Yulong Gu | Computer Science

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Research Interests

Recommender Systems, Information Retrieval, Deep Learning, Graph Embedding, Reinforcement Learning, Data Mining, Natural Language Processing

Education

Tsinghua University PhD, Major:Computer Science, GPA:3.5/4.0

Beijing University of Posts and Telecommunications
Bachelor, Major:Computer Science, GPA:3.5/4.0, Rank:1%

Research and Project Experiences

Search and Recommendation BU

^o Senior Algorithm Engineer, Hangzhou, China

Alibaba Inc. is the large E-commerce site in China. It has about 1 billion users and more than 7 trillion Yuan GMV(Gross Merchandise Volume) in 2019. I'm working in the Search and Recommendation BU and am responsible for improving the search and recommendation algorithms in Alibaba.

Data Science Lab, Search and Recommendation BU

Research Scientist, Beijing, China

JD.com Inc. is the second large E-commerce site in China. It has about 300 million users and it has about 2 trillion Yuan GMV(Gross Merchandise Volume) in 2019. I am responsible for improving the recommendation algorithm in JD APP.

I joined JD through the *DMT* (Doctor Management Trainee) project, which selects about top 10 Ph.D from all over the world each year. I worked in the Data Science Lab (datascience.jd.com), which is a research lab in the Search and Recommendation BU in JD, focuses on research on Recommender Systems, Information Retrieval, NLP, Dialogue System and so on to improve the Recommender Systems and Search Engine for e-commerce in JD. My research has focused on Recommender Systems, Deep Learning, Graph Neural Networks and Sequential Data Modeling. My advisor is Senior Director Dawei Yin (www.yindawei.com). **My research topics:**

Beijing, China 2012.08–2017.07

Beijing, China 2008.09–2012.06

Alibaba Inc.

May 2020 - Now

JD.com Inc. *July 2017– May 2020* (1) Deep Multifaceted Transformers for Multi-objective Ranking in Large-Scale E-commerce Recommender Systems (CIKM 2020). I developed a Transformer based Deep Recommender Systems, which improves the online CTR (Click-Through Rate), CVR(ConVersion Rate), GMV(Gross Merchandise Volume) by 18.8%, 19.2% and 17.9% respectively in the "Guess You Like" recommendation module. It has been deployed to serve as the main traffic in JD's online Recommender Systems.

(2) Decoupled Graph Convolution Network for Inferring Substitutable and Complementary Items (CIKM 2020). I proposed a Graph Convolution Network based method for find Substitutable and Complementary Items, which is significant for candidate generation in Recommender System. It improves the online CTR by 3.6% in the "Guess" You Like" recommendation module.

(3) Hierarchical User Profiling for E-commerce Recommender Systems (WSDM) **2020).** I developed a Hierarchical User Profiling framework called HUP, which can model users' interests in category level and product level, can achieve impressive performance for both category and item Recommendation in E-commerce. HUP is based a Pyramid Recurrent Neural Networks equipped with our defined recurrent unit Behavior-LSTM that can model users' behavior type, dwell time and time intervals information well.

(4) Semi-supervised User Profiling with Heterogeneous Graph Attention Networks (IJCAI 2019). I proposed a heterogeneous graph attention networks (HGAT) method for Semi-supervised User Profiling in e-commerce. It can achieve outstanding performance for predicting users' profile information (e.g. age and gender).

(5) Deep Reinforcement Learning based Recommender Systems. I developed a Deep Reinforcement Learning based Recommender Systems to optimize long-term reward such as total clicks and automatically adjust recommendation strategies (e.g. diversity).

Network Research Lab, Department of Computer Science Tsinghua University 0 July 2013–July 2017 PhD, Beijing, China

Tsinghua University is the best university in the computer science area in China. I do research on User Profiling and Recommender Systems in Social Networks supervised by Professor Weidong Liu.

Knowledge Mining Group 0

Research Assistant Intern, Beijing, China

Microsoft Research Asia is one of the best research labs in the world. I do research on building Knowledge Base from texts using Natural Language Processing, Machine Learning, and Data Mining techniques.

I was responsible for building knowledge base by extracting knowledge from free texts in Wikipedia and building common sense knowledge base about activities of human.

My advisors are Principal Researcher Dr. Zaiqing Nie (http://www.zaiqing.net/) and Professor Gerard De Melo(http://gerard.demelo.org/).

Web Search Research Team

Research Assistant Intern, Beijing, China

Sougou Inc. is the second largest search engine company in China. I worked as a research assistant to improve the quality of search engine ranking model supervised by Dr. Jingfang Xu.

Microsoft Research Asia

July 2013–June 2015

Sougou Inc.

April 2012–July 2012

Data Mining and Anti-spam Research Team in Tieba

Baidu Inc. July 2011–March 2012

[°] Research Assistant Intern, Beijing, China

Baidu Inc. is the largest search engine company in China. I worked as a research assistant to detect spam posts and users from Tieba which is the largest Chinese Community in the world. My advisor is Dingkun Hong.

Professional Skills

Strong research ability in Recommender Systems, Deep Learning, NLP, Machine Learning, Social Networks and Data Mining.

Strong programming skills using TensorFlow, Keras, Pytorch, Python, C++, C#, C, Java, Spark, Hive and SQL.

Good background in algorithms, data structures and mathematics.

Good programming skills in Web, APP, Android and Windows application programming.

Awards

2015, First Prize in CCF National Big Data Innovation Contest

- 2011, Second Prize in Mathematical Contest in Modeling
- 2010, First Prize in China Undergraduate Mathematical Contest in Modeling, Beijing
- 2011, First Prize in China Water Robot Contest
- 2011, First Prize in RoboCup open contest of the China Robot Contest

Recent Publications

- 1. Yulong Gu. Attentive Neural Point Processes for Event Forecasting. AAAI 2021.
- 2. **Yulong Gu**, Zhuoye Ding, Shuaiqiang Wang, Lixin Zou, Yiding Liu and Dawei Yin. Deep Multifaceted Transformers for Multi-objective Ranking in Large-Scale E-commerce Recommender Systems. CIKM 2020.
- 3. Yiding Liu, **Yulong Gu**, Zhuoye Ding, Junchao Gao, Ziyi Guo, Yongjun Bao and Weipeng Yan. Decoupled Graph Convolution Network for Inferring Substitutable and Complementary Items. CIKM 2020.
- 4. **Yulong Gu**, Zhuoye Ding, Shuaiqiang Wang, and Dawei Yin. Hierarchical User Profiling in E-commerce Recommender Systems. WSDM 2020.
- 5. Lixin Zou, Long Xia, **Yulong Gu**, Xiangyu Zhao, Weidong Liu, Jimmy Xiangji Huang, Dawei Yin. Neural Interactive Collaborative Filtering. SIGIR 2020.
- 6. Weijian Chen, **Yulong Gu**, Zhaochun Ren, Xiangnan He, Hongtao Xie, Tong Guo, Dawei Yin, and Yongdong Zhang. Semi-supervised user profiling with heterogeneous graph attention networks. IJCAI 2019.
- 7. **Yulong Gu**, Yuan Yao, Weidong Liu, and Jiaxing Song. "HLGPS: A Home Location Global Positioning System in Location-Based Social Networks." ICDM 2016.

Profiles

- $\,\circ\,$ Personal website: https://guyulongcs.github.io/
- Google Scholar: https://scholar.google.com/citations?user=_p_9y7wAAAAJ
- ${\rm o\ LinkedIn:\ https://www.linkedin.com/in/yulong-gu-5332445a/}$