Shoujin Wang

Research Fellow (Level B), RMIT University   M: +61 452139866
Casual Academic, Macquarie University   E: shoujin.wang@mq.edu.au
Research Profile: [DBLP](#), [Google Scholar](#) (Citation: 1100+, h-index: 15, i10-index: 16)

Summary

Shoujin has a PhD degree in Data Science and Artificial Intelligence (AI). Since his master study, Shoujin has devoted himself into research, teaching and development in the areas like business analytics, data science, machine leaning, and AI for more than ten years. Specifically, Shoujin has a **research strength** and expertise in user behaviour analysis and modelling, recommender systems, and time series modelling and forecasting. A series of original and innovative theories and algorithms have been developed in these fields. Also, Shoujin has gained rich **teaching experience** by successfully serving as a **Lecturer, a Guest Lecturer or a Tutor** in various units such as Business Analytics, E-commerce**, Database**, **Data Science**, Big Data and Internal Research Project. In addition, Shoujin has various **industry experience** in Data Science Application, **Database, Business Intelligence and Data Visualization**. Shoujin extensively **serves the data science and AI community** by actively taking a variety of roles like (senior) PC members of premier data science conferences, lead guest editor of prestigious journals.

Research Interests

Shoujin is generally interested in data science and analytics, some particular interests include:
- Data mining for pattern/rule mining and knowledge discovery
- Machine learning (deep learning) for user behaviour analysis and recommender systems
- Time series or sequential data modelling and prediction
- Fake news mitigation, trustworthy and responsible recommender systems

Education

PhD in Data Science and Machine Learning, University of Technology Sydney, Sydney, 2014 – 2018
- Supervisor: Prof. Longbing Cao
- PhD Project: Learning complex relations for session-based recommendations

MPhil in Information Management and E-commerce, Shanghai University, Shanghai, 2011 – 2014
- Supervisor: A/Prof. Ying Qian
- Thesis: Research on the spread of the public opinion on network based on system dynamics

BEc in Engineering, Central South University of Forestry and Technology, Changsha, 2007 – 2011
- Supervisor: Dr Xiangyu Huang
- Thesis: Customer lifetime value analysis based on system dynamics

Work Experience

Research Fellow (Level B) at RMIT University   2021.03 – Present

- Work with Xiuzhen Zhang, Yan Wang on an **ARC Discovery Project** to conduct research on machine learning and fake news detection and mitigation, develop cutting-edge solutions and algorithms for fake news detection and mitigation and publish high-quality research papers.

Postdoctoral Research Fellow at Macquarie University   2018.10 – 2021.02

- Work with Michael Sheng, Yan Wang and Mehmet Orgun an **ARC Discovery Project** to conduct research on machine learning and recommender systems, develop cutting-edge solutions and algorithms for user modelling, user behaviour analysis and item recommendation and write high-quality research papers. As first author, Shoujin published **five CORE Rank A*** conference papers and **one CORE Rank A*** journal article.

- Co-supervise HDR students and organize group meetings, supervised two PhD students and one visiting student. Out of which, one has completed. All of them have papers accepted by CORE A conferences or/and journals.

- Work as a lecturer or guest lecturer to deliver lectures to under/post graduate students and to supervise coursework students with their projects, also work as a tutor to run practical workshops for undergraduate students.

Data Scientist (part-time) and Big Data Team Coordinator at Vantage FX 2018.02 – 2018.07

Responsible for BI system construction, customer profiling and product recommendations.

- Conduct a BI report project to visualize various types of business data to an integrated report system with **MySQL** and **Tableau and Amazon QuickSight**. 5 dashboards containing 21 daily/monthly reports with the form of table, bar chart, pie chart, and curve chart etc. are outlined.

- Coordinate a big data team of 5 colleagues (including the risk manager) to promote an intelligent risk management project (automatic tagging programming) using the combination of database techniques, data mining techniques like pattern mining, sequence analysis, and machine learning techniques like multi-variable linear regression models, Recurrent neural networks.

- Set up a study group for the team and provide a weekly training (2 – 3 hours) on data science techniques to the team members to leverage their data-driven analytic thinking styles.

