Shoujin Wang
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Biography

Shoujin Wang is a real-world application driven data science researcher. He obtained his PhD in Data Science from the University of Technology Sydney in 2019. Shoujin's main research interests include Data Mining, Machine Learning, Recommender Systems and Fake News Mitigation. He has published more than 40 high-quality research papers in these areas, most of which were published at premier data science and AI conferences or journals, like The ACM Web Conference, AAAI, IJCAI and ACM Computing Surveys (CSUR). He has delivered four research tutorials on recommender systems at AAAI, IJCAI, SIGIR and ICDM.

Shoujin has generally served as a (senior) PC member at over 10 premier international conferences including KDD, AAAI, IJCAI and a reviewer for more than 10 prestigious journals including Machine Learning, IEEE Transactions on Knowledge and Data Engineering (TKDE), ACM Transactions on Information Systems (TOIS), etc. Shoujin has been invited to serve as a guest editor of three primer journals including IEEE Intelligent Systems and has organized two workshops at ICDM. Shoujin has some practical data science application experience by being involved into two industry projects. He is also one of the two recipients of the prestigious 2022 Club Melbourne Fellowships.

Qualifications

Data Science and Artificial Intelligence, PhD, Recommender Systems

31 Mar 2019 HDR Supervision Orientation 2018-2020, HDR30

Employment

Honorary Lecturer
Lecturer
School of Computing
Macquarie University
1 Sept 2022 → present

Research outputs

Cluster-aware attentive convolutional recurrent network for multivariate time-series forecasting
Bai, S., Zhang, Q., He, H., Hu, L., Wang, S. & Niu, Z., 14 Nov 2023, In: Neurocomputing. 558, p. 1-13 13 p., 126701.

Beyond CNNs: exploiting further inherent symmetries in medical image segmentation
Pang, S., Du, A., Orgun, M. A., Wang, Y., Sheng, Q. Z., Wang, S., Huang, X. & Yu, Z., Nov 2023, In: IEEE Transactions on Cybernetics. 53, 11, p. 6776-6787 12 p.

Modeling user demand evolution for next-basket prediction
Wang, S., Wang, Y., Hu, L., Zhang, X., Zhang, Q., Sheng, Q. Z., Orgun, M. A., Cao, L. & Lian, D., Nov 2023, In: IEEE Transactions on Knowledge and Data Engineering. 35, 11, p. 11585-11598 14 p.

Data science for next-generation recommender systems
Wang, S., Wang, Y., Sivrikaya, F., Albayrak, S. & Anelli, V. W., Aug 2023, In: International Journal of Data Science and Analytics. 16, 2, p. 135-145 11 p.

Efficient tree policy with attention-based state representation for interactive recommendation
Shi, L., Zhang, Q., Wang, S., Zhang, Z., Zhou, B., Wu, M. & Li, S., Jul 2023, In: Applied Sciences. 13, 13, p. 1-18 18 p., 7726.

MbSRS: a multi-behavior streaming recommender system
Zhao, Y., Wang, S., Wang, Y. & Liu, H., Jun 2023, In: Information Sciences. 631, p. 145-163 19 p.

Rumor Detection With Hierarchical Representation on Bipartite Ad Hoc Event Trees
Zhang, Q., Yang, Y., Shi, C., Lao, A., Hu, L., Wang, S. & Naseem, U., 23 May 2023, (E-pub ahead of print) In: IEEE Transactions on Neural Networks and Learning Systems. 13 p.

DuCL: dual-stage contrastive learning framework for Chinese semantic textual matching
Zuo, Y., Lu, W., Peng, X., Wang, S., Zhang, W. & Qiao, X., Mar 2023, In: Computers and Electrical Engineering. 106, p. 1-12 12 p., 108574.

A counterfactual collaborative session-based recommender system
Song, W., Wang, S., Wang, Y., Liu, K., Liu, X. & Yin, M., 2023, *The ACM Web Conference 2023: proceedings of the World Wide Web Conference WWW 2023.* New York: Association for Computing Machinery (ACM), p. 971-982 12 p.

