

Yanru Qu

Ph.D. in Computer Science - University of Illinois, Urbana-Champaign

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Education

University of Illinois, Urbana-Champaign

- Ph.D. in Computer Science
- Advisor: Prof. **Jiawei Han**

Illinois, U.S.
Aug. 2019 - Now

Shanghai Jiao Tong University

- M.S. in Computer Science, GPA: 3.83/4, Major: 3.93/4
- B.E. in Computer Science (IEEE Honored Class), GPA: 86.87/100, Major: 90.59/100
- Advisors: Prof. **Weinan Zhang**, Prof. **Yong Yu**, and Prof. **Jun Wang** (University College London)

Shanghai, China
Sep. 2012 - Mar. 2019

Research Interests

My research interests lie in the general area of machine learning and data mining, especially their applications in natural language, information system, and knowledge graph, with a wish to push the limit of user and content understanding, as well as build more accessible and personalized intelligent systems for people

Publications (Google Scholar Profile)

An End-to-End Neighborhood-based Interaction Model for Knowledge-enhanced Recommendation

- **Yanru Qu***, Ting Bai*, Weinan Zhang, Jianyun Nie, Jian Tang
- *In Workshop of DLP-KDD'19 (Best Paper)*

Dynamically Fused Graph Network for Multi-hop Reasoning

- Yunxuan Xiao*, **Yanru Qu***, Lin Qiu*, Hao Zhou, Lei Li, Weinan Zhang, Yong Yu
- *In Proceedings of ACL'19 (oral)*

Text-driven Graph Embedding with Pairs Sampling

- Liheng Chen, **Yanru Qu**, Zhenghui Wang, Lin Qiu, Weinan Zhang, Ken Chen, Shaodian Zhang, Yong Yu
- *In Proceedings of WWW'19*

Product-based Neural Networks for User Response Prediction over Multi-field Categorical Data

- **Yanru Qu**, Bohui Fang, Weinan Zhang, Ruiming Tang, Minzhe Niu, Huifeng Guo, Yong Yu, and Xiuqiang He
- *In ACM Transactions on Information System (TOIS)*

QA4IE: A Question Answering based Framework for Information Extraction

- Lin Qiu, Hao Zhou, **Yanru Qu**, Weinan Zhang, Suoheng Li, Shu Rong, Dongyu Ru, Lihua Qian, Kewei Tu and Yong Yu
- *In Proceedings of ISWC'18 (oral)*

Label-aware Double Transfer Learning for Cross Specialty Medical Named Entity Recognition

- Zhenghui Wang, **Yanru Qu**, Liheng Chen, Jian Shen, Weinan Zhang, Shaodian Zhang, Yimei Gao, Gen Gu, Ken Chen, and Yong Yu
- *In Proceedings of NAACL-HLT'18 (oral, 6.73%)*

Wassertein Distance Guided Representation Learning for Domain Adaptation

- Jian Shen, **Yanru Qu**, Weinan Zhang, Yong Yu
- *In Proceedings of AAAI'18*

Product-based Neural Networks for User Response Prediction

- **Yanru Qu**, Han Cai, Kan Ren, Weinan Zhang, Yong Yu, Ying Wen, Jun Wang
- *In Proceedings of ICDM'16 (oral)*

Selected Experiences

Research Intern at NLP Group, ByteDance AI Lab

*Worked on language models and text generation with Dr. **Hao Zhou** and Dr. **Lei Li***

Shanghai, China
Apr. 2019 - Aug. 2019

- Proposed a general framework for sampling & editing natural sentences.
- The framework decouples diversity, naturalness, consistency, semantic preserving and other desired properties of generation through a graphical model and a log linear model, thus can benefit from separately pre-trained models, e.g., GPT-2 for naturalness, paraphrase model or NMT for semantic preserving, etc.
- The framework utilizes Metropolis Hastings sampling, which enables word insertion & deletion as well as replacement, thus is more flexible and controllable than Gibbs sampling.

Research Intern at Montreal Institute of Learning Algorithms (MILA)

Montreal, Canada

Worked on graph neural networks with Prof. **Jian Tang** and Prof. **Jiayun Nie** (UdeM)

June. 2018 - Nov. 2018

- o Proposed a Knowledge-enhanced Neighborhood Interaction (KNI) framework for recommendation with knowledge graphs.
- o This work studies an “early summarization” issue of existing graph-based recommendation models, which only simply utilize user & item representations, while the more valuable local interactions among user-/item-neighbors are neglected. This work incorporates Knowledge graph to address sparsity and cold start, and proposes Neighborhood Interaction model to make full use of the local structures.
- o The proposed framework achieves superior performance improvements in click-through rate prediction (1.1%-8.4% absolute AUC improvements) and outperforms by a wide margin in top-N recommendation, compared with the most advanced feature based, meta-path based, and graph network based SOTAs. And this paper wins the **best paper award** of DLP-KDD’19.

Team Leader of SJTU APEX Lab-Huawei Noah’s Ark Lab Joint Research Program

Shanghai & Shenzhen, China

Worked on deep recommender systems with Dr. **Ruiming Tang** (Huawei)

Mar. 2017 - Mar. 2018

- o Developed a deep recommender system for Huawei app market with over CNY ¥ 1,400,000 funding.
- o This work reveals a “coupled gradient issue” in latent vector-based models, and propose kernel product to learn more expressive field-aware feature interactions. Then we study an “insensitive gradient issue” in DNN-based models and introduce product layers to DNNs to tackle this problem. Combining these two findings, we propose Product-based Neural Network as well as Product-net In Net models.
- o Our system achieves in average **35%** Click-Through Rate improvements in online A/B test, and is latter deployed in Huawei industrial environments. Our model also defeats the winner system, **libFFM**, in Criteo Display Advertising Challenge.
- o This work wins the “Outstanding Cooperation Award” and is regarded as a “High-value Potent” by Huawei. And corresponding paper is accepted by ACM Transactions on Information Systems (TOIS).

Student Researcher at APEX Lab, SJTU

Shanghai, China

Worked with Prof. **Weinan Zhang**, Prof. **Yong Yu** and Prof. **Jun Wang** (UCL)

Sep. 2015 - June. 2018

- o I joined APEX Lab when I was a junior student at SJTU. I started working on computational advertising and recommendation using Deep Learning. Based on my experience on using deep representation learning for categorical data, I expanded my research interests to Information Extraction, Natural Language, Knowledge Graph, and even Transfer Learning. During the years I published several papers on fields listed above, and finally received Master degree and Shanghai Outstanding Graduate award at APEX Lab.

Chief Technology Officer of Sixiangjiyuan Co. Ltd.

China

Developed a campus online shopping platform, UHands

Sep. 2014 - Sep. 2015

- o I joined Sixiangjiyuan Co. Ltd., a university venture company, in my sophomore year. We developed a campus online shopping platform, UHands, with web sites, iOS & Android applications. The venture company got CNY ¥ 1,000,000 angel investment.

Selected Awards

- o **Best Paper Award** (DLP-KDD’19) 2019
- o **Shanghai Outstanding Graduate** (Top 3 in CS Department) 2019
- o **National Scholarship for Graduate Students** (Top 3 in CS Department) 2018
- o **National Scholarship for Graduate Students** (Top 5 in CS Department) 2017

Open Source Projects

- o Implementation of **product-nets** and **its distributed version**, 300+ stars on github
- o Implementation of **knowledge-enhanced neighborhood interaction** framework