Teaching Experience (Casual Academic)

- **Lecturer**
1. COMP8871 (internal research project), deliver lectures, supervise students to do research projects, organize consultation sessions and mark students' presentations and reports at the Department of Computing, Macquarie University. 2020.07 – 2020.11.
2. COMP8871 (internal research project), Macquarie University, 2020.02 – 2020.07. (one of the **Top-3** units of more than 60 ones with the best feedback in the department in 2020 S1).

- **Casual lecturer**
1. Teach three units "**Database**" (20 students), "e-Commerce" (40 students) and "Modern Management Technique" (60 students), be responsible for the course coordination and curriculum design, development and execution at the adult education college of Shanghai University. The teaching was appreciated by the students, 2012.04 – 2013.11.

- **Guest lecturer**
1. **Data Wrangling** (FIT5196), design, prepare and deliver a guest lecture at **Monash University**, 2021. 11.
2. **Big Data** (COMP3210/6210big data), design, prepare, develop and deliver a guest lecture on recommender systems at the Department of Computing, Macquarie University, 2020.05.
3. **Mining Unstructured Data** (COMP8230), design, prepare, develop and deliver a guest lecture on recommender systems at the Department of Computing, Macquarie University, 2020.04.
4. **E-commerce technology** (COMP344), design, prepare, develop and deliver a guest lecture on recommender systems at the Department of Computing, Macquarie University, 2019.10.

- **Tutor**
1. **Fundamentals of Business Analytics** (BUSA 2020), prepare and run the practical workshops (tutorials) for 2 classes (each class has 25-30 students), School of Business, Macquarie University, 2022.02 – 2022.05.
2. **Data Science with Python Coding** (COMP2200/6200), prepare and run the practical workshops (tutorials) for 2 classes (each class has 25-30 students), organize consultation sessions, mark students' practical assignments at the School of Computing, Macquarie University, 2021.07 – 2021.11. (Highly positive feedbacks, Learning experience score =**4.62/5**).
3. **Data Science with Python Coding** (COMP2200/6200), Macquarie University, 2020.07 – 2020.11.

Coursework Student Mentoring & Research Student Supervision

- **Coursework students mentoring**
Shoujin successfully served as a mentor of 12 master-by-coursework students for their research projects in unit COMP 8871 (internal research project) in S1 and S2 in 2020. His supervision was highly appreciated and most of his students got HD or D results.

- **Supervised research students and publications**
1. Wei Guo, Year-3 Undergraduate Student, IEEE DSAA 2021 *1 (CORE A)
2. Wenzhuo Song, Visiting PhD Student, ACM RecSys 2021 * 1 (CORE A)

3. Nan Wang, PhD Student, WWWJ (CORE A) * 1, WISE 2020 (CORE A) *1
4. Yan Zhao, PhD Student, WISE 2020 (CORE A) *1

Lecture-style Conference Tutorials

1. **Shoujin Wang**, Liang Hu, Yan Wang, Longbing Cao, Quan Z. Sheng, and Mehmet A. Orgun. *Towards Ubiquitous Recommender Systems : Data, Approaches, and Applications*, the 35th AAAI Conference on Artificial Intelligence (AAAI 2021, **CORE A***), 2021.
2. **Shoujin Wang**, Liang Hu, Yan Wang, Longbing Cao, Quan Z. Sheng, and Mehmet A. Orgun. *Next-Generation Recommender Systems and Their Advanced Applications*, the 29th International Joint Conference on Artificial Intelligence (IJCAI 2020, **CORE A***), 2020.
3. Liang Hu, **Shoujin Wang**, Qi Zhang, Longbing Cao. *Complement, Composite and Context: The 3C-Law to Build Multidomain Recommender Systems*, the 21st IEEE International Conference on Data Mining (ICDM 2021, **CORE A***), 2021.
4. Liang Hu, **Shoujin Wang**, Longbing Cao and Jian Cao. *Coupling Everything : A Universal Guideline for Building State-of-The-Art Recommender Systems*, the 28th International Joint Conference on Artificial Intelligence (IJCAI 2019, **CORE A***), 2019.

Publications

Shoujin has published over **30 high-quality papers** at premier data science and AI conferences or journals, including 13 first-authored ones. 10 papers were published or accepted by **CORE Rank A* venues**, including eight first-authored ones. Selected papers are listed below:

CORE is short for the Computing Research and Education Association of Australasia, **CORE A*** - 7.15% of 811 ranked venues; **CORE A** - 15.91% of 811 ranked venues. (http://portal.core.edu.au/conf-ranks/).

