Yuxuan Lou

Tel: +65-82600153

Google Scholar Page, Personal Homepage

Email: yuxuanlou98@gmail.com; yuxuanlou@u.nus.edu

EDUCATION

National University of Singapore, Singapore (M.Sc. in Statistics)

- School of Statistics and Probability   2020.08 – 2020.03

Fudan University, Shanghai, China (B.S. in Applied Mathematics)

- School of Data Science   2018.09 – 2020.07

  Core courses: C Programming (A), Introduction to Statistical Learning and Machine Learning (A), Data Structure (A), Computational Statistics (A-), Statistics: Principles, Methods and R (A-), Foundations of Probability Theory (A-)

- School of Mathematical Science   2016.09 – 2018.07

PUBLICATION

- ***Yuxuan Lou**, Fuzhao Xue, Zangwei Zheng, Yang You, 2021.* Cross-token Modeling with Conditional Computation   *arXiv preprint **arXiv:2109.02008** (NeurIPS 2022 In Submission)*

- *Fuzhao Xue, Xiaoxin He, Xiaozhe Ren, Yuxuan Lou, Yang You, 2022.* One Student Knows All Experts Know: From Sparse to Dense   *arXiv preprint **arXiv:2201.10890**(NeurIPS 2022 In Submission)*

- *Fuzhao Xue**, Ziji Shi**, **Yuxuan Lou**, Yong Liu**, Yang You**, 2021**.* Go Wider Instead of Deeper   *arXiv preprint **arXiv:2107.11817** (AAAI 2022 accepted)*

RESEARCH EXPERIENCES

Large-scale Pretrain Vision Model Architecture Design with MoE

HPC-AI LAB, National University of Singapore, Advisor: Prof. Yang You   2021.03 – 2022.1

- Reviewed and reproduced modern Vision Transformer models and MLP-like models.

- Designed large-scale vision models (Sparse-MLP, Widenet) based on Mixture of Experts.

- Proposed a all-MLP architecture with conditional computation in two directions and extended MoE to spatial dimension of image representation.

- Introduced parameter sharing to ViT-MoE models and proposed an explanation of why specific LayerNorm parameters had better performance.

- Distributed model training on TPU clusters.

- Detailed ablation study to further investigate the contribution of different model components.

- 1 paper accepted by AAAI 2022, 2 paper in submission to NeurIPS 2022

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Neural Network based Image Compression and Image Query System

DAS LAB, Harvard University, Advisor: [Prof. Stratos Idreos](#)   2019.07-2020.01

- Constructed the neural-network based image compression models which include Auto-Encoder, adaptive arithmetic coding, and adaptive code length regularization.

- Built neural network model based on Pyramid Convolutional Network and Generative Adversarial Network for different query tasks according to compressed image representation.

- Introduced spp-net and inverse spp-net, which is designed to better understand and summarize the multiscale knowledge of images.

- The new compressed image representation of our model is 4 times smaller than that of the baseline model without loss of digit capacity.

Score System of Figure Skating Sports Base on LSTM

CV LAB, School of Data Science, Fudan University Advisor: [Prof. Yanwei Fu](#)   2018.05 – 2019.01

- Reviewed video analysis methods including SVR, CNN, 3D convolution, and LSTM.

- Constructed the dataset by searching and downloading figure skating videos, including NHK, TEB, COC, 4CC, etc., and filtered the dataset by removing the videos that are not fluent or coherent.

- Assisted to propose a deep architecture that includes two complementary components, Self-Attentive LSTM and Multi-scale Convolutional Skip LSTM.

Design of Toolkit (fastNLP) for Natural Language Processing

School of Data Science, Fudan University Advisor: [Prof. Xipeng Qiu](#)   2018.09 – 2018.12

- Learned to establish dataset SQuAD, a dataset of questions for machine comprehension of text, and analyze dataset based on sliding window baseline and logic regression.

- Reviewed pre-training language models and methods including ELMO, OpenAIGPT, etc

- Implemented a language representation model Bidirectional Encoder Representations from Transformers (BERT).

- Participated in designing FastNLP, a modularized and extensible toolkit for Natural Language Processing,

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Professional Experience

HPC-AI Tech

Deep Learning Engineer   2022.2 - Present

- Colossal-AI, Colossal-AI Examples co-developer

- Open domain dialog model design with internet knowledge augmentation

Interactive Entertainment Group, Tencent

Machine Learning Engineer Intern   2020.3 - 2020.6

- Built machine learning models to classify emotional levels of comments.

- Built deep learning abstractive text summarization models to extract the summary of comment contexts

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SKILLS

Programming language & Database: C++, Python, Pascal, R, SQL, Spark

Deep learning: Tensorflow, Pytorch, Keras