

# Lantao Yu

Wean Hall 4201 – Carnegie Mellon University – Pittsburgh, USA

✉ lantaoyu@hotmail.com • 🌐 lantaoyu.com

## Education

---

### Shanghai Jiao Tong University

Shanghai, China

Sep. 2014-Jun. 2018

- Senior undergraduate, Dept. of Computer Science
- Zhiyuan Honors Program of Engineering (an elite program for top 5% talented students)
- GPA: Overall: 91.30/100 (**Ranking: 3<sup>rd</sup>/151**) | Major: 93.47/100 | Final Year: 93.93/100
- Standard Test: TOEFL: 108 (R30, L29, S23, W26), GRE: V160, Q167, W4.0
- Advisors: Prof. [Weinan Zhang](#), Prof. [Yong Yu](#) and Prof. [Jun Wang](#) (University College London)

### Carnegie Mellon University

Pittsburgh, USA

Aug. 2017-Feb. 2018

- Research Intern, Institute for Software Research, School of Computer Science
- Advisor: Prof. [Fei Fang](#)

## Research Interests

---

Machine learning in general, including deep learning, representation learning, reinforcement learning, as well as their applications in sequential decision making, generative modeling, natural language understanding, multi-agent systems and data mining.

## Publications (Google Scholar Profile)

---

### SeqGAN: Sequence Generative Adversarial Nets with Policy Gradient

- Lantao Yu, Weinan Zhang, Jun Wang, Yong Yu.
- In *Proceedings of the 31st AAAI Conference on Artificial Intelligence*. AAAI 2017. (**77 citations**)

### A Dynamic Attention Deep Model for Article Recommendation by Learning Human Editors' Demonstration

- Lantao Yu\*, Xuejian Wang\*(equal contribution), Kan Ren, Guanyu Tao, Weinan Zhang, Yong Yu, Jun Wang.
- In *Proceedings of the 23rd SIGKDD Conference on Knowledge Discovery and Data Mining*. KDD 2017.

### IRGAN: A Minimax Game for Unifying Generative and Discriminative Information Retrieval Models

- Jun Wang, Lantao Yu, Weinan Zhang, Yu Gong, Yinghui Xu, Benyou Wang, Peng Zhang, Dell Zhang.
- In *Proceedings of the 40th International ACM SIGIR Conference on Research and Development in Information Retrieval*. SIGIR 2017. **Best Paper Award Honorable Mention**. (**7 citations**)

### Deep Reinforcement Learning for Green Security Game with Online Information

- Lantao Yu, Yi Wu, Rohit Singh, Lucas Joppa and Fei Fang.
- In *Workshop on Artificial Intelligence for Imperfect-Information Games at AAAI 2018*.

### An Empirical Study of AI Population Dynamics with Million-agent Reinforcement Learning

- Lantao Yu\*, Yaodong Yang\*, Yiwei Bai\*(equal contribution), Jun Wang, Weinan Zhang, Ying Wen, Yong Yu.
- In *Workshop on Aligned Artificial Intelligence at NIPS 2017*. (Follow-up work submitted to AAMAS 2018)

## Honors and Awards

---

- **Best Paper Award Honorable Mention** ([Link](#)), SIGIR 2017.
- **Microsoft Azure Research Award**, Carnegie Mellon University. 2017.
- **Scholarship of Excellent Undergraduates** (Top 2 students in School of Electronic Information and Electrical Engineering), Shanghai Jiao Tong University. 2017
- **National Scholarship** (Top 3 students in CS Department), Ministry of Education of P.R.China. 2016.
- **Zhiyuan College Honors Scholarship** (Top 5%), Shanghai Jiao Tong University. 2015 & 2016.
- **Overall GPA Ranking Top 3** (Sophomore GPA Ranking 1<sup>st</sup>/151), Department of Computer Science, Shanghai Jiao Tong University. 2014-2017.