An ion exchange mechanism inspired story ending generator for different characters
Jiang, X., Zhang, Q., Shi, C., Jiang, K., Hu, L. & Wang, S., 2023, *Machine learning and knowledge discovery in databases: European Conference, ECML PKDD 2022, Grenoble, France, September 19–23, 2022, Proceedings, Part II.* Amini, M-R., Canu, S., Fischer, A., Guns, T., Kralj Novak, P. & Tsoumakas, G. (eds.). Cham: Springer, Springer Nature, p. 553-570 18 p. (Lecture Notes in Artificial Intelligence; vol. 13714).

Dual contrastive transformer for hierarchical preference modeling in sequential recommendation
Huang, C., Wang, S., Wang, X. & Yao, L., 2023, *SIGIR '23: proceedings of the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval.* New York: Association for Computing Machinery (ACM), p. 99-109 11 p.

Intention-aware user modeling for personalized news recommendation
Wang, R., Wang, S., Lu, W., Peng, X., Zhang, W., Zheng, C. & Qiao, X., 2023, *Database Systems for Advanced Applications: 28th International Conference, DASFAA 2023, Tianjin, China, April 17–20, 2023, proceedings, part II.* Wang, X., Sapino, M. L., Han, W-S., El Abbadi, A., Dobbie, G., Feng, Z., Shao, Y. & Yin, H. (eds.). Cham: Springer, Springer Nature, p. 179-194 16 p. (Lecture Notes in Computer Science; vol. 13944).

Modality coupling for privacy image classification
Liu, Y., Huang, Y., Wang, S., Lu, W. & Wu, H., 2023, In: IEEE Transactions on Information Forensics and Security. 18, p. 4843-4853 11 p.

Modeling temporal positive and negative excitation for sequential recommendation
Huang, C., Wang, S., Wang, X. & Yao, L., 2023, *The ACM Web Conference 2023: proceedings of the World Wide Web Conference WWW 2023.* New York: Association for Computing Machinery (ACM), p. 1252-1263 12 p.

Multiview clickbait detection via jointly modeling subjective and objective preference
Shi, C., Yin, Y., Zhang, Q., Xiao, L., Naseem, U., Wang, S. & Hu, L., 2023, *Findings of the Association for Computational Linguistics: EMNLP 2023.* Stroudsburg, PA: Association for Computational Linguistics, p. 11807-11816 10 p.

WSDM 2023 workshop on interactive recommender systems
Liu, Y., Zhang, H., Sun, Z., Wang, S. & Zhang, J., 2023, *Proceedings of the Sixteenth ACM International Conference on Web Search and Data Mining (WSDM '23).* New York: Association for Computing Machinery (ACM), Vol. 1. p. 1275-1276 2 p.

Aspect-driven user preference and news representation learning for news recommendation
Lu, W., Wang, R., Wang, S., Peng, X., Wu, H. & Zhang, Q., Dec 2022, In: IEEE Transactions on Intelligent Transportation Systems. 23, 12, p. 25297-25307 11 p.

Chinese sentence semantic matching based on multi-level relevance extraction and aggregation for intelligent human–robot interaction
Lu, W., Zhao, P., Li, Y., Wang, S., Huang, H., Shi, S. & Wu, H., Dec 2022, In: Applied Soft Computing. 131, p. 1-11 11 p., 109795.

Multi-granularity interaction model based on pinyins and radicals for Chinese semantic matching
Zhao, P., Lu, W., Wang, S., Peng, X., Jian, P., Wu, H. & Zhang, W., Jul 2022, In: World Wide Web. 25, 4, p. 1703-1723
21 p.

Exploiting intra- and inter-session dependencies for session-based recommendations
Wang, N., Wang, S., Wang, Y., Sheng, Q. Z. & Orgun, M. A., Jan 2022, In: World Wide Web. 25, 1, p. 425-443 19 p.

