ZUN LI

Mobile: +86-139-1625-6613, Email: rezunli96@gmail.com, Homepage, Github

EDUCATION

Shanghai Jiao Tong University, China *Sept. 2014- June 2018 (expected)*
B.S.E. in Computer Science (IEEE Honored Class)
Overall GPA: 3.71/4.00 (88.26/100) Major GPA: 3.81/4.00 (89.63/100).
Core Courses: Mathematical Analysis I & II (93 & 91/100), Linear Algebra (97/100), Probability Theory and Random Process (92/100), Automata Theory (95/100), Software Engineering (92/100, Rank **1st**/60), Artificial Intelligence (90/100), Algorithm Design and Analysis (98/100, Rank **1st**/60).

INTERESTED AREAS

My current interests are Algorithmic Game Theory, Machine Learning and their applications, such as Data Exchange, Computational Advertising and Recommender System.

PUBLICATIONS

[1] **Zun Li**, Zhenzhe Zheng, Fan Wu, Guihai Chen, "How to Buy Cookies? On Designing Optimal Data Purchasing Strategies for Online Ad Auctions", **submitted** to *AAAI, 2018*

[2] **Zun Li**, Hongjiang Lv, Zhenzhe Zheng, Fan Wu, Guihai Chen, "Learning in Online Marketplace: Data Purchasing Policy Designs under Uncertainty", **submitted** to *AAAI, 2018*

[3] Zhenzhe Zheng, **Zun Li**, Fan Wu, Shaojie Tang, Guihai Chen, "How to Sell Data? On Designing Optimal Data Trading Strategy for Data Marketplace", **submitted** to *VLDB, 2018*

[4] Zhenzhe Zheng, **Zun Li**, Fan Wu, Guihai Chen, "Generalized Online Auctions with Time Varying Values", In preparation for *IJCAI-ECAI, 2018*.

RESEARCH EXPERIENCE

A Top-K Ranking Based Collaborative Filtering Algorithm *June 2017 - Present*
Research Intern at Qing Zhao Group, Cornell University *Advisor: Prof. Qing Zhao*

- Investigated machine learning techniques such as Learning-to-Rank and low-rank matrix factorization.
- Designed a new metric to measure the accuracy of Top-K items ranking, thus developed a new way to find similar neighbors for each user based on the new metric.
- Proposed a new CF algorithm where each observed rating was assigned a score, based on which the rank aggregation among neighbors was conducted.
- Implemented the designed algorithm and obtained 10% gain against state-of-art ones on real datasets.
- Providing theoretical bound for the designed algorithm.

Mechanism Design for Data Exchange *August 2016 - September 2017*
Researcher Assistant at Advanced Network Lab, SJTU *Advisor: Prof. Fan Wu*

My research on Data Exchange is threefold, consisting of:

i. **Computational Advertising and Data Engineering**

- Proposed a general framework consisting of an ad auction model and a data purchasing model, which comprehends a variety of ad auction forms and different classes of learning agents.
- Proved the existence and uniqueness of the equilibrium and showed how to calculate the optimal strategy in a simple setting. The methodology was then extended to a general scheme.
- Conducted numerical simulations to evaluate the behaviors of two types of learning agents under different strategic environments.

ii. **Learning Agents in Data Market.**

- Divided into three levels of uncertainty for data consumers. Deployed Bayesian updating method to learn the quality distributions.

· Proposed interpolation based reinforcement learning algorithms to compute the policies efficiently.
· Evaluation results showed the algorithms achieved good performances in terms of purchasing choice decision and computational cost.

iii. **Economic Techniques for Pricing Digital Goods.**
· Proposed a theoretical market model where vendors were allowed to price data by economic techniques like free sampling and versioning.
· Derived the optimal trading strategies under various cases.
· Used a real-life taxi location dataset to evaluate the strategy designs.

Online Mechanism Design with Time Varying Values *October 2017 - Present*
Researcher Assistant at Advanced Network Lab, SJTU *Advisor: Prof. Fan Wu*

· Considered an online auction model for selling reusable goods where agents' values are assumed to be vary with time. Preemption to reallocate goods to newly arrived agents are allowed.
· Presented dynamic programming allocation method. Proved that the upper bound of competitive ratio with the off-line optimal solution is within constant factors.
· Determined the unique payment by extending classical Myerson's Lemma for the proposed generalized model. Thus designed a strategy-proof online mechanism for agents with time varying values.

SELECTED PROJECTS

Xpo: An Online Campus Second-hand Trading Market System *March 2016 - June 2016*
· Conducted all the business process for a software engineering project, including the documents completion and software production.
· Developed an Android campus second-hand trading platform APP. Implemented pattern design into the system framework design.

MIDI Music Files Synchronization via SeqGAN *March 2017 - June 2017*
· Investigated MIDI formats. Used specialized module to extract features from raw MIDI files.
· Researched and implemented Sequential Generative Adversarial Network (SeqGAN) by TensorFlow to train music data set and generate new MIDI files.

A Hierarchical Network Selection Game for HetNets *March 2017 - June 2017*
· Proposed a generalized game framework for heterogeneous networks selection, including a cooperative game within a population a population and a non-cooperative game between different populations.
· Compared the algorithmic performances of the normal selection, reinforcement learning selection and evolutionary selection toward equilibrium state.

PROFESSIONAL ACTIVITIES

External Reviewer for IEEE TWC, IWQoS 2017, INFOCOM 2018.

HONOR & REWARDS

Meritorious Winner (Top **15%** Worldwide), Interdisciplinary Contest in Modeling *2016*
1st Class Prize (Top **2%** Provincial Level), National Undergraduate Physics Contest *2015*
Litiantangren Corporation Scholarship (Top **10%**) *2015-2016*
SJTU Academic Excellence Scholarship Class-B (Top **10%**) *2016-2017, 2015-2016*
SJTU Academic Excellence Scholarship Class-C (Top **20%**) *2014-2015*
Champion (**1st**/1000 Contestants), "Step-by-Step" Campus Orienteering & Quiz Game *2015*

TECHNICAL SKILLS

Programming Languages Python, C++, Verilog, Java, PHP, HTTP/CSS, SQL.
Tools MATLAB, Mathematica, TensorFlow, Git, LaTeX, XAMPP.