Qing Wang

Ph.D.

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INTERESTS

Large-scale Data Mining; Reinforcement Learning; Multi-armed Bandits; Machine Learning;

BRIEF BIO

Dr. Wang received her PhD degree in the School of Computing and Information Sciences at Florida International University under the supervision of Dr. S. S. Iyengar and Dr. Shu-Ching Chen. Qing entered FIU PhD program in Fall 2014, immediately after obtaining her Master and Bachelor degree in Computer Science from **Xidian University** and **Zhengzhou University**. In 2017, she received the **Best Student Paper Award** from IEEE SCC. She was a recipient of **2018 FIU SCIS Overall Outstanding Graduate Student**. Qing's research focuses on **learning from data**: how to efficiently discover useful patterns and how to effectively retrieve information. The interests lie broadly in data mining and machine learning studying both the algorithmic and application issues. The algorithmic aspects involve developing new scalable, efficient and interactive algorithms that can handle very large datasets. The underlying techniques studied include clustering, classification, reinforcement learning, etc.

EXPERIENCE

Academic Experience

2014.8-2016.5 **Teaching Assistant**, *School of Computing and Information Sciences*, FIU, USA.

- 2014.8-2014.12 COP 4772 Principle of Database.
- 2015.2-2015.5 TCN 5010 Telecommunications Technology and Applications.
- 2015.8-2015.12 COP 2210 Java Programming I.
- 2016.2-2016.5 CAP 4770 Introduction to Data Mining.

2015.8-2018.12 **Research Assistant**, *Knowledge Discovery Research Group*, FIU, USA.

- **Multi-armed bandits.** Multi-armed bandits are very popular applying into various interactive recommender systems. I am working on modeling the interactive behaviors between users and items to better track users' preference.
- **Event Mining.** Designed and implemented a **frequent-itemset mining module** of the online Event Mining system. This module is able to discover some interesting frequent patterns from event data.
- **Tag Recommendation.** Studied and implemented a tag recommendation algorithm to label newly posted questions with a set of tags on StackOverflow.
- **Medical Image Annotation.** Studied the medical image annotation problem and solved it using the hierarchical multi-label classification algorithm to classify an image according to the IRMA code hierarchically organized.

Industry Experience

2019.3-Present **Postdoctoral Researcher**, ***IBM T.J Watson Research Center***, New York, NY, USA.

- AI for operations.

2018.5-2018.7 **Research Intern**, ***IBM T.J Watson Research Center***, New York, NY, USA.

- During this summer internship, I have participated in two AI challenges and worked with two IBM AI Science teams for the collaborations. 1) Learning Models for AI Skill Orchestration: aiming to utilize bandit algorithms for interactive skills planning. 2) Learning Logical Representations of Natural Languages with Little Supervision: aiming to learn the logic forms from natural language using deep learning and reinforcement learning techniques.

2017.5-2017.7 **Research Intern**, ***IBM T.J Watson Research Center***, New York, NY, USA.

- Online IT Automation Recommendation Using Hierarchical Multi-armed Bandit Algorithms. (SDM 2018)
- Proposed a new online learning algorithm, a hierarchical multi-armed bandit algorithm for the IT automation recommendation;
- Implemented these online algorithms and conducted comparative experiments on a large-scale real ticket dataset collected from IBM Global Services.

2016.6-2016.8 **Research Intern**, ***IBM T.J Watson Research Center***, New York, NY, USA.

- Constructing the Knowledge Base for Cognitive IT Service Management. (Best Student Paper Award of IEEE SCC 2017)
- Proposed an integrated framework for the ticket resolution recommendation;
- Constructed a domain knowledge base using ontology modeling techniques.

2011.8-2012.5 **Software Engineer Intern**, *Collaboration And Deployment Services Team(CADS)*, ***IBM SPSS***, Xi'an, China.

- Designed and implemented an automatic testing framework for CADS platform using IBM Rational Functional Tester. This framework can help customize test cases with a XML configuration file, and execute them automatically.
- Implemented a control locating module, an action verifying module, and the XML parser module.

PROGRAMMING SKILLS

Languages:	Java (proficient), Python (familiar), Javascript (familiar)	Frameworks:	Tensorflow, Apache Hadoop, Map Reduce, Tomcat, jQuery
DB:	DB2, MySQL, Redis	Tools:	Git, SVN

SERVICE ACTIVITIES

1. Session Chair, IEEE Big Data 2018.

PUBLICATIONS

Paper Awards

1. Best student paper award at the 2017 IEEE International Conference on Services Computing (IEEE SCC 2017); Conf paper: Q. Wang, W. Zhou, C. Zeng, T. Li, L. Shwartz and G. Y. Graharnik, "Constructing the Knowledge Base for Cognitive IT Service Management."