A probabilistic code balance constraint with compactness and informativeness enhancement for deep supervised hashing
Zhang, Q., Hu, L., Cao, L., Shi, C., Wang, S. & Liu, D. D., 2022, *Proceedings of the Thirty-First International Joint Conference on Artificial Intelligence.* De Raedt, L. (ed.). International Joint Conferences on Artificial Intelligence, p. 1651-1657 7 p.

A systematical evaluation for next-basket recommendation algorithms
Shao, Z., Wang, S., Zhang, Q., Lu, W., Li, Z. & Peng, X., 2022, *2022 IEEE 9th International Conference on Data Science and Advanced Analytics DSAA'2022: proceedings.* Huang, J. Z., Pan, Y., Hammer, B., Khan, M. K., Xie, X., Cui, L. & He, Y. (eds.). Piscataway, NJ: Institute of Electrical and Electronics Engineers (IEEE), p. 1041-1050 10 p.

Chinese sentence matching with multiple alignments and feature augmentation
Zuo, Y., Peng, X., Lu, W., Wang, S., Li, Z., Zhang, W. & Zhai, Y., 2022, *2022 International Joint Conference on Neural Networks (IJCNN): 2022 conference proceedings.* Piscataway, NJ: Institute of Electrical and Electronics Engineers (IEEE) , 8 p. (IEEE International Joint Conference on Neural Networks (IJCNN)).

Data science and artificial intelligence for responsible recommendations
Wang, S., Liu, N., Zhang, X., Wang, Y., Ricci, F. & Mobasher, B., 2022, *Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD '22).* New York: Association for Computing Machinery, p. 4904-4905 2 p.

Modeling spatio-temporal neighbourhood for personalized point-of-interest recommendation
Wang, X., Sun, G., Fang, X., Yang, J. & Wang, S., 2022, *Proceedings of the Thirty-First International Joint Conference on Artificial Intelligence.* De Raedt, L. (ed.). International Joint Conferences on Artificial Intelligence, p. 3530-3536 7 p.

News recommendation via multi-interest news sequence modelling
Wang, R., Wang, S., Lu, W. & Peng, X., 2022, *2022 IEEE International Conference on Acoustics, Speech, and Signal Processing: proceedings.* Piscataway, NJ: Institute of Electrical and Electronics Engineers (IEEE), p. 7942-7946 5 p. (IEEE International Conference on Acoustics, Speech, and Signal Processing proceedings).

Rethinking adjacent dependency in session-based recommendations
Zhang, Q., Wang, S., Lu, W., Feng, C., Peng, X. & Wang, Q., 2022, *Advances in Knowledge Discovery and Data Mining: 26th Pacific-Asia Conference, PAKDD 2022, Chengdu, China, May 16–19, 2022, proceedings, part III.* Gama, J., Li, T., Yu, Y., Chen, E., Zheng, Y. & Teng, F. (eds.). Cham, Switzerland: Springer, Springer Nature, p. 301-313 13 p. (Lecture Notes in Computer Science; vol. 13282).

Sequential/session-based recommendations: challenges, approaches, applications and opportunities
Wang, S., Zhang, Q., Hu, L., Zhang, X., Wang, Y. & Aggarwal, C., 2022, *SIGIR '22: proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval.* New York, US: Association for Computing Machinery, Inc, p. 3425-3428 4 p.

Veracity-aware and event-driven personalized news recommendation for fake news mitigation
Wang, S., Xu, X., Zhang, X., Wang, Y. & Song, W., 2022, *WWW 2022 - Proceedings of the ACM Web Conference 2022.* New York, NY: Association for Computing Machinery, p. 3673-3684 12 p.

Word sense disambiguation based on memory enhancement mechanism
Kan, B., Lu, W., Peng, X., Wang, S., Zhang, G., Zhang, W. & Qiao, X., 2022, *Knowledge science, engineering and management : 15th International Conference, KSEM 2022, Singapore, August 6–8, 2022, Proceedings, Part II.* Memmi, G., Yang, B., Kong, L., Zhang, T. & Qiu, M. (eds.). Cham: Springer, Springer Nature, p. 249-260 12 p. (Lecture Notes in Computer Science; vol. 13369).

