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 – 3.85/4.0)
- China 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

- **Hanlin Zhang**, Shuai Lin, Weiyang Liu, Pan Zhou, Jian Tang, Xiaodan Liang, Eric P. Xing, "Iterative Graph Self-Distillation", under submission to *International Conference on Learning Representations (ICLR)*, 2021
- Wangchunshu Zhou*, Jinyi Hu*, **Hanlin Zhang**∗ (**Equal Contribution**), Xiaodan Liang, Chenyan Xiong, Maosong Sun, Jian Tang, "Towards Interpretable Natural Language Understanding with Explanations as Latent Variables", *Neural Information Processing Systems (NeurIPS)*, 2020
- 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)*, 2020

Preprints

- Yuan Yang, **Hanlin Zhang** "Learning by Asking Commonsense Questions", preprint
- **Hanlin Zhang**, Ivor Cribben, "On Time-vraing Graphical Lasso for Functional Brain Connectivity Network Dynamics Inference", Preprint

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. Train the model with variational EM algorithm in 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: Unsupervised and Semi-supervised Graph representation Learning via self-distillation
- Proposed a contrastive learning framework with self-distillation for unsupervised and semi-supervised graph representation learning and achieve state-of-the-art performance.
- **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. Utilized discriminator-driven latent space MCMC sampling with the help of a flow-based model for EBMs to generate novel molecular graphs.
- Major Participator in project: Active Learning over knowledge graphs via neural logic inductive learning
- 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 like Visual Genome.

University of Alberta **Edmonton**
Research Assistant *July 2019 – Oct. 2019*
- Advisor: **Prof. Di Niu** and **Prof. Bang Liu**
- **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 to unify matrix factorization methods and model sparse interactions between users and items

University of Alberta **Edmonton**
Research Assistant *April 2019 – Aug. 2019*
- Advisor: **Prof. Ivor Cribben**
- **Project leader** in 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
- China 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. Bayesian statistics, convex optimization etc