Yanru Qu

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

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Education

University of Illinois, Urbana-Champaign — **Illinois, U.S.**
Aug. 2019 - Now

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

Shanghai Jiao Tong University — **Shanghai, China**
Sep. 2012 - Mar. 2019

- B.E. in Computer Science (IEEE Honored Class), GPA: 86.87/100, Major: 90.59/100
- M.S. in Computer Science, GPA: 3.83/4, Major: 3.93/4
- TOEFL: R29, L29, S24, W27, total 109; GRE: V150, Q170, W4.0
- Advisors: Prof. Weinan Zhang, Prof. Yong Yu, and Prof. Jun Wang (University College London)

Research Interests

My research interests lie in the general area of machine learning and data mining, especially their applications in information system, knowledge graph, and natural language, 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
- L Chen, **Y Qu**, Z Wang, L Qiu, W Zhang, K Chen, S Zhang, Y Yu.
- *In Proceedings of WWW'19.*

Product-based Neural Networks for User Response Prediction over Multi-field Categorical Data
- **Y Qu**, B Fang, W Zhang, R Tang, M Niu, H Guo, Y Yu, and X He.
- *In ACM Transactions on Information System (TOIS).*

QA4IE: A Question Answering based Framework for Information Extraction
- L Qiu, H Zhou, **Y Qu**, W Zhang, S Li, S Rong, D Ru, L Qian, K Tu and Y Yu.
- *In Proceedings of ISWC'18* (oral).

Label-aware Double Transfer Learning for Cross Specialty Medical Named Entity Recognition
- Z Wang, **Y Qu**, L Chen, J Shen, W Zhang, S Zhang, Y Yu, Y Gao, G Gu, and K Chen.
- *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 Awards

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

Research and Work Experiences

Research Intern at NLP Group, ByteDance AI Lab **Shanghai, China**
Worked on natural language generation with Dr. Hao Zhao and Dr. Lei Li *Apr. 2019 - Aug. 2019*
Proposed to use Metropolis-Hastings Sampling (MCMC) to sample natural sentences with desired labels, which can be used for unsupervised domain adaptation tasks, e.g., sequence labelling.

Research Intern at Montreal Institute of Learning Algorithms (MILA) **Montreal, Canada**
Worked on graph neural networks with Prof. Jian Tang and Prof. Jianyun Nie *June. 2018 - Nov. 2018*

- Here is a brief introduction to some selected works (in proceedings or submission).
  - **Knowledge-enhanced Neighborhood Interaction Framework for Recommendation**
    Incorporated knowledge graph to solve sparsity and cold start problems in recommendation.
    Proposed a novel neighborhood interaction framework for (knowledge) graph-based recommendation.
  - **Leaning Inductive Graph Embedding with Improved Sampling Strategy**
    Proposed an efficient sampling strategy which reduces 99% training samples compared to DeepWalk / node2vec.
    Proposed an inductive graph embedding model to make full use of textual information on graphs.
  - **Review Scheduling for Online Learners with Model-based Reinforcement Learning**
    Proposed a novel model-based RL model for online learning systems, which uses a memory model to model user behaviors, adopts multi-task learning to boost performance, and provide pseudo rewards to solve sparse rewards.

Joint Research Program between APEX Lab and Noah's Ark Lab **Shanghai & Shenzhen, China**
Developed deep recommender systems with Dr. Ruiming Tang (Huawei) *Mar. 2017 - Mar. 2018*

- Developed and deployed a deep recommender system for Huawei app market with over CNY ¥ 1,400,000 fundings.
- Served as the program leader, achieved average **35%** Click-Through-Rate improvements in online A/B test.
- Defeated libFFM (ranking 1st) in Criteo Display Advertising Challenge.
- Corresponding work was regarded as a "High-value Potent" by Huawei Potent Committee and was accepted by TOIS.

Student Researcher at APEX Lab, SJTU **Shanghai, China**
Worked on deep learning with Prof. Weinan Zhang, Yong Yu and Jun Wang (UCL) *Sep. 2015 - June. 2018*

- Here is a brief introduction to some selected works (in proceedings).
  - **Product-based Neural Networks (Recommender Systems)**
    Revealed a coupled gradient issue and an insensitive gradient issue of state-of-the-art recommendation models.
    Proposed kernel product as well as network-in-network architectures to learn feature interactions.
    The proposed model achieved great improvements in both offline and online evaluations.
  - **Label-aware Double Transfer Learning (Information Extraction)**
    Introduced a label-aware assumption which is critical in real-world Named Entity Recognition systems.
    Proved the equivalence of the L2 distance in parameter space and the KL-divergence in model output distributions.
  - **Adversarial Representation Learning (Transfer Learning)**
    Proposed a domain-invariant representation learning approach for domain adaptation.
    Provided a generalization bound guarantee and a gradient analysis of the proposed method.

Chief Technology Officer of UHands **China**
Developed a compus online shopping platform, UHands *Sep. 2014 - Sep. 2015*

- Served as the Chief Technology Officer of the university venture company, Sixiangjiyuan Co. Ltd.
- The venture company got CNY ¥ 1,000,000 angel investment.

Open Source Projects

- Implementation of product-nets, product-nets-distributed, and hdf5-data-access, 300+ stars on Github.
- Implementation of Knowledge-enhanced Neighborhood Interaction.