CURRICULUM VITAE | YUE YU

E-mail: yue9yu@gmail.com | Homepage: https://yueyyu.github.io/yuyue | Phone: (+86) 18810631027

"THROWING IN DATA, BUT THIRSTY FOR KNOWLEDGE"

EDUCATION

Tsinghua University *Beijing, China*
B.Eng. in Electronic Engineering Aug 2015 – June 2019 (Expected)
B.Ec. in Economic and Management (Second Degree)

- **GPA:** 3.81/4.00 (93/100), **Rank:** 3/216 (1.5%, in Department), 1/31 (in Class).
- **Math and Physics Courses:** Calculus (I: A, II: A-), Linear Algebra (I: A, II: A), Physics (I:A, II: A+), Probability and Stochastic Processes (I: A-, II: A), Discrete Mathematics (A), Functions of Complex Variables and Equations of Mathematical Physics (A), Econometrics (A), Quantum Mechanics and Statistical Mechanics (A).
- **Core Courses:** Computer Program Design (I: A-, II: A-), Data Structure and Algorithm, Introduction to Auditory-visual Information System (A), Database (A), Signals and Systems (A-), Advanced MATLAB Programming (A-), Student Research Training (A+), Mobile Data Mining (Graduate course, A).

University of Illinois at Urbana Champaign *Urbana, IL, USA*
Visiting Student at Department of Computer Science Jul 2018 – Sep 2018

- Visiting student and Research Assistant in Artificial Intelligence Lab at UIUC.

RESEARCH INTERESTS

Big Data Mining: Mining the information for semantics-rich data (e.g. Spatio-temporal data, Time-Series data, Text data) with machine learning methods.
Mining Large Social and Information Networks: Developing novel methods to capture the rich semantics in information networks with multi-type objects with application to real-world problems.
Data-Driven Urban Computing: Analyzing the urban mobility data to address critical urban issues. I am also enthusiastic about interdisciplinary research.

PUBLICATIONS

1. **Y. Yu,** T. Xia, Y. Li. B&B: Planning Bus Routes with Sharing-bikes in the city. In submission. Under Review.
2. X. Xu*, **Y. Yu***, B. Li, L. Song, C. Liu, C. Gunter. Characterizing Malicious Edges targeting on Graph Neural Networks. In submission. Under Review.
3. M. Zhang, **Y. Yu,** Y. Li. A Survey on Urban Anomaly: Description, Detection and Prediction. In submission. Under Review.
4. T. Xia*, **Y. Yu***, F. Xu, Y. Li, F. Sun, Y. Zheng. Understanding Urban Dynamics via State-sharing Hidden Markov Model. Accepted by *The Web Conference* (WWW'19).
5. C. Gao, C. Huang, **Y. Yu**, H. Wang, Y. Li, D. Jin. Privacy-preserving Cross-domain Location Recommendation. Accepted by *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* (IMWUT'19).

Note: * stands for equal contribution.

RESEARCH EXPERIENCE

City Brain Research Center *Hangzhou, China*
Research Intern to Prof. Zhenhui Li, Associate Professor at College of Information Sciences and Technology of *Pennsylvania State University* Sep 2018 – Present
Deep Reinforcement Intelligent for Intelligent Traffic Light Control

- Use real traffic flow data in Hangzhou to design self-learning traffic signal control system.
- Draw connection between the RL method and the traditional transportation theory to achieve better performances on flow control in urban grid network scenarios.
- **Key Words**: Reinforcement Learning, Urban Computing, Transportation theory.

University of Illinois at Urbana-Champaign *Urbana, IL, USA*
Research Assistant to Prof. Bo Li, Artificial Intelligence Lab Jul 2018 – Sep 2018
Malicious Edge Detection on Graph-Structured Data

- Designed a novel graph generation method together with link prediction method to detect malicious edges. We also leveraged novel features to perform outlier detection for detection.
- Extensive experiments showed that the proposed detection mechanism can achieve AUC above 90% against attack strategies on both real-world network datasets and synthetic networks.
- **Key Words**: Adversarial Machine Learning, Graph Mining, Graph Neural Networks.

