Senqiao Yang

Check update Curriculum Vitae [**here**]

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Education

Harbin Institute of Technology Shenzhen, CHN

Bachelor of Engineering in Data Science and Big Data (Mathematics) *Sep. 2020 – Jun. 2024*

- CGPA: 88.439/100
- Kaggle *Competition Expert*
- ECCV2022 Workshop Competition top3%
- I got First-class scholarship of Harbin Institute of Technology (Top level) **every year**.
- I was selected as the outstanding student of Harbin Institute of Technology **every year**.

Research Interests

My research interests mainly lie in AI and deep learning.

My work span Domain Adaptation, Interpretable Deep Learning, Computer Vision, Trajectory trackings, Generative model, etc.

My academic goal is to do solid and interpretable AI research.

Experience

Contrastive Learning and Domain Adaptation July. 2022 – Oct. 2022

Research Intern CAIRI Lab

Supervisor: Chair Prof. Stan.Z.Li *Google Scholoar citations 5 millons+*

- We propose a method named Noise-resistant soft contrastive learning to solve the view-noise problem in data argumentation for contrastive learning.
- We propose a new classifer which is started from common sense to solve the label noise problem of universal domain adaptation.
- We achieve a new state-of-the-art in the most challenging universal domain adaptation settings
- I was responsible for proposing and implementing the second invention in this article. Also, I deduced and proved the formulas and theorems in the Appendix.

Neuroevolution in Regularized Neural Networks Jan. 2022 – Oct. 2022

Undergraduate Resarch Assistant Harbin Institute of Technology

Supervisor: Prof. Ho-kin Tang

- We propose a new optimization algorithm by combining the backpropagation with the evolution algorithm.
- We conducted many experiments on MNIST, CIFAR, and ImageNet to demonstrate that our new algorithm can improve classifiers' accuracy of all benchmark models trained using SGD or ADAM.
- I was responsible for proposing and implementing the ideas in this article. I was also responsible for writing the article.

Time Series and Complex Networks in Pattern Recognition July. 2021 – Apr. 2022

Undergraduate Resarch Student Harbin Institute of Technology

Supervisor: Prof. Yi.Zhao

- We propose a strategy for measuring the random error of low-cost inertial sensors by transforming the time series into complex networks
- We demonstrate the value of complex network topological features in motion state recognition and time series analysis by comparing the gesture recognition accuracy of various machine learning and deep learning models.
- I was responsible for proposing and implementing the ideas in this article, as well as writing the article.

Universal Approximation and Explicit Training Strategy Nov. 2020 – June. 2021
Undergraduate Resarch Student Harbin Institute of Technology
Supervisor: Prof. Yi.Zhao

- We constructed a CNN structure with universal approximation, which is called UniverApproCNN. It is ensured that the approximation error of such CNN is bounded by an explicit approximation upper bound that relies on the hyperparameters of this model.
- We provided an explict training strategy, and applied it into inertial guidance. We used the curve similarity index defined by Fréchet distance to prove that the experimental results are highly consistent with the functional relationship given by the theory.
- I was responsible for all coding, part of article writing, and the oral presentation at the conference.

Publications & Preprints

* indicates equal contribution.

5. **Senqiao Yang**, RunHua Jiang, HaoYang Li, Wei Chen, Keren Li, Ho-Kin Tang and Sim Kuan Goh. "Impacts of Darwinian Evolution on Deep Neural Networks." *Arxiv* [PDF]

4. Zelin Zang, Yongjie Xu, Linyan Lu, Yulan Geng, **Senqiao Yang** and Stan Z. Li. "UDRN: Unified Dimensional Reduction Neural Network for Feature Selection and Feature Projection." *proceeding in Neural Networks Minor revision* [PDF]

3. Zelin Zang*, Lei Shang*, **Senqiao Yang***, Baigui Sun, Xuansong Xie and Stan.Z. Li. "Boosting Novel Category Discovery Over Domains with Soft Contrastive Learning and All in One Classifier." *proceeding in CVPR2023* [PDF]

2. **Senqiao Yang**, Yifeng Wang, and Yi. Zhao. "Signal enhancement and gesture recognition for low-cost inertial sensors." accepted to *Chinese Journal of Sensors and Actuators*, 2022.*Preprint*

1. Yang Yin*, Yifeng Wang* and **Senqiao Yang***. "UniverApproCNN with Universal Approximation and Explicit Training Strategy." *International Conference on Collaborative Computing: Networking, Applications and Worksharing*, 2022. [PDF]

Honors & Awards

- Silver Prize: **ECCV2022 Workshop** - Universal Image Embedding Challenge (top 3 %)
  Awarded by ECCV&Kaggle in 2022
- Silver Prize: Google Brain - Ventilator Pressure Prediction (top 2 %)
  Awarded by Kaggle in 2021
- Bronze Prize: G2Net Gravitational Wave Detection (top 6 %)
  Awarded by Kaggle in 2021
- Meritorious winner: the Mathematical Contest In Modeling (MCM) (top 7 %)
  Awarded by COMAP(Consortium for Mathematics and Its Applications) in 2022
- Outstanding winner: Mathematical Contest In Modeling (top 2 %)
  Awarded by HIT in both 2021 and 2022
- First class: Undergraduate Academic Merit Scholarship (top 5%)
  Awarded by HIT in both 2021 and 2022
- First Prize: 20th Chinese Student Robot Competition (top 4%)
  Awarded by CYLC(Communist Youth League of China) and DJI in 2021

Skills

Languages: English (Fluent), Mandarin Chinese (native)

Programming: Proficient in Python, Familiar with C/C++

Tools: Git, PyTorch, Wolfram Mathematica, Numpy, LaTeX