

# Lu Lin

PHD STUDENT · COMPUTER SCIENCE · UNIVERSITY OF VIRGINIA

☎ (+1) 434-227-0494 | ✉ ll5fy@virginia.edu | 🏠 <https://louise-lulin.github.io>

## Summary

I am a PhD student in Computer Science at University of Virginia, supervised by Dr. [Hongning Wang](#). My research is in statistical machine learning, with a focus on Bayesian and probabilistic graphical model to learn computational user representations for recommender systems using multi-modality user-generated data.

## Education

2017 - present	<b>University of Virginia</b> , Doctor of Computer Science	<i>Virginia, USA</i>
2014 - 2017	<b>Beihang University</b> , Master of Computer Science	<i>Beijing, China</i>
2010 - 2014	<b>Beihang University</b> , Bachelor of Computer Science	<i>Beijing, China</i>

## Research/Project Experience

### Research Assistant in Human-Centric Data Mining Group

*UVa, USA*

#### Advisor: Dr. [Hongning Wang](#)

#### 1. LEARNING NODE EMBEDDING WITH ATTENTIONS FROM EDGE-CHANNELS Jun. 2019 - Present

- Studying a new graph neural network where the edges with contents serve as attentions.
- Developing a variational autoencoder framework to infer latent edge-channels as attentions.
- The proposed method is expected to improve the node embeddings for recommendation task.

#### 2. LEARNING USER REPRESENTATIONS VIA NETWORK AND TOPIC EMBEDDING Sept. 2018 - Feb. 2019

- Studied user representation learning problem via a joint modeling of multi-modality data generated by users, i.e., social network and text content.
  - Developed a probabilistic generative model which embeds content and network in a shared latent topical space to capture the dependency among different modalities.
  - The user representations learnt on Yelp reviews and StackOverflow discussion posts with network structures are proved to be effective in content prediction, link prediction and expert recommendation tasks.
- ✓ Accepted by the 13th ACM International Conference on Web Search and Data Mining(WSDM'20).

#### 3. LEARNING PERSONALIZED TOPICAL COMPOSITIONS Nov. 2017 - Aug. 2018

- Studied a new problem that aims at decoupling a user's subjective composition of topical content in his/her review document from the entity's intrinsic properties.
  - Modeled the generative process of each review document as a user's subjectivity responding to an item's property in a low-dimensional topical space.
  - Verified the effectiveness of the proposed model on Yelp and Amazon review data with improved performance in recommendation and summarization tasks.
- ✓ Published in Proc. of the 12th ACM International Conference on Web Search and Data Mining(WSDM'19).

### Machine Learning Intern in DiDi AI Lab

*DiDi Chuxing, China*

#### Advisor: Dr. [Jieping Ye](#)

#### ESTIMATED TIME OF ARRIVAL

*Sept 2015 - May 2016*

- Studied the problem of estimating time of arrival given origin-destination pair in a map, which is a core infrastructure for many downstream tasks, e.g., order assignment and price estimate.
- Did extensive experiments to compare the road speed prediction accuracy using different methods: XG-Boost (outperformed others), Gradient-Boosted Trees, Tensor Decomposition and Gaussian Process.

## Research Assistant in the Advanced Computing Technology Group

Beihang University, China

Advisor: Dr. Feng Chen

### ROAD TRAFFIC SPEED PREDICTION USING MULTI-MODALITY DATA

Jul 2014 - Sept 2015

- Aimed to improve the road traffic speed prediction with sparse sensor observations using new-type data from cross domain sources, i.e., mobile trajectory data and social media data.
  - Designed a unified probabilistic model to capture the generative process of observations from road sensor data, trajectory data and Twitter data, and to infer latent traffic speed prediction given multimodal data.
  - Experiments on two big USA cities, Philadelphia and Washington D.C., validated the prediction accuracy compared with four state-of-the-art methods.
- ✓ Published in IEEE Transactions on Knowledge & Data Engineering (TKDE'18).

## Publication

- Lin Gong, **Lu Lin**, Hongning Wang. JNET: Learning User Representations via Joint Network Embedding and Topic Embedding. In Proc. of the 13th ACM International Conference on Web Search and Data Mining (WSDM'20), 2020. (to appear)
- **Lu Lin**, Zheng Luo, Dezhi Hong, Hongning Wang. Sequential Learning with Active Partial Labeling for Building Metadata. The 6th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys '19), 2019. (to appear)
- **Lu Lin**, Lin Gong, Hongning Wang. Learning Personalized Topical Compositions with Item Response Theory. In Proc. of the 12th ACM International Conference on Web Search and Data Mining (WSDM'19), 2019.
- **Lu Lin**, Jianxin Li, Feng Chen, Jieping Ye and Jinpeng Huai. Road Traffic Speed Prediction: A Probabilistic Model Fusing Multi-Source Data. IEEE Transactions on Knowledge & Data Engineering (TKDE'18), 2018.
- **Lu Lin**, Jianxin Li and et al. Opinion Mining and Sentiment Analysis in Social Networks: A Retweeting Structure-Aware Approach. In Proc. of the 7th International Conference on Utility and Cloud Computing (UCC '14). 2014.

## Honor & Award

2019	WSDM 2019 Student Travel Award	Melbourne, Australia
2018	SIGIR 2018 Student Travel Award	Michigan, USA
2017	UVa Computer Science Department Fellowship	Virginia, USA
2016	Outstanding Contribution Team Award of Didi AI lab	Beijing, China
2014	Best Bachelor Thesis Award in Beihang University	Beijing, China
2014	Outstanding Graduate of Beijing City	Beijing, China
2011	The 3rd Prize in 22nd Undergraduate Mathematical Contest	Beijing, China

## Teaching

Fall 2019	Teaching Assistant, Natural Language Processing, Yangfeng Ji	UVa, USA
Spring 2019	Teaching Assistant, Text Mining, Hongning Wang	UVa, USA

## Skill

<b>Programming</b>	Python, Java, C/C++, MATLAB, LaTeX Finished Courses: Linear Algebra, Probability and Statistics, Mathematical Statistics,
<b>Machine Learning</b>	Optimization, Machine Learning, Learning and Game Theory, Deep Reinforcement Learning (Online Video of CS 285 at UC Berkeley)
<b>Data Mining</b>	Finished Courses: Text Mining, Natural Language Processing
<b>Personal</b>	Table Tennis, Badminton, Chinese Zither, Calligraphy