- **Full conference papers**
1. **Shoujin Wang**, Xiaofei Xu, Xiuzhen Zhang, Yan Wang. *Veracity-aware and Event-driven Personalized News Recommendation for Fake News Mitigation*. In Proceedings of the 27th ACM The Web Conference (TheWebConf 2022, **CORE A*,** accepted), 1-11, 2022.
2. **Shoujin Wang**, Liang Hu, Yan Wang, Xiangnan He, Quan Z. Sheng, Mehmet Orgun, Longbing Cao, Francesco Ricci, Philip S. Yu. *Graph Learning based Recommender Systems: A Review*. In Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI 2021 Survey Track, **CORE A***), 4644-4652, 2021.
3. **Shoujin Wang**, Liang Hu, Yan Wang, Quan Z. Sheng, Mehmet Orgun, Longbing Cao. *Intention2Basket: A Neural Intention-driven Approach for Dynamic Next-basket Planning*. In Proceedings of the 29th International Joint Conference on Artificial Intelligence (IJCAI 2020, **CORE A*, acceptance rate=12.6%**), 2333-2339, 2020.
4. **Shoujin Wang**, Liang Hu, Yan Wang, Quan Z. Sheng, Mehmet Orgun, Longbing Cao. *Intention Nets: Psychology-inspired User Choice Behaviour Modelling for Next-basket Prediction*. In Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI 2020, **CORE A*,** oral presentation, acceptance rate=20.6%), 6259-6266, 2020.
5. **Shoujin Wang**, Liang Hu, Yan Wang, Longbing Cao, Quan Z. Sheng, Mehmet Orgun. *Sequential Recommender Systems: Challenges, Progress and Prospects*. In Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI 2019, **CORE A*,** acceptance rate=17.6%), 6332-6338, 2019.
6. **Shoujin Wang**, Liang Hu, Yan Wang, Quan Z. Sheng, Mehmet Orgun, Longbing Cao. *Modelling Multi-purpose Sessions for Next-item Recommendations via Mixture-channel Purpose Routing Networks*. In Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI 2019**, CORE A*,** acceptance rate=17.9%), 3771-3777, 2019.
7. **Shoujin Wang**, Liang Hu, Longbing Cao, Xiaoshui Huang, Defu Lian, Wei Liu. *Attention-based Transactional Context Embedding for Next-Item Recommendation*. In Proceedings of the 32nd AAAI Conference on Artificial Intelligence (AAAI 2018, **CORE A*,** acceptance rate=25%, **120+ citations**), 2532-2539, 2018.
8. **Shoujin Wang**, Liang Hu, Longbing Cao. *Perceiving the Next Choice with Comprehensive Transaction Embeddings for Online Recommendation*. In Proceedings of the 15th European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD 2017, CORE A), 285-302, 2017.
9. **Shoujin Wang**, Wei Liu, Jia Wu, Longbing Cao, Qinxue Meng, Paul Kennedy. *Training Deep Neural Networks on Imbalanced Data Sets*. In Proceedings of the 29th International Joint Conference on Neural Networks (IJCNN 2016, CORE A, **330+ citations**), 4368-4374, 2016.
10. Wei Guo, **Shoujin Wang**, Wenpeng Lu, et al. *Sequential Dependency Enhanced Graph Neural Networks for Session-based Recommendations*. In Proceedings of the 8th IEEE International Conference on Data Science and Advanced Analytics (IEEE DSAA 2021, CORE A).

11. Wenzhuo Song, **Shoujin Wang,** Yan Wang. *Next-item Recommendations in Short Sessions,* In Proceedings of the 15th ACM Conference on Recommender Systems (RecSys 2021, CORE A, accepted, acceptance rate=18.4%), 1-14, 2021.
12. Nan Wang, **Shoujin Wang**, Yan Wang, Quan Z. Sheng and Mehmet Orgun. *Modelling Local and Global Dependencies for Next-item Recommendations.* In Proceedings of the 21st International Conference on Web Information Systems Engineering (WISE 2020), 285-300, 2020.
13. Yan Zhao, **Shoujin Wang**, Yan Wang, Hongwei Liu and Weizhe Zhang. *Double-Wing Mixture of Experts for Streaming Recommendations*. In Proceedings of the 21st International Conference on Web Information Systems Engineering (WISE 2020), 269-284, 2020.
14. Xu Zhang, Wenpeng Lu, Guoqiang Zhang, Fangfang Li, and **Shoujin Wang**. *Chinese Sentence Semantic Matching Based on Multi-Granularity Fusion Model*. In Proceedings of the 24th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2020, CORE A), 246-257, 2020.
15. Liang Hu, Longbing Cao, **Shoujin Wang**, et al. *Diversifying Personalized Recommendation with User-Session Context*. In Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI 2017, **CORE A*,** acceptance rate=26%), 1858-1864, 2017.

