SHUO HAN

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EDUCATION

Cornell Tech, New York, NY   May 2021 (Expected)
Master of Engineering in Computer Science | GPA: 4.0
Scholarship: *Noel Croucher Graduate Fellowship*
Relevant Coursework: Machine Learning Engineering, Data Science in the Wild, Optimization Methods, Algorithms for Applications

Cornell University, Ithaca, NY   Dec 2018
Master of Engineering in Environmental Engineering | GPA: 3.95
Relevant Coursework: Machine Learning, OOP and Data Structures, Time Series Data Analysis, Engineering Management Methods

Tongji University, Shanghai, China   Jun 2017
Bachelor of Engineering in Environmental Engineering | GPA: 3.76
Scholarship: *Tongji Scholarship of Excellence, three times (2014, 2015, 2016)*

TECHNICAL SKILLS

Programming Languages:	Python, Java, R, C#
Frameworks:	PyTorch, TensorFlow, Keras, NumPy, OpenCV, Spark, Numba, CUDA
Other Tools:	LaTeX, Git, Bash, OR-Tools

RESEARCH EXPERIENCE

Cornell Autonomous Driving Group, Research Assistant, Ithaca, NY   Mar 2019 - Nov 2019
Advisor: Prof. Kilian Weinberger and Prof. Wei-Lun Chao

- Modified state-of-the-art stereo depth estimation models (e.g., PSMNet, GANet) to boost performance on 3D object detection on KITTI Benchmark.
- Designed a multi-camera stereo-matching depth estimation approach on CARLA virtual dataset. Reduced the median depth error by 5% compared to the traditional stereo approach.
- Assisted with data processing and model evaluation in papers accepted by IROS2019. Implemented a crowdsourcing annotation tool for instance and semantic segmentation.

PROJECTS

Spotify Recommendation System (Python, Spotify API)   Fall 2018
A Spotify playlist recommendation system

- Implemented user-user collaborative filtering with locality sensitive hashing on the Spotify Million Playlist Dataset. Used Spotify API to extract audio features from tracks and implemented content-based filtering. The combined prediction system can reach a R-precision of 0.13 on the test dataset.
- Created a GUI for users to input playlist or adjust preferred audio features to get track recommendations.

MiniTorch (Python, CUDA)   Fall 2020
A Python re-implementation of PyTorch

- Implemented neural network modules, auto-differentiation, tensor class and GPU computing. The MiniTorch package follows the API of PyTorch. Users can train feedforward and convolutional neural networks on CPU and GPU backends.

Floc App for Sustainable Water Supply, (Python, OpenCV, MySQL)   Spring 2018
An open-source app to detect floc particles in the water after flocculation.

- Directed a team of four in the AguaClara Program. Created an object detection app using Python that can detect, count, and measure the floc particles in the drinking water treatment. The app is able to assess the efficiency of flocculation in real time.
- Implemented Gaussian thresholding, feature detections, and other image processing techniques with OpenCV and Scikit-Image.

EXTRACURRICULAR ACTIVITIES

AguaClara Cornell, **Grader**, Ithaca, NY   Fall 2018
- Graded and commented code submissions in the AguaClara Program. Advised teams in the Apps and Algorithms Division.

Basketball Team of Tongji University, Core member, Shanghai   Sept 2014 - Jan 2016
- Participated in the 18th CUBA (Chinese University Basketball Association) tournament.

CERTIFICATION

Coursera: Deep Learning Specialization, Algorithms Specialization, Reinforcement Learning Specialization