Wenhao He

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Skills

Languages: Python, SQL, JavaScript, HTML, CSS, C/C++, LaTeX
Libraries: Numpy, PyTorch, Pandas, Sci-kit Learn, Scipy, PySpark, OpenCV, Matplotlib
Frameworks: ROS, Hadoop, PyTorch, Tensor-Flow, React, Flask, Pygame, NodeJS
Developer Tools: Jupyter, PyCharm, Visual Studio Code, IntelliJ IDEA, GitHub, Magicavoxel, Git, Docker
Cloud/Databases: AWS, MongoDB, MySQL
OS: Windows, Linux, MacOS

Education

•**University at Buffalo, The State University of New York** *Aug 2022 - Feb 2024*
Master of Science in Engineering Science focus on Artificial Intelligence
Coursework: Machine Learning, Deep Learning, Computer Vision, Reinforcement Learning

•**University at Buffalo, The State University of New York** *Aug 2018 - May 2022*
Bachelor of Science in Computer Science
Coursework: Data Structures, Computer Architecture, Computer Networking, Web Application

Research

•**Audio Cloning: Librosa, PyTorch, Matplotlib, Python** *Aug 2023 - Feb 2024*
Developing an AI model to replicate a judge's voice from the Brown v. Board case

- supervised by **Dr. David S. Doermann**
- Collaborated with a team of 4 and developed audio cloning model
- Replicate judge's voice with **90% accuracy** for reading court decisions, enhancing the authenticity of digital records
- Bringing court documents to life and **preserving authentic historical sounds** through modern techniques

Projects

•**Monocular Depth Estimation in Single Image: PyTorch, OpenCV, Matplotlib, Python** *Feb 2023 - May 2023*
Leveraged Deep Learning for 3D distance analysis from 2D images

- Collaborated in a team of 4, leveraging the **EfficientNet-B5 network** for robust feature extraction
- Trained on **NYU-Depth V2 dataset** with **1,449 labeled and 400k+ unlabeled pairs**, improving model depth
- Measured distance between photographer and object in 3D using an existing 2D image

•**Multiple-agent Playing GoMoku Board Game: PyTorch, Matplotlib, Python** *Mar 2023 - May 2023*
A Reinforcement Learning project trains agents to play GoMoku board game

- Crafted a Monte Carlo Tree Search(MCTS) algorithm as own model, with a **100% win rate** over pure MCTS
- Trained agents using a custom MCTS model and AlphaZero, achieving competitive self-play outcomes
- Reduced training time by **76.67%** compared to AlphaZero across 100 episodes

•**Detection on Fruit/Vegetables in 2D Images: PyTorch, OpenCV, Matplotlib, Python** *Mar 2023 - May 2023*
Conducted a Computer Vision project for detecting fruit and vegetables in 2D images

- Achieved <**0.05 training loss** and >**98% test accuracy** identifying **100+ fruit/vegetable classes**
- Crafted image-based fruit/vegetable counting algorithm, >**95% accurate** across scale variations
- Enhanced classification precision by **15%** with advanced edge detection in feature extraction

•**Class Chat Application: Python, JavaScript, HTML/CSS, MySQL, Docker** *Sep 2021 - Dec 2021*
A Web App project for class-wide social network chat app

- Developed a private messaging system for **40+ users** with instant delivery in a class chat app
- Fashioned UI for users to create a profile customization, **with 80% user adoption rate**