- **Journal articles**
1. **Shoujin Wang**, Longbing Cao, Yan Wang, Quan Z. Sheng, Mehmet Orgun, Defu Lian. *A Survey on Session-based Recommender Systems*. ACM Computing Surveys (CSUR) 54(7): 1-38, 2021. (**CORE A*,** JCR Q1, **IF=10.28**, **130+ citations**).
2. **Shoujin Wang** and Longbing Cao. *Inferring Implicit Rules by Learning Explicit and Hidden Item Dependency*. IEEE Transactions on Systems, Man, and Cybernetics: Systems 50(3):935-946, 2020. (IEEE TSMC, JCR Q1, **IF = 13.45**).
3. **Shoujin Wang**, Longbing Cao, Liang Hu, Shlomo Berkovsky, et al. *Hierarchical Attentive Transaction Embedding with Intra-and Inter-Transaction Dependencies for Next-Item Recommendation*. IEEE Intelligent Systems, 36(4): 56-64, 2021. (IEEE IS, JCR Q1).
4. **Shoujin Wang**, Gabriella Pasi, Liang Hu, Longbing Cao. *The Era of Intelligent Recommendation: Editorial on Intelligent Recommendation with Advanced AI and Learning*. IEEE Intelligent Systems, 35(5): 3-6, 2020. (IEEE IS, JCR Q1).
5. Nan Wang, **Shoujin Wang**, Yan Wang, Quan Z. Sheng, Mehmet Orgun. *Exploiting Intra- and Inter-session Dependencies for Session-based Recommendations.* World Wide Web Journal, 25: 425–443, 2022. (WWWJ, CORE A).
6. Wenpeng Lu, Rui Yu, **Shoujin Wang**, et al. *Sentence Semantic Matching based on 3D CNN for Human-robot Language Interaction*. ACM Transactions on Internet Technology, 2021. (TOIT, JCR Q1, accepted).
7. Wenpeng Lu, Rui Yu, Huimin Lu, **Shoujin Wang**, Fangfang Li, Xu Zhang, Jiguo Yu. *Sentence Pair Modelling Based on Semantic Feature Map for Human Interaction with IoT Devices*. International Journal of Machine Learning and Cybernetics, 2021. (JMLC, JCR Q1, accepted).
8. Wenpeng Lu, Yuteng Zhang, **Shoujin Wang**, Heyan Huang, Qian Liu, Sheng Luo. *Concept Representation by Learning Explicit and Implicit Concept Couplings*. IEEE Intelligent Systems, 36 (1): 6-15, 2020. (IEEE IS, JCR Q1).
9. Yan Zhao, **Shoujin Wang**, Yan Wang, Hongwei Liu. *Stratified and Time-aware Sampling based Adaptive Ensemble Learning for Streaming Recommendations*, Applied Intelligence, 51 (6): 3121-3141, 2020.
10. Xiaolong Xu, Xihua Liu, Xiaochun Yin, **Shoujin Wang**, Quan Qi, Lianyong Qi. *Privacy-Aware Offloading for Training Tasks of Generative Adversarial Network in Edge Computing*. Information Sciences, 532(9): 1-15, 2020. (JCR Q1).
11. Wenmin Lin, Xiaochun Yin, **Shoujin Wang**, Mohammad R. Khosravi. *A Blockchain-enabled Decentralized Settlement Model for IoT Data Exchange Services*. Wireless Networks, Wireless Networks, DOI:10.1007/s11276-020-02345-9, 2020.
12. Lin Xiao, Jianhua Dai, Rongbo Lu, Shuai Li, Jichun Li, **Shoujin Wang**. *Design and Comprehensive Analysis of a Noise-Tolerant ZNN Model with Limited-Time Convergence for Time-Dependent Nonlinear Minimization*. IEEE Transactions on Neural Networks and Learning Systems (TNNLS), DOI: 10.1109/TNNLS.2020.2966294, 2020. (**CORE A*,** JCR Q1, **IF = 10.45**).
13. Wenpeng Lu, Fanqing Meng, **Shoujin Wang**, Guoqiang Zhang, Xu Zhang, Antai Ouyang. *Graph-Based Chinese Word Sense Disambiguation with Multi-Knowledge Integration*. CMC-Computers Materials & Continua 61(1):197-212, 2019. (JCR Q1).

