Huili Huang

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Education

Georgia Institute of Technology – Ph.D. in Computational Science and Engineering Aug. 2021– Present

- Graduate Teaching Assistant of Machine Learning (Fall 2021)

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

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 The new ConvNet structure superseded the RotNet in the limited CIFAR-10 (+7.03%) and ImageNet (+6.49%) dataset.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 (ICVISP 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