Yuantong Li

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SUMMARY

I am a PhD candidate in the Department of Statitics at Purdue. I am advised by Prof. Guang Cheng and Prof. Wei Sun. My research interests fall in statistical reinforcement learning, bandits, and online learning. I also had research experience in natural language process, deep learning, and information retrieval area.

EDUCATION

Ph.D., Statistics, Purdue University *2019 - (exp.) 2022*
Advisor: Prof. Guang Cheng; Thesis Topic: Online Learning, Multi-Armed Bandit, and RL Inference
M.S., Statistics, North Carolina State University *2016 - 2018*
Advisor: Prof. Sujit Ghosh; Thesis Topic: Cauchy Mixture Model
B.S., Maths (Honored), Zhejiang University *2012 - 2016*

PUBLICATION/PREPRINTS

Y. Li, C. Wang, and G. Cheng. (2020+). Online Forgetting Process for Linear Regression Models, *submitted to AISTATS 2021.*[paper].

Y. Li, Q. Ma, and S. Ghosh. Determining the Number of Mixture Components of Heavy-Tailed Densities, *The 26th ACM SIGKDD Conference on Knowledge Discovery and Data Mining 2020*, (**KDD'20**)[paper].

S. Zhao, Y. Huang, C. Su, **Y. Li** and F. Wang. Interactive Attention Networks for Semantic Text Matching, *2020 IEEE International Conference on Data Mining*, **(ICDM'20)**[paper].

Y. Li, F. Yang, H. Rao, and R. Feng. (2020+). Effective Peel Learning for Small Data with Structured Features, [paper].

J. Duan, **Y. Li**, J. Guo, and G. Cheng. (2020+). Ranking with Tail-Attention Regression in Stock Cross-Sectional Selection, *submitted.*

WORKING EXPERIENCE

Full Time - NLP Advisor: Prof. Fei Wang *Feb 2018 - Aug 2019*
Cornell University

- (Teamwork) With given query about patients' cancer status, genes, and demographic information, provided useful precision medicine-related papers from PubMed to help clinicians treat cancer patients.
- Did query expansion including Knowledge Integration and implemented the precision medicine classifier including logistic regression, Navie Bayes, SVM, and Bert methods.
- Implemented rule based, CNN, and BERT methods separately to match query and scientific articles.
- Built a precise biomedical literature retrieval engine with deep learning and external knowledge.

Full Time - NLP Advisor: Prof. Huan Sun *Sep 2018 - Feb 2019*
Ohio State University

- Implemented the neural topic model combined with variational Bayesian inference method to get the posterior distribution of topic words of texts.
- Exploited attention based Seq2Seq model to generate long texts of product reviews from Yelp dataset.

RESEARCH EXPERIENCE

Thesis Project - Mutli-Agents Advisor: Prof. Wei Sun, Prof. Guang Cheng *Now*
Purdue University

- Studied the multi-agents contextual bandit for online advertising by the stable matching method for two-sided markets, where the two-sided markets are advertisers and users.
- Matched the ads to the users through the online feedback provided by historical ad-user interactions such as CTR in real case. Besides, we will provide the theoretical guarantee and simulation results.

Thesis Project - RL Advisor: Prof. Wei Sun, Prof. Guang Cheng *Now*
Purdue University

- Currently focusing on the distribution behavior of stochastic gradient descent algorithm in TD learning.

Course Project - Federated Learning Advisor: Prof. Pan Li *Now*
Purdue University

- Studied the convergence behavior of Graph Neural Network in Federated Learning setting under non i.i.d data assumption.

Thesis Project - Online Learning Advisor: Prof. Guang Cheng *Now*
Purdue University

- Proposed two online algorithms FIFD-OLS and FIFD-Adaptive Ridge with constant memory and "*First in First out*" rule to protect data privacy motivated by EU's *"Right To Be Forgotten"* regulation.
- Provided the regret upper bound of two algorithms and studied the difference behavior between ordinary online learning and FIFD setting's online learning.

Course Project - Mixture Model Advisor: Prof. Sujit Ghosh *Jan 2018 - Aug 2018*
North Carolina State University

- Developed a mixture model for heavy tailed data (eg. Cauchy mixture) and provided two algorithms Iterative-Quantile Change Point method and Non Iterative-Quantile Change Point method (NIQCD).
- Compared NIQCD with other MCMC methods, which greatly improved the computational time by 500 fold in simulation and real data. Applied NIQCD to Standard & Poor's 500 stock index daily return and analyzed the market trends. This paper is accepted in **KDD 2020**.

Intern - Deep learning Advisor: Pr. Rui Feng *May 2017 - Aug 2017*
University of Pennsylvania

- Created a novel deep learning algorithm called *Peel Learning* (PL) which incorporates structure relationship among features and improved the upper bound of the generalization error of PL.
- Applied PL, LR, random forest, PASNet, and NN methods to two real data sets, (1) to understand the relationship between fMRI data and response time; (2) to predict lung transplantation outcome using gene expression profiles in donors' lungs.

Intern - Quant *Sep 2015 - May 2016*
Hangzhou CIEC International Co., Ltd, Hangzhou, China

- Created an event-driven stock trading model by utilizing stocks from Shanghai Stock Exchange (SSE).
- Achieved 40% annual return and greater than 70% days with positive return.

SKILLS

Programming: Python, R
Deep Learning Library: Pytorch

PROFESSIONAL SERVICES

Conference Reviewer: AISTATS 2021.
Journal Reviewer: IEEE TNNLS.