**YUYAN WANG**

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Graduate School of Business

Stanford University

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**ACADEMIC EMPLOYMENT**

**Assistant Professor of Marketing,** Stanford UniversityGraduate School of Business *July 2023 - present*

**EDUCATION**

**Princeton University, Princeton, NJ** *Sept. 2012 - June 2016*

* **Ph.D.** in Statistics, Department of Operations Research & Financial Engineering

**University of Science and Technology of China (USTC), Hefei, China** *Sept. 2008 - July 2012*

* **B.S Honors** in Statistics, Special Class for the Gifted Young. GPA: 3.95/4.0
* Guo Moruo Scholarship (<1%, highest award for undergrad) and National Scholarship (<1%, twice)

**RESEARCH INTERESTS**

**Topics:** Machine Learning, Recommender Systems and Personalization, Consumer Modeling, Long-Term Optimization, Algorithmic Fairness

**Methodologies:** Deep Learning, Reinforcement Learning, Statistical Machine Learning, High-Dimensional Statistics, Causal Inference, Field Experiment, Big Data Analytics

**WORKING PAPERS**

* Wang, Y., Tao L., Zhang X.. “Recommending for a Multi-Sided Marketplace: A Multi-Objective Hierarchical Approach.”
  + *2nd round revision at Marketing Science.* ***Best Paper Award*** *at* [*CIST 2022*](https://sites.google.com/corp/view/cist2022/)*.*
* Li, P.,Wang, Y., Chi, E.H., Chen, M.“Prompt Tuning Large Language Models on Personalized Aspect Extraction for Recommendations.”
* Li, P.,Wang, Y., Chi, E.H., Chen, M. “Hierarchical Reinforcement Learning for Modeling User Novelty-Seeking Intent in Recommender Systems.”

**JOURNAL PUBLICATIONS**

* Li, Q., Cheng, G., Fan, J., Wang, Y.(2018). “Embracing the Blessing of Dimensionality in Factor Models.” *Journal of the American Statistical Association, 113.521 (2018): 380-389.* ***(JASA).***
* Fan, J., Li, Q., Wang, Y. (Alphabetical order)(2017). “Estimation of High-Dimensional Mean Regression in Absence of Symmetry and Light-tail Assumptions.” *Journal of the Royal Statistical Society: Series B (Statistical Methodology) 79.1 (2017): 247-265. (****JRSS-B****).*
* Lin, N., Jing, R., Wang, Y., Yonekura E., Fan, J., Xue, L. (2017). “A statistical investigation of the dependence of tropical cyclone intensity change on the surrounding environment.” *Monthly Weather Review, 145 (7), 2813-2831.*

**CONFERENCE PUBLICATIONS**

* Chang B.,Karatzoglou A., Wang, Y.**,** Xu, C., Chi, E.H., Chen, M.. “Latent User Intent Modeling for Sequential Recommenders.” *Proceedings of the ACM Web Conference 2023 (theWebConf 2023).*
  + *Full paper with oral presentation; Acceptance rate: 19.8%.*
* Wang, Y., Sharma, M., Badam, S., Xu, C., Sun, Q., Richardson, L., Chung, L., Chi, E.H., Chen, M.. “Surrogate for Long-Term User Experience in Recommender Systems.” *Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery & Data Mining (KDD 2022).*
  + *Top Computer Science conference. Full paper with oral presentation; Acceptance rate: 15.0%.*
  + *Selected as* [*most influential KDD papers*](https://www.paperdigest.org/2023/04/most-influential-kdd-papers-2023-04/) *in 2022. Highlighted by* [*an invited talk at KDD 2022*](https://www.kdd.org/kdd2022/ADSSpeaker.html)*.*
  + *Short version accepted to BayLearn 2022.*
* Wang, Y., Tao L., Zhang X.. “Recommending for a Multi-Sided Marketplace with Heterogeneous Contents.” *Sixteenth ACM Conference on Recommender Systems (Recsys 2022).* 
  + *Top Recommender Systems conference. 4-page short paper with oral presentation; Acceptance rate: 28.0%. Media coverage:* [*Shaped*](https://www.shaped.ai/blog/day-2-of-recsys2022-our-favorite-5-papers-and-talks)*.*
* Wang, Y., Zhao, Z., Dai B., Fifty, C., Lin, D., Hong L., Li, W., Chi, E.H.. “Can Small Heads Help? Understanding and Improving Multi-Task Generalization.” *Proceedings of the ACM Web Conference 2022 (WWW / theWebConf 2022).*
  + *Full paper with oral presentation; Acceptance rate: 17.7%.*
* Wang, J., Le, Y., Chang, B., Wang, Y., Chi, E.H., Chen, M.. “Learning to Augment for Casual User Recommendation.” *Proceedings of the ACM Web Conference 2022 (WWW / theWebConf 2022)*.
  + *Full paper with oral presentation; Acceptance rate: 17.7%.*
* Oberst, M., D'Amour A., Chen M., Wang, Y., Sontag D., Yadlowsky S. Bias-robust Integration of Observational and Experimental Estimators. *American Causal Inference Conference (ACIC 2022)*.
  + *Journal version on arXiv:* [*https://arxiv.org/pdf/2205.10467.pdf*](https://arxiv.org/pdf/2205.10467.pdf)*.*
* Wang, Y., Wang, X., Beutel, A., Prost, F., Chen, J., Chi, E. H.. “Understanding and Improving Fairness-Accuracy Trade-offs in Multi-Task Learning.” *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining (KDD 2021)*.
  + *Top Computer Science conference. Full paper with oral presentation; Acceptance rate: 15.4%.*
  + *Short version accepted to BayLearn 2021.*
* Chen, M., Wang, Y., Xu C., Le, Y., Sharma, M., Richardson, L., Wu S., Chi, E.H.. “Values of User Exploration in Recommender Systems.”*Fifteenth ACM Conference on Recommender Systems (Recsys 2021)***.** 
  + *Top Recommender Systems conference. Full paper with oral presentation; Acceptance rate: 18.4%.*
* Chen, Z., Wang, Y., Lin, D., Cheng, D.Z., Hong, L., Chi, E.H., Cui, C.. “Beyond Point Estimate: Inferring Ensemble Prediction Variation from Neuron Activation Strength in Recommender Systems.” *Proceedings of the 14th ACM International Conference on Web Search and Data Mining (WSDM 2021)***.**
  + *Full paper with oral presentation; Acceptance rate: 18.6%.*

**PATENTS & BLOGS**

* Wang, Y., Zhang, X., Liu, I., Ning, Y., Peng, C. (2021). “Multi-layer Optimization for a Multi-sided Network Service.” **U.S. Patent No. 11,127,066**. Washington, DC: U.S. Patent and Trademark Office.
* Zhang, X., Zhang, S., Wang, Y., Gogate, M., Ning, Y., Peng, C. Liu, I., Lee, C. (2021). “Optimizing Listing Efficiency and Efficacy for a Delivery Coordination System.” **U.S. Patent No. 11,157,579**. Washington, DC: U.S. Patent and Trademark Office.
* Wang, Y., Ning, Y., Liu, I., Zhang, X. (2018). “Food Discovery with Uber Eats: Recommending for the Marketplace.” *Uber Engineering Blog***.**
  + *Media coverage:* [*Top 10 machine learning articles of the month*](https://medium.mybridge.co/machine-learning-top-10-articles-for-the-past-month-v-oct-2018-ca24dadbe495)*.*

**INVITED TALKS & CONFERENCE PRESENTATIONS**

* “Recommending for a Multi-Sided Marketplace: A Multi-Objective Hierarchical Approach.”
  + UCLA Anderson School of Management. May 2024.
  + UC Berkeley Haas School of Business. Mar 2024.
  + University of Arizona Wieland Speaker Series. Feb 2024.
  + Warrington College of Business, University of Florida. Jan 2024.
  + Peking University Guanghua School of Management. Dec 2023.
  + UChicago Booth Marketing Seminar. Nov 2023.
  + USC Marshall Statistics Seminar. Nov 2023.
  + AIBA Workshop, Temple University (virtual). Oct 2023.
  + Reading Group Sequence on Interference & Marketplace, Stanford GSB. Sept 2023.
  + KDD 2023 “[AI for Open Society](https://aioskdd.github.io/)” Day Invited Talk. Aug 2023.
  + SICS, Haas School of Business, UC Berkeley. June 2023.
  + University of California, Riverside School of Business. Feb 2023.
  + Coupang, Inc. May 2023.
  + Stern School of Business, New York University. Nov 2022.
  + The Wharton School, University of Pennsylvania. Nov 2022.
  + Stanford Graduate School of Business. Nov 2022.
  + Kellogg School of Management, Northwestern University. Oct 2022.
  + 2022 INFORMS Annual Meeting. Oct 2022.
  + Conference on Information Systems and Technology (CIST) 2022 (***Best Paper Award***).
  + SC Johnson College of Business, Cornell University (virtual). Oct 2022.
  + Naveen Jindal School of Management, UT Dallas. Oct 2022.
  + 16th ACM Conference on Recommender Systems (Recsys 2022). Sept 2022.
  + HKUST Business school (virtual). Sept 2022.
