



Yixuan Chen

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Research Interests

Representation Learning, Dynamic Neural Networks, and Vision-Language Models.

Publications

[P4] Chen, Y., Shi, Y., Dong, M., Yang, X., Li, D., Wang, Y., Dick, RP., Lv, Q., Zhao, Y., Yang F., Shang, L. Over-parameterized Model Optimization with Polyak-Łojasiewicz Condition. International Conference on Learning Representations (**ICLR**), May 2023.

[P3] Chen, Y., Shi, Y., Li, D., Wang, Y., Dong, M., Zhao, Y., Lv, Q., Dick, RP., Shang, L. Recursive Disentanglement Network. International Conference on Learning Representations (**ICLR**), April 2022.

[P2] Chen, Y., Li, D., Zhang, P., Sui, J., Lv, Q., Lu, T., Shang, L. Cross-Modal Ambiguity Learning for Multimodal Fake News Detection. World Wide Web Conference (**WWW**), April 2022.

[P1] Chen, Y., Sui, J., Hu, L., Gong, W. Attention-Residual Network with CNN for Rumor Detection. International Conference on Information and Knowledge Management (**CIKM**), Oct 2019.

[M2] Shi, Y., Chen, Y., Dong, M., Yang, X., Li, D., Wang, Y., Dick, RP., Lv, Q., Zhao, Y., Yang F., Lu, T., Gu, N., Shang, L. Train Faster, Perform Better: Modular Adaptive Training in Over-Parameterized Models. (**under review**).

[M1] Chen, Y., Shi, Y., Li, D., Wang, Y., Dong, M., Zhao, Y., Dick, RP., Lv, Q., Yang F., Shang, L. Compositional Representation Learning with Recursive Disentanglement. (**under review**).

Research Experience

Over-parameterized Model Optimization (Jan. 2022 - Oct. 2022)

Goal: Optimizing over-parameterized models for training efficiency and generalization.

- Theoretically proved the upper bounds of convergence and generalization abilities are the ratio of the Lipschitz constant and the PL constant (termed as the condition number).
- Designed a structured pruning method with a gating network to dynamically mask poorly-behaved parameters with high condition numbers during training.

Unsupervised Disentangled Representation Learning (Jan. 2021 - Oct. 2021)

Goal: Learning disentangled representations in the compositional feature space.

- Formulated the compositional disentanglement learning problem from an information-theoretic perspective.
- Proposed a recursive disentanglement network that propagates regulatory inductive bias recursively across the compositional feature space during disentangled representation learning.
- Implemented the proposed framework in Python and conducted experiments to demonstrate its effectiveness.

Multi-modal Representation Learning (Oct. 2020 - Apr. 2021)

Goal: Learning multimodal representation, especially for multi-modal fake news detection.

- Formulated the cross-modal ambiguity learning problem from an information-theoretic perspective.
- Proposed an ambiguity-aware multimodal fake news detection method to adaptively aggregate unimodal features and cross-modal correlations.
- Implemented the proposed framework in Python and conducted experiments using two datasets to demonstrate its effectiveness.

Education

2020 - 2024 (expected)

School of Computer Science, Fudan University

PhD Candidate in Computer Science

Advisor: **Prof. Li Shang**

2017 - 2020

School of Engineering Science, University of Chinese Academy of Sciences

MSc. Management Science and Engineering

Advisor: **Prof. Jie Sui**

2013 - 2017

Business School, University of Shanghai for Science and Technology

BSc. Management Science and Engineering

Scholarships and Awards

- Outstanding Graduate of Beijing (2020)
- Outstanding Graduate of University of Chinese Academy of Sciences (2020)
- National Scholarship (2019)

Skills

- Python
- PyTorch
- Numpy/Scipy
- Java
- \LaTeX
- Markdown