docker*

- Collaborate with medical peer to develop SOTA toolage for processing/analyzing fMRI brain scans

## Work Experience

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**E Source** | Software Engineer

*Buffalo, NY | 2021 - 2022 | Python, Java, AWS, Docker, Cassandra*

- Manage complex data pipelines and design effective Cassandra query patterns to support Data Science analysis
- Create guidelines and CI/CD pipelines to rapidly create, develop, test, and deploy packages/services
- Develop and orchestrate multiple microservices across AWS technologies

**Dell Medical** | Research Software Developer

*Austin, TX | 2022 | Python PsychoPy*

- Delivered multiple PsychoPy tasks to be used in trials with participants after a guided psychedelic experience
- Revamped development process for quick deployment/accessibility across devices

**Table Date** | Founder & App Developer

*Buffalo, NY | 2019-2021 | TypeScript, React, AWS*

- Designed and built React Native app to interact with backend API, thorough testing suite for scalable API server
- Formed short/long term business plans and delivered product presentations at pitching competitions to local VC's

**Freelance** | Project Manager & Developer

*Remote | 2019-2021 | Swift, JavaScript, AWS*

- Configured AWS environments (EC2 Servers, RDS Databases, and S3 Cloud Storage) and manage codebase
- Reviewed and selected among several potential teams to develop client's product