Chinese clinical named entity recognition based on stacked neural network
Zhang, R., Lu, W., Wang, S., Peng, X., Yu, R. & Gao, Y., 25 Nov 2021, In: Concurrency Computation Practice and Experience. 33, 22, p. 1-11 11 p., e5775.

Sentence pair modeling based on semantic feature map for human interaction with IoT devices
Yu, R., Lu, W., Lu, H., Wang, S., Li, F., Zhang, X. & Yu, J., Nov 2021, In: International Journal of Machine Learning and Cybernetics. 12, 11, p. 3081-3099 19 p.

Sentence semantic matching based on 3D CNN for human–robot language interaction
Lu, W., Yu, R., Wang, S., Wang, C., Jian, P. & Huang, H., Nov 2021, In: ACM Transactions on Internet Technology. 21, 4, p. 1-24 24 p., 98.

A survey on session-based recommender systems
Wang, S., Cao, L., Wang, Y., Sheng, Q. Z., Orgun, M. A. & Lian, D., Sept 2021, In: ACM Computing Surveys. 54, 7, p. 1-38 38 p., 154.

Dynamic scheduling algorithm in cyber mimic defense architecture of volunteer computing
Li, Q., Meng, S., Sang, X., Zhang, H., Wang, S., Bashir, A. K., Yu, K. & Tariq, U., Aug 2021, In: ACM Transactions on Internet Technology. 21, 3, p. 1-33 33 p., 75.

Hierarchical attentive transaction embedding with intra- and inter-transaction dependencies for next-item recommendation
Wang, S., Cao, L., Hu, L., Berkovsky, S., Huang, X., Xiao, L. & Lu, W., 1 Jul 2021, In: IEEE Intelligent Systems. 36, 4, p. 56-64 9 p.

Stratified and time-aware sampling based adaptive ensemble learning for streaming recommendations
Zhao, Y., Wang, S., Wang, Y. & Liu, H., Jun 2021, In: Applied Intelligence. 51, 6, p. 3121-3141 21 p.

Comprehensive analysis of a new varying parameter zeroing neural network for time varying matrix inversion
Xiao, L., Zhang, Y., Dai, J., Zuo, Q. & Wang, S., Mar 2021, In: IEEE Transactions on Industrial Informatics. 17, 3, p. 1604 - 1613 10 p.

Concept representation by learning explicit and implicit concept couplings
Lu, W., Zhang, Y., Wang, S., Huang, H., Liu, Q. & Luo, S., Jan 2021, In: IEEE Intelligent Systems. 36, 1, p. 6-15 10 p.

Next-generation recommender systems and their advanced applications
Wang, S., Hu, L., Wang, Y., Cao, L., Sheng, Q. Z. & Orgun, M. A., Jan 2021.

Graph learning based recommender systems: a review
Wang, S., Hu, L., Wang, Y., He, X., Sheng, Q. Z., Orgun, M. A., Cao, L., Ricci, F. & Yu, P. S., 2021, *Proceedings of the Thirtieth International Joint Conference on Artificial Intelligence, IJCAI 2021.* Zhou, Z-H. (ed.). Freiburg, Germany: International Joint Conferences on Artificial Intelligence, p. 4644-4652 9 p. (IJCAI International Joint Conference on Artificial Intelligence).

Next-item recommendations in short sessions
Song, W., Wang, S., Wang, Y. & Wang, S., 2021, *Proceedings, 15th ACM Conference on Recommender Systems (RecSys '21).* New York, NY: Association for Computing Machinery (ACM), p. 282-291 10 p.

Sequential dependency enhanced graph neural networks for session-based recommendations
Guo, W., Wang, S., Lu, W., Wu, H., Zhang, Q. & Shao, Z., 2021, *2021 IEEE 8th International Conference on Data Science and Advanced Analytics, DSAA 2021.* Piscataway, NJ: Institute of Electrical and Electronics Engineers (IEEE), p. 1-10 10 p. (2021 IEEE 8th International Conference on Data Science and Advanced Analytics, DSAA 2021).

