# Zuobai Zhang

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## Education

**Mila - Québec AI Institute / Université de Montréal**                    **Montréal, Québec, Canada**
*Ph.D. in Computer Science*                                                                          *Sept. 2021 – present*
- Advisor: Jian Tang
- Research Direction: Graph Representation Learning, Drug Discovery

**Fudan University**                                                                                            **Shanghai, China**
*B.S. in Computer Science* (*Honor Class*)                                                        *Sept. 2017 – Jun. 2021*
- Advisor: Zhongzhi Zhang
- Research Direction: Graph Mining, Network Science, Spectral Graph Theory
- (First three years) GPA: 3.93/4.0, Major GPA: 3.99/4.0, Ranking: 1/145
- (Overall) GPA: 3.86/4.0, Ranking: 1/145

## Internship

**ByteDance Inc.**                                                                                              **Shanghai, China**
*Machine Learning Engineering Intern*                                                            *Sept. 2020 – Jan. 2021*
- Worked in Data-Rec Shanghai Group led by Yitan Li.
- Designed machine learning algorithms to improve the recommender system of Toutiao and developed new features in real-world products.

## Publications

- **Biharmonic Distance-Based Performance Metric for Second-Order Noisy Consensus Networks.**
  Yuhao Yi, Bingjia Yang, **Zuobai Zhang**, Wanyue Xu, Zhongzhi Zhang, Stacy Patterson
  *IEEE Transactions on Information Theory*

- **Neural Bellman-Ford Networks: A General Graph Neural Network Framework for Link Prediction.**
  Zhaocheng Zhu, **Zuobai Zhang**, Louis-Pascal Xhonneux, Jian Tang
  *NeurIPS 2021*

- **Learning Interpretable Cellular and Gene Signature Embeddings from Single-Cell Transcriptomic Data.**
  Yifan Zhao*, Huiyu Cai*, **Zuobai Zhang**, Jian Tang, Yue Li
  *Nature Communications*

- **Minimizing Spectral Radius of Non-Backtracking Matrix by Edge Removal.**
  **Zuobai Zhang**, Zhongzhi Zhang, Guanrong Chen
  *CIKM 2021*

- **Coherence Scaling of Noisy Second-Order Scale-Free Consensus Networks.**
  Wanyue Xu, Bin Wu, **Zuobai Zhang**, Zhongzhi Zhang, Haibin Kan, Guanrong Chen
  *IEEE Transactions on Cybernetics*

- **Opinion Dynamics Incorporating Higher-Order Interactions.**
  **Zuobai Zhang**, Wanyue Xu, Zhongzhi Zhang, Guanrong Chen
  *ICDM 2020* (short paper)

- **Power-Law Graphs Have Minimal Scaling of Kemeny Constant for Random Walks.**
  Wanyue Xu, Yibin Sheng, **Zuobai Zhang**, Haibin Kan, Zhongzhi Zhang
  *The Web Conference 2020*

- **Fast Approximation of Coherence for Second-Order Noisy Consensus Networks.**
  **Zuobai Zhang**, Wanyue Xu, Yuhao Yi, Zhongzhi Zhang
  *IEEE Transactions on Cybernetics*

- **Nearly Linear Time Algorithm for Mean Hitting Times of Random Walks on a Graph.**
  **Zuobai Zhang**, Wanyue Xu, Zhongzhi Zhang
  *WSDM 2020*

## Selected Projects

- **TorchDrug: A Powerful and Flexible Machine Learning Platform for Drug Discovery.** (with TorchDrug team)
  A machine learning platform designed for drug discovery, covering techniques from graph machine learning, deep generative models to reinforcement learning.
  [Homepage]   [Github]   [Twitter]

## Honors & Awards

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|---|---|
| **Outstanding Undergraduates Graduates of Shanghai** | **Jun. 2021** |
| **Scholarships for Outstanding Academic Individuals at Fudan University** | **Dec. 2020** |
| **Shanghai Scholarship (Top 1%)** | **Oct. 2020** |
| **SenseTime Scholarship (29 undergrads from China)** | **Jan. 2020** |
| **Chinese National Scholarship (Top 1%)** | **Oct. 2019** |
| **Chun Tsung Scholar Program** | **Apr. 2019** |
| **Wish Scholarship** | **May 2019** |
| **Chinese National Scholarship (Top 1%)** | **Oct. 2018** |
| **Gold Medal, ACM-ICPC Asia Regional Contest EC-Final** | **Dec. 2017** |
| **Gold Medal, ACM-ICPC Asia Regional Contest Qingdao Site** | **Nov. 2017** |
| **Silver Medal, National Olympiad in Informatics, National Finals** | **Jul. 2016** |
| **Gold Medal, Winter Camp of National Olympiad in Informatics** | **Jan. 2016** |
| **First Prize (2nd place), National Olympiad in Informatics, Shandong Division** | **Nov. 2015** |

## Skills

- **Programming Languages:** Python, C/C++, LaTeX, Julia, JavaScript, MATLAB, HTML
- **Language:** Chinese-Native, English-Fluent (**GRE**: 162+169+4.0)