Professional Service

- **Conference organization:**
1. **Volunteer Coordinator** of the 7th IEEE International Conference on Data Science and Advanced

Analytics (DSAA 2020)

- **Workshop organization:**
1. **Lead organizer** of the Second International Workshop on Advanced Neural Algorithms and Theories for Recommender Systems (NeuRec 2021) co-located with ICDM 2021 (CORE A*)
2. **Lead organizer and founder** of the First Workshop on Advanced Neural Algorithms and Theories for Recommender Systems (NeuRec 2020) co-located with ICDM 2020 conference (CORE A*)

- **Journal editing:**
1. Lead guest editor of Frontiers in Big Data, 2020-2021
2. Lead guest editor of IEEE Intelligent Systems (JCR Q1), 2019-2020
3. Guest editor of International Journal of Data Science and Analytics (Springer JDSA), 2019-2021

- **Selected conference (or senior) program committee (PC) member**:
  KDD (2022), WSDM (2021-2022), CIKM (2020-2022), AAAI (2019-2022), IJCAI (2019-2022), PAKDD (2017-2022), UMAP (2021-2022), DSAA (2017), IJCAI (2021, Senior PC)

- **Selected journal reviewer**:
1. **IEEE:** Transactions on Knowledge and Data Engineering Machine Learning (TKDE), Transactions on Cybernetics (TCYB), Transactions on Information Forensics & Security, Intelligent Systems (TIFS), Transactions on Industrial Informatics (TII)
2. **ACM:** Transactions on Information Systems (TOIS), ACM Transactions on Internet Technology (TIST), ACM Transactions on Sensor Networks (TOSN)
3. **Springer:** Machine Learning, International Journal of Data Science and Analytics (JDSA), Soft Computing
4. **Wiley:** International Journal of Intelligent Systems
5. **Elsevier:** Information Sciences, Neurocomputing

- **Volunteer:** KDD 2015, Big data summit co-located with IJCAI 2017, AAAI 2018

Research Fund

- DAAD AInet Grant, 6000 AUD, 2021
- Deepblue Research Fund, 3500 AUD, 2021
- Frontiers in Big Data Research Grant, 1400 AUD, 2020
- IJCAI 2019 Travel Grant, 1200 USD, 2019

Selected Honours & Awards

1. DAAD AInet fellowship by DAAD (2021)
2. IJCAI travel grant by IJCAI (2019 & 2021)
3. AAAI student scholarship by AAAI (2018)
4. Vice-chancellor's postgraduate research student conference fund award by UTS (2017 & 2018)
5. International research scholarship by UTS (2014 - 2018)
6. Outstanding graduate of Shanghai by Shanghai municipal government (2014, Top 3%)
7. National postgraduate scholarship by Chinese ministry of education (2014, Top 2%)
8. National endeavour scholarship by Chinese ministry of education (2009, Top 5%)
9. Outstanding student of Central South University of Forestry and Technology (2009, Top 3%)

Referees

- **Professor Michael Sheng**, ARC Future Fellow, Head of School, School of Computing, Macquarie University, Balaclava Rd, Macquarie Park NSW 2109, Australia. Email: michael.sheng@mq.edu.au, Tel: +61 2 9850 9505.
- **Professor Longbing Cao**, ARC Future Fellow, ACM Distinguished Scientist, receipt of 2019 Eureka Prize for Excellence in Data Science, Director, the Data Science Lab, University of Technology Sydney, 15 Broadway, NSW 2007, Australia. Email: longbing.cao@uts.edu.au, Tel: +61 2 9514 4477.
- **Professor Francesco Ricci**, the Lead Editor of the prestigious Recommender System Handbook and the former Dean of the Faculty of Computer Science, Free University of Bozen-Bolzano, Piazza Domenicani 3, 1, 39100 Bolzano BZ, Italy. Email: francesco.ricci@unibz.it, Tel: +39 0471 016971.