Hanlin Zhang

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Education

South China University of Technology   **Guangzhou**
B.E. in Computer Science   *Sep. 2017 – 2021(Expected)*

- Major GPA – **3.92/4.0** (Overall GPA – 3.86/4.0)
- National Scholarship (Ranking: **1st /140**)
- Relevant Coursework: Probability and Statistics (4.0/4.0)/ Mathematical Analysis (4.0/4.0)/ Linear Algebra (4.0/4.0)/ Data Structure (4.0/4.0)/ Deep Learning (4.0/4.0)/ Artificial Intelligence (4.0/4.0)/ Pattern Recognition (4.0/4.0)/ Innovation Research Training (4.0/4.0)

University of Alberta   **Edmonton**
Research Assistant in Electrical and Computer Engineering   *July 2019 – Oct. 2019*

- Funded by China Scholarship Council (**CAD $9000**)

Publications

- Wangchunshu Zhou∗, Jinyi Hu∗, **Hanlin Zhang**∗ (**Co-first Author**), Xiaodan Liang, Chenyan Xiong, Maosong Sun, Jian Tang, "Towards Interpretable Natural Languag Understanding with Explanations as Latent Variables", under submission to *Neural Information Processing Systems* (*NeurIPS*), 2020
- Yuan Yang, **Hanlin Zhang**, Xiaodan Liang, Le Song, "Learning by Asking Commonsense Questions", preprint in preparation for *International Conference on Learning Representation* (*ICLR*), 2020
- **Hanlin Zhang**, Ivor Cribben, "On Time-varing Graphical Lasso for Functional Brain Connectivity Network Dynamics Inference", under submission to *IEEE Transactions on Biomedical Engineering* (*TBME*), 2019
- Bang Liu, **Hanlin Zhang**, Di Niu, Linglong Kong, "Factorizing Historical User Actions for Next-Day Purchase Prediction," under submission to *ACM Transactions on the Web* (*TWEB*), 2019

Research Experiences

Montreal Institute for Learning Algorithms (**Mila**)   **Montreal**
Research Intern   *Feb. 2020 – now*

- Advisor: **Prof. Jian Tang**
- Project leader in project: Towards Interpretable Natural Language Understanding with Explanations as Latent Variables
- Proposed a latent variable model for relation extraction and text classification with limited labels and explanations to for an interpretable and label-efficient learning paradigm
- Extended the framework to semi-supervised learning setting with a self-training algorithm and achieve better performance compared with strong baselines

Carnegie Mellon University   **Pittsburgh**
Research Assistant   *Nov. 2019 – now*

- Advisor: **Prof. Eric Xing** (CMU) and **Prof. Xiaodan Liang** (SYSU)
- Project leader in project: Learning Energy-based Models for Molecular Graph Generation
- Proposed Energy-based Models (EBMs) for modelling density of molecular graphs and generating

by sampling from the modified density
- Proposed discriminator-driven latent space MCMC sampling with the help of a flow-based model for novel molecular graph generation
- Proposed learning by asking commonsense questions framework for query-efficient, interpretable active learning with neural logic inductive learning. Leveraging hierarchical transformers to learn first-order logic rules from knowledge base.

University of Alberta **Edmonton**
Research Assistant *July 2019 – Oct. 2019*

- Advisor: **Prof. Di Niu**
- Project leader in project: Factorizing user actions for next-day purchase prediction
- Modeled intrinsic power-law characteristics in implicit feedback datasets
- Extended Bayesian Factorization Machines and implemented with probabilistic programming

University of Alberta **Edmonton**
Research Assistant *April 2019 – Aug. 2019*

- Advisor: **Prof. Ivor Cribben**
- Project leader project: fMRI brain network dynamics modelling
- Modeled fMRI brain connectivity network based on Gaussian graphical model. Estimated time-evolving networks using time-varing graphical lasso with a combination of lasso penalty and Laplacian penalty
- Utilized alternating direction method of multipliers (ADMM) for convex optimization in joint graphical lasso problem for classification using XGBoost based on estimated brain networks with Bayesian optimization

Honors & Awards

- Undergraduate Oversea Research Scholarship (CAD $9000) , China Scholarship Council, 2019
- National Scholarship (ranking: 1st / 140), 2018

Skills

- Programming Language: Experienced in Python, C/C++, Java, Shell, LaTeX. Familiar with R, SQL, MATLAB
- Machine learning libraries: Pytorch, Tensorflow, Sklearn, Pandas, Numpy, etc
- Solid mathematical foundations in machine learning related areas, e.g., statistical machine learning, optimization theory and approximation algorithms, etc