

Huili Huang

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Education

Georgia Institute of Technology – Ph.D. in Computational Science and Engineering, GPA: 4.0/4.0 Aug. 2021– Present

- Graduate Teaching Assistant of CSE6242 Data and Visual Analytics (Spring2022, Fall2022(Head TA), Spring2023)
- Graduate Teaching Assistant of CS7641/CS4641 Machine Learning (Fall 2021, Summer 2023(Head TA))

Georgia Institute of Technology - M.S. in Computer Science, GPA: 4.0/4.0 Aug. 2019 – May. 2021

- Graduate Teaching Assistant of Machine Learning (Spring 2020, Fall2020, Spring2021)
- Related Courses: Computer Vision, Machine Learning, Deep Learning, Data Visualization and Analysis, ML for Trading, Game AI

University of Electronic Science and Technology of China– B.S. in Software Engineering, GPA: 3.74/4.0 Sep. 2015 – Jul. 2019

Work & Research Experiments

Localizing Damage in Social Media Images May. 2023 – Present

Graduate Researcher

- Proposed an innovative structure for evaluating disaster damage in social media images with limited data. Achieved an improvement of 5.63% over supervised learning methods using ResNet50.
- Implemented the SimCLR model to tackle the cold start problem in identifying and evaluating disaster damage zones.
- Introduced an automated workflow, "Auto Segment (AS)", specifically tailored for extracting damage information related to earthquakes. This approach mitigated the cold start issue without necessitating parameter tuning.

Disaster Damage Analysis Using Multi-Resource Data May. 2022 – Jul. 2023

Graduate Researcher

- Constructed and validated a multi-resource dataset to enhance the understanding and prediction of disaster damages.
- Demonstrate the Nighttime Light (NTL) change ratio holds a positive correlation with the extent of damage caused by hurricanes.

CNN parameters optimization using different Image transformations Jan. 2020 – Aug. 2021

Graduate Researcher

- Implemented different transformations such as rescale, color distortion, crop to optimize self-supervised learning methods like RotNet with **Pytorch**.
- Proposed and implemented a multi-scale training method **ScaleNet**. The new ConvNet structure superseded the RotNet in the limited CIFAR-10 (+7.03%) and ImageNet (+6.49%) dataset.
- Proved that ScaleNet improved the cutting-edge models such as SimCLR by learning effective features for classification tasks.
- Generated first-layer filter visualization and feature map visualization for different architectures such as AlexNet, ResNet50 and NIN, indicating that the ScaleNet method can catch more edge filters in various directions.

Video-based Early Fire-Detection System Feb. 2019 – Jun. 2019

Research Intern

- Extracted basic features such as flame contour and flame angle from dataset using dynamic detection and image clustering.
- Developed an early fire detection system based on the detection of the flame using support-vector machines (SVM) and achieved accuracy of 93% (in C++).
- Combined the detection method with YOLOv3 and achieved accuracy of 99% (in C++).

Pseudo-Random Number Generator (PRNG) Based on Logistic Chaotic May. 2018 – Sep. 2018

Undergraduate Researcher

- Proposed an improved algorithm of the one-dimensional Logistic chaotic PRNG based on topological conjugation (in Python).
- Demonstrated that the algorithm improved the uniformity of the traditional Logistic chaotic PRNG by the qualitative analysis and quantitative calculation.

Publication

ScaleNet: An Unsupervised Representation Learning Method for Limited Information (GCPR2021)

An Improved Pseudo-Random Number Generator Based on the Logistic Chaotic vocabulary, 2018 International Conference on Vision, Image and Signal Processing (ICVISIP 2018)

Projects

Deep Reinforcement Learning for Tunable Agents

Jan. 2020 – May. 2020

- Combined the tabular Q-learning with Deep Neural Network (DNN) to realize a two-player zero-sum games with **Pytorch**
- Applied the model on a high-dimensional state space Pursue-evasion game (PEG) based on OpenAI Gym.

Highway Road Video Vehicle Detection

Aug. 2019 – Sep. 2019

- Implemented a Highway Road Video Vehicle Detection based on SVM and Histogram of Oriented Gradients (HOG) (in Python) with a 98%accuracy of SVM+HOG.
- Implemented a Highway Road Video Vehicle Detection based on YOLOv3, which is 22% faster than SVM +HOG approach

PTE: Predictive text embedding through large-scale heterogeneous text networks.

Aug. 2019 – Sep. 2019

- Reproduced PTE with Linear Regression, CNN and SVM using MR, DBLP, 20NG dataset (in Python). The data had the word-word embedding information (PTE method) outperformed the original classification tasks.

Skills Add languages

Python, Pytorch, Keras, C/ C++, Java, Latex/ Markdown, UML, SQL, MATLAB, HTML, COBOL, JCL

Awards

Excellent graduate of UESTC	2019
First-rank study scholarship	2018
Outstanding study scholarship	2017
China National Scholarship for College Student	2016