- **Yuan-Ze Scholarship** (Top 2% in Computer Science Department), Zhiyuan College. 2015.
- **First Prize** in China Undergraduate Mathematical Contest in Modeling, Shanghai Division. 2015

## Research Experiences

---

### Deep Reinforcement Learning for Security Game with Online Information

Guide: Prof. Fei Fang, SCS, CMU

Aug. 2017-Present

- Proposed a novel game model incorporating the vital element of online information, which has been previously neglected by the research community, and no previous mathematical programming methods are applicable.
- Leverage convolutional neural networks for learning spatio patterns and combine deep reinforcement learning, double oracle algorithm and meta-learning to compute the Nash Equilibrium for such a complicated game.

### Learning and Planning for Wildlife Security

Guide: Prof. Fei Fang, SCS, CMU

Aug. 2017-Present

- Design machine learning algorithms to predict poaching activities and improve patrolling strategies.
- Deployed by World Wildlife Fund (WWF) for improving real-world patrolling.

### Adversarial Training for Discrete Sequential Data Generation

Guide: Prof. Weinan Zhang, Prof. Jun Wang, Prof. Yong Yu, CSD, SJTU

Jun. 2016-Sep. 2016

- Proposed a novel framework combining adversarial training and policy gradient methods for generating discrete sequential data.
- Accepted as a full paper at AAAI 2017. Received **75+ citations** during the last year.
- Successfully applied to dialogue systems, machine translations, image captions and music generation, etc.

### Minimax Framework for Information Retrieval

Guide: Prof. Jun Wang, Prof. Weinan Zhang, CSD, SJTU

Sep. 2016-Jan. 2017

- Propose a minimax framework unifying two schools of information retrieval methodologies
- Achieved significant performance gains over strong baselines in a variety of applications including web search, item recommendation, and question answering.
- Accepted as a full paper at SIGIR 2017. Won the **Best Paper Award Honorable Mention**.

### Dynamic Attention Deep Model for Article Recommendation

Guide: Prof. Weinan Zhang, Prof. Jun Wang, Prof. Yong Yu, CSD, SJTU

Dec. 2016-Feb. 2017

- Proposed a hybrid attention-based model to model the editors' dynamic underlying criterion.
- Outperformed strong baselines through a 9-day A/B testing, with more stable and robust predictions.
- The attention-based article recommendation system was deployed in a commercial article feed platform.
- Accepted as a full paper at KDD 2017.

### Emerging Collective Dynamics from Large AI Population

Guide: Prof. Weinan Zhang, Prof. Jun Wang, Prof. Yong Yu, CSD, SJTU

May. 2017-Aug. 2017

- Designed and developed a platform for large scale Multi-Agent Reinforcement Learning experiments.
- Discovered the ordered collective dynamics from a large population of RL agents driven by self-interest.
- Verified the principles developed in the real world could be applied to understand AI population.

### Detecting Click Fraud in Computational Advertising

Guide: Prof. Weinan Zhang, Prof. Yong Yu, CSD, SJTU

Jan. 2016-Jun. 2016

- Apache Spark cluster computing for processing massive data from YOYI Inc.
- Implemented state-of-the-art click fraud detection algorithms on large-scale real world datasets.

### Open Source Projects

- [Implementation of SeqGAN](#). 800+ stars in Github.
- [Implementation of IRGAN](#). 200+ stars in Github.
- [Million-level Multi-Agent Reinforcement Learning Platform](#).
- [Multi-agent Reinforcement Learning Paper Collection](#). 260+ stars in Github.

### Selected Academic Presentations

- [Sequence Generative Adversarial Networks](#). AAAI 2017 Conference, San Francisco.
- [Generative Adversarial Networks for Discrete Data](#). Invited talk, at PaperWeekly.
- [Adversarial Training for Information Retrieval](#). Apex Lab, SJTU.

### Review Experience: PIC 2016, SIGIR 2017