Articles in Refereed Journals

1. **Qing Wang**, Chunqiu Zeng, Wubai Zhou, Tao Li, S. S. Iyengar, Larisa Shwartz, Genady Ya. Graharnik, "Online Interactive Collaborative Filtering Using Multi-armed Bandit with Dependent Arms", IEEE Transactions on Knowledge and Data Engineering (IEEE TKDE), 2018.

2. Hongjun Li, Biao Cai, Shaojie Qiao, Shu-Ching Chen, **Qing Wang**, "ExTCKNN: Expanding Tree-based Continuous K Nearest Neighbor Query in Road Networks with Traffic Rules", IEEE Access, 2018.

3. Tao Li, Chunqiu Zeng, Wubai Zhou, Wei Xue, Yue Huang, Zheng Liu, Qifeng Zhou, Bin Xia, **Qing Wang**, Wentao Wang, Xiaolong Zhu, "FIU-Miner (a fast, integrated, and user-friendly system for data mining) and its applications", Knowledge and Information Systems (KIAS), 2016.

Conferences Proceedings Papers

1. **Qing Wang**, Chunqiu Zeng, S. S. Iyengar, Tao Li, Larisa Shwartz, Genady Ya. Graharnik, "AISTAR: An Intelligent System for Online IT Ticket Automation Recommendation", IEEE International Conference on Big Data (IEEE BigData 2018), Seattle, Washington, USA, 2018.

2. **Qing Wang**, Tao Li, S. S. Iyengar, Larisa Shwartz, Genady Ya. Graharnik, "Online IT automation recommendation Using Hierarchical Multi-armed Bandit Algorithms", SIAM International Conference on Data Mining (SDM 2018), San Diego, California, USA, 2018.

3. Wei Xue, Wubai Zhou, Tao Li, **Qing Wang**, "MTNA: A Neural Multi-Task Model for Aspect Category Classification and Aspect Term Extraction on Restaurant Reviews", International Joint Conference on Natural Language Processing (IJCNLP 2017), Taipei, Taiwan, 2017.

4. **Qing Wang**, Wubai Zhou, Chunqiu Zeng, Tao Li, Larisa Shwartz, Genady Ya. Graharnik, "Constructing the Knowledge Base for Cognitive IT Service Management", IEEE International Conference on Services Computing (IEEE SCC 2017), Honolulu, Hawaii, USA, 2017. [**Best Student Paper Award**]

5. Wubai Zhou, Wei Xue, Ramesh Baral, **Qing Wang**, Chunqiu Zeng, Tao Li, Jian Xu, Zhen Liu, Larisa Shwartz, Genady Ya. Graharnik, "STAR: A System for Ticket Analysis and Resolution", ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (ACM SIGKDD 2017), Halifax, Nova Scotia, Canada, 2017.

6. Chunqiu Zeng, **Qing Wang**, Shekoofeh Mokhtari, Tao Li, "Online Context-Aware Recommendation with Time Varying Multi-Armed Bandit", ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (ACM SIGKDD 2016), San Francisco, California, USA, 2016.

7. Tao Li, Wubai Zhou, Chunqiu Zeng, **Qing Wang**, Qifeng Zhou, Dingding Wang, Yue Huang, Jia Xu, Wentao Wang, Minjing Zhang, Steve Luis, Shu-Ching Chen and Naphtali Rishe, "DI-DAP: An Efficient Disaster Information Delivery and Analysis Platform in Disaster Management", ACM International Conference on Information and Knowledge Management (ACM CIKM 2016), Indianapolis, Indiana, USA, 2016.

8. Chunqiu Zeng, **Qing Wang**, Wentao Wang, Tao Li, Larisa Shwartz, "Online Inference

for Time-varying Temporal Dependency Discovery from Time Series", IEEE International Conference on Big Data (IEEE Big Data 2016), Washington D.C., USA, 2016.

Honors & Awards

1. **FIU SCIS Overall Outstanding Graduate Student Award**. (Nov. 2018)
2. IEEE SCC **Best Student Paper Award**. (Jun. 2017)
3. **FIU Dissertation Year Fellowship**. (Aug. 2018 - Aug. 2019)
4. SIAM **Student Travel Award**. (May. 2018)
5. SIGKDD **Student Travel Award**. (Jul. 2017)
6. FIU GPSC **Student Travel Award**. (Nov. 2018)
7. FIU GPSC **Student Travel Award**. (Jul. 2017)
8. **DiDi Beijing-IEEE Future Elite Forum Invitation**. (May. 2018)
9. The Winner of Poster Presentation in Engineering Computing of **GSAW 2017 Scholarly Forum**. (Mar. 2017)

Education

2014.8-present **Ph.D. in Computer Science**, *Florida International University*, Miami, FL, U.S.A..
GPA: 3.81/4.0

2010.8-2013.5 **M.S. in Computer Science**, *Xidian University*, Xi'an, Shaan'xi, China.
GPA: 3.3/4.0

2005.8-2009.6 **B.E. in Computer Science**, *Zhengzhou University*, Zhengzhou, Henan, China.
GPA: 3.6/4.0