Design and comprehensive analysis of a noise-tolerant ZNN model with limited-time convergence for time-dependent nonlinear minimization
Xiao, L., Dai, J., Lu, R., Li, S., Li, J. & Wang, S., Dec 2020, In: IEEE Transactions on Neural Networks and Learning Systems. 31, 12, p. 5339-5348 10 p.

Privacy-aware offloading for training tasks of generative adversarial network in edge computing
Xu, X., Liu, X., Yin, X., Wang, S., Qi, Q. & Qi, L., Sept 2020, In: Information Sciences. 532, p. 1-15 15 p.

The era of intelligent recommendation: editorial on intelligent recommendation with advanced AI and learning
Wang, S., Pasi, G., Hu, L. & Cao, L., Sept 2020, In: IEEE Intelligent Systems. 35, 5, p. 3-6 4 p.

Jointly modeling intra- and inter-transaction dependencies with hierarchical attentive transaction embeddings for next-item recommendation
Wang, S., Cao, L., Hu, L., Berkovsky, S., Huang, X., Xiao, L. & Lu, W., 30 May 2020, (Submitted) (arXiv).

A Blockchain-enabled decentralized settlement model for IoT data exchange services
Lin, W., Yin, X., Wang, S. & Khosravi, M. R., 8 May 2020, (E-pub ahead of print) In: Wireless Networks. p. 1-15 15 p.

Inferring implicit rules by learning explicit and hidden item dependency
Wang, S. & Cao, L., Mar 2020, In: IEEE Transactions on Systems, Man, and Cybernetics: Systems. 50, 3, p. 935-946 12 p.

Chinese sentence semantic matching based on multi-granularity fusion model
Zhang, X., Lu, W., Zhang, G., Li, F. & Wang, S., 2020, *Advances in Knowledge Discovery and Data Mining: 24th Pacific-Asia Conference, PAKDD 2020 Singapore, May 11–14, 2020, Proceedings, Part II.* Lauw, H. W., Lim, E-P., Wong, R. C-W., Ntoulas, A., Ng, S-K. & Pan, S. J. (eds.). Cham, Switzerland: Springer, Springer Nature, p. 246-257 12 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 12085 LNAI).

Contour-maintaining-based image adaption for an efficient ambulance service in intelligent transportation systems
Liu, Q., Kang, B., Yu, K., Qi, X., Li, J., Wang, S. & Li, H-A., 2020, In: IEEE Access. 8, p. 12644-12654 11 p.

Double-wing mixture of experts for streaming recommendations
Zhao, Y., Wang, S., Wang, Y., Liu, H. & Zhang, W., 2020, *Web Information Systems Engineering – WISE 2020: 21st International Conference Amsterdam, The Netherlands, October 20–24, 2020 Proceedings, Part II.* Huang, Z., Beek, W., Wang, H., Zhou, R. & Zhang, Y. (eds.). Cham, Switzerland: Springer, Springer Nature, p. 269-284 16 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 12343 LNCS).

Intention2Basket: a neural intention-driven approach for dynamic next-basket planning
Wang, S., Hu, L., Wang, Y., Sheng, Q. Z., Orgun, M. & Cao, L., 2020, *Proceedings of the 29th International Joint Conference on Artificial Intelligence, IJCAI 2020.* Bessiere, C. (ed.). California: International Joint Conferences on Artificial Intelligence, p. 2333-2339 7 p. (IJCAI International Joint Conference on Artificial Intelligence; vol. 2021-January).

Intention Nets: psychology-inspired user choice behavior modeling for next-basket prediction
Wang, S., Hu, L., Wang, Y., Sheng, Q. Z., Orgun, M. & Cao, L., 2020, *The Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20).* Palo Alto, CA: Association for the Advancement of Artificial Intelligence, p. 6259-6266 8 p. (AAAI 2020 - 34th AAAI Conference on Artificial Intelligence).

