

Muxin Zhou

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Education

MBZUAI

Master in Machine Learning

Abu Dhabi, UAE

Sept 2023 - Current

Peking University

Bachelor in Computer Science

Beijing, China

Aug 2019 - Jul 2023

Research Experience

Self-Supervised Method Applied in Dataset Distillation

Abu Dhabi, UAE

Advisor: Dr. Zhiqiang Shen, MBZUAI

Sept 2023 - Dec 2023

- We introduce SCDD, a **S**elf-supervised **C**ompression method for **D**ataset **D**istillation that facilitates diverse information compression and recovery compared to traditional supervised learning schemes, further reaps the potential of large pre-trained models with enhanced capabilities.
- As the model size increases, our method excels in retrieving more information during data synthesis, which SRe²L(the pervious state-of-the-art dataset distillation method) is struggling to tackle.
- SCDD outperforms SRe²L by large margins. We demonstrate the superiority of our method on CIFAR-100, Tiny-ImageNet and ImageNet-1K.
- Our method also outperform SRe²L in downstream tasks, such as Continual Learning and Network Slimming.

Application of Deep Learning in Alpha Factor Mining

Beijing, China

Advisor: Prof. Ying Tan, Peking University

Mar 2023 - May 2023

- Used the basic LSTM model to mine alpha factors (alpha factor is an evaluation method of stocks in the field of quantitative finance), and test the performance of factors in 100 A-share stocks from the beginning of 2019 to the end of 2022 (about 100000 pieces of data).
- Used the following models to mine alpha factors: LSTM with attention, 5 linear models (Lasso, Elastic Net, Random Forest, OLS, Lars), and compare their performance with the basic LSTM model.
- In general, nonlinear models perform better (according to Annualized rate of return, Sharp-ratio, IC, IR); adding attention could improve the performance of LSTM model.

Emotional Analysis of Chinese Opera Lyrics

Beijing, China

Advisor: Prof. XiaoJun WAN, Wangxuan Institute of Computer Technology, Peking University

May 2022 - Jun 2022

- Applied Internet Worm method to gain Opera Lyrics data from Chinese Classic Drama Database.
- Used TFIDF model to quantify Chinese lyrics, utilized LSI model to achieve theme of texts, used semi-supervised learning method of SKLEARN lib(LabelSpreading) to learn and get Accuracy(86%).

Chinese Riddle Answer System

Beijing, China

Advisor: Prof. XiaoJun WAN, Wangxuan Institute of Computer Technology, Peking University

Nov 2021 - Dec 2021

- Determined the answer according to a given riddle and five candidate answers. Tried to establish a multi-classification method, exploited Bert training model and utilized OpenHowNet(a tool that can explain the meaning of words and calculate word similarity) to explain the meaning of the answer; but the accuracy is only 37%.
- Constructed a binary classification method (combine the explanation of each answer in the wiki with the riddle to form a training element. If the answer is correct, set the label to 1, otherwise is 0) and calculated text similarity by LSI, BM25 model and text2vec model; The highest accuracy comes from the BM25 model, which is 61%.

Garbage Classification Project in Computer Vision

Beijing, China

Research Assistant, Advisor: Prof. Chengrong LI, Chinese Academy of Science

Feb 2021 - Mar 2021

- Implemented different classification algorithms, including resNet, mobileNet, efficientNet.
- Compared model validation based on training speed, accuracy, and degree of over fitting.
- Improved the accuracy from 93% to 96% by making algorithm selectively focus on valuable information.
- Designed and implemented a UI interface to realize simple user interaction using PyQt5 python library.

Virtual Campus Guide Robot on Webots Platform

Beijing, China

Team Member, Advisor: Professor Dingsheng LUO, Peking University

Mar 2021 - Apr 2021

- Built the virtual robot that can lead tourists to their destination after they relay to the IFLYTEK voice system.
- Established the virtual robot working environment, which is the same proportion of Peking University.

Work Experience

China Galaxy Securities Research Institute

Beijing, China
Jul 2022 - Aug 2022

Quantitative Researcher, Quantitative Research Internship

- Reappeared “Crowded Trades: Implications for Sector Rotation and Factor Timing”.
- Founded UI interface to display recent performance of Economic Cycle, Currency Cycle and Inventory Cycle.

Beijing Huilong Capital Management

Beijing, China
Winter 2021; Summer 2021

Quantitative Researcher, Quantitative Research Internship

- Generated multi-factor alpha signals(short term/long term) based on multivariate regression.
- Removed abnormal data(format error, null value, data out of range, etc) and regularized data.
- Tested the performance of factors on previous data by indicators such as sharp-ratio, correlation, maximum draw down, Information Coefficient; Filtered factors according to the macro trend of factor performance (graphical trend) and took off similar factors.

Publications

- A Good Compression Is All You Need for Dataset Distillation
Anonymous
2024

(This manuscript, authored as the primary author, is presently undergoing resubmission to ECCV. It is referenced in the first bullet point of the 'Research Experience' section.)

- Generalized Large-Scale Data Condensation via Various Backbone and Statistical Matching
Shitong Shao, Zeyuan Yin, Muxin Zhou, Xindong Zhang, Zhiqiang Shen
2023

(CVPR 2024)

Achievements

2021-2022 **Personal Award**, Peking University Ms. Jin Dehang Traditional Music and Opera Research Scholarship China

Skills and Language

Programming Python, C++, Latex.
Language English, Chinese.