Tsinghua University (Department of Electronic Engineering) *Beijing, China*
Research Assistant to Prof. Yong Li, Future Communications & Internet Lab Jun 2018 – Oct 2018
Understanding Urban Dynamics via State-sharing Hidden Markov Models

- Collected human PoI check-in data and citizens' mobility flow data to describe urban's regularity.
- Designed a novel urban dynamic revealing system based on state-sharing HMM to identify the typical dynamic patterns on various regions of the city with different urban functions.
- Evaluation on real-world PoI check-in data and mobility flow data in Beijing demonstrate that our model outperforms 54.2% than traditional HMM model on reconstruction error.
- Supported by ***Tsinghua University Initiative Scientific Research Program*** with funding of 5000 USD.
- **Key Words:** Urban Computing, Spatial-Temporal Data Mining, Hidden Markov Models.

Tsinghua University (Department of Electronic Engineering) *Beijing, China*
Research Assistant to Prof. Yong Li, Future Communications & Internet Lab May 2018 – Aug 2018
Privacy-preserving Cross-domain Location Recommendation

- Presented a new framework for privacy-preserving cross-domain location recommendation, in which data from the transferred domain is protected with the criteria of differential privacy.
- Designed confidence-enhanced collective matrix factorization (CCMF) to filter noise in transferred domain and balance two domains' influence for better recommendation.
- Evaluation on real-world dataset collecting from Foursquare and Tencent proved that PoI recommendation performance was elevated by 2.05%-111.76%.
- **Key Words**: Collaborative Filtering, Location Recommendation, Data Privacy.

Tsinghua University (Department of Electronic Engineering) *Beijing, China*
Research Assistant to Prof. Yong Li, Future Communications & Internet Lab Dec 2017 – May 2018
Mobile Trajectory Data Mining and its application to Bus Route Planning

- Detected hot spots for urban traffic and derived candidate bus stations via mining massive trajectories.
- Designed a heuristic approach to extend each bus routes with the consideration of the sharing-bikes simultaneously to maximize the coverage of traffic flows.
- Evaluation on real-world dataset of taxi and sharing-bike services in New York City demonstrated that our method outperforms 7.05% and 15.55% over the baseline methods without sharing-bikes.
- **Key Words**: Bus route design, Sharing-bikes, Urban Planning.

Tsinghua University (Department of Electronic Engineering) *Beijing, China*
Instructed by Prof. Jiansheng Chen, Associate Professor at Tsinghua University Oct 2017 – Dec 2017
Cross Modal Matching of the Video and Audio Information

- Given disordered video and audio sequence, using the existing deep learning framework (Inception V3 for video and VGG for audio) to extract visual and auditory features.
- Used the Bi-directional LSTM with the attention mechanism to measure the similarity between audio-visual information to retrieve the original audio files corresponding to each silent video.
- Evaluation on the real videos in YouTube certified that the Top 5 accuracy on matching exceeded 95%.
- **Key Words**: Deep Learning, Cross-Modal learning, Computer Vision.

Selected Awards and Honors

- **China National Scholarship**, 2018 (*Highest level* of scholarship set by the government of China)
- **Hoka Scholarship**, 2017 (Awarded to students with outstanding comprehensive performance)
- **Changhong Scholarship**, 2016 (Awarded to students with outstanding comprehensive performance)
- **Tsinghua Comprehensive Excellence Award**, 2016-2018 (Top 5% student in EE department)
- **Tsinghua Academic Excellence Award**, 2016-2018 (Top 5% student in EE department)
- **Tsinghua Research Excellence Award**, 2018 (Top 5% student in EE department)
- **Tsinghua Volunteering Excellence Award**, 2016 (Top 5% student in EE department)
- **1st Prize** for the 32rd National Undergraduate Physics Olympic, 2016 (Top 1%)

Additional Information

- **Computer skills:** C/C++, Python, MATLAB, SQL, STATA, Verilog, Pytorch, Keras, Spark, Latex.
- **Language:** Mandarin Chinese (Native); English (Proficient: TOEFL 103/120; GRE V156, Q170, AW 4.0).
- **Extracurricular activities:** Siyuan Leadership Training Programme (Top 1% out of 3300 students in Tsinghua University), Yangfan Excellent Student Training Program (Top 10% out of 260 students in EE Dept.), Student Union of EE Dept. (2016), Student Union of Tsinghua University (2015, 2017).