Modelling local and global dependencies for next-item recommendations
Wang, N., Wang, S., Wang, Y., Sheng, Q. Z. & Orgun, M., 2020, *Web Information Systems Engineering – WISE 2020: 21st International Conference Amsterdam, The Netherlands, October 20–24, 2020 Proceedings, Part II.* Huang, Z., Beek, W., Wang, H., Zhou, R. & Zhang, Y. (eds.). Cham, Switzerland: Springer, Springer Nature, p. 285-300 16 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 12343 LNCS).

Sequential recommender systems: challenges, progress and prospects

Wang, S., Hu, L., Wang, Y., Cao, L., Sheng, Q. Z. & Orgun, M., Aug 2019, *Proceedings of the 28th International Joint Conference on Artificial Intelligence, IJCAI 2019.* Kraus, S. (ed.). California: International Joint Conferences on Artificial Intelligence, Vol. 2019-August. p. 6332-6338 7 p.

Graph-based Chinese word sense disambiguation with multi-knowledge integration

Lu, W., Meng, F., Wang, S., Zhang, G., Zhang, X., Ouyang, A. & Zhang, X., 2019, In: Computers, Materials and Continua. 61, 1, p. 197-212 16 p.

Modeling multi-purpose sessions for next-item recommendations via mixture-channel purpose routing networks

Wang, S., Hu, L., Wang, Y., Sheng, Q. Z., Orgun, M. & Cao, L., 2019, *2019 International Joint Conference on Artificial Intelligence.* Kraus, S. (ed.). International Joint Conferences on Artificial Intelligence, p. 3771-3777 7 p.

Attention-based transactional context embedding for next-item recommendation

Wang, S., Hu, L., Cao, L., Huang, X., Lian, D. & Liu, W., 2018, *Thirty-Second AAAI Conference on Artificial Intelligence, AAAI 2018.* Association for the Advancement of Artificial Intelligence, p. 2532-2539 8 p.

Diversifying personalized recommendation with user-session context

Hu, L., Cao, L., Wang, S., Xu, G., Cao, J. & Gu, Z., 2017, *Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence (IJCAI-17).* Sierra, C. (ed.). International Joint Conferences on Artificial Intelligence, p. 1858-1864 7 p.

Perceiving the next choice with comprehensive transaction embeddings for online recommendation

Wang, S., Hu, L. & Cao, L., 2017, *Machine Learning and Knowledge Discovery in Databases: European Conference, ECML PKDD 2017 Proceedings, Part II.* Ceci, M., Hollmén, J., Todorovski, L., Vens, C. & Džeroski, S. (eds.). Cham: Springer, Springer Nature, p. 285-302 18 p. (Lecture Notes in Artificial Intelligence; vol. 10535).

Training deep neural networks on imbalanced data sets

Wang, S., Liu, W., Wu, J., Cao, L., Meng, Q. & Kennedy, P. J., 31 Oct 2016, *IJCNN 2016: Proceedings of the 2016 International Joint Conference on Neural Networks.* Piscataway, NJ: Institute of Electrical and Electronics Engineers (IEEE), p. 4368-4374 7 p.

Activities

Complement, Composite and Context: The 3C-Law to Build Multidomain Recommender Systems
Liang Hu (Speaker), Shoujin Wang (Speaker), Qi Zhang (Speaker) & Longbing Cao (Speaker)
7 Dec 2021 → 10 Dec 2021

Towards Ubiquitous Recommender Systems: Data, Approaches, and Applications
Shoujin Wang (Speaker), Liang Hu (Speaker), Yan Wang (Speaker), Michael Sheng (Speaker), Mehmet A. Orgun (Speaker) & Longbing Cao (Speaker)
3 Feb 2021

Next-Generation Recommender Systems and Their Advanced Applications
Shoujin Wang (Speaker), Liang Hu (Speaker), Yan Wang (Speaker), Michael Sheng (Speaker), Mehmet Orgun (Speaker) & Longbing Cao (Speaker)
8 Jan 2021

Coupling Everything: A Universal Guideline for Building State-of-The-Art Recommender Systems
Liang Hu (Speaker), Shoujin Wang (Speaker) & Longbing Cao (Speaker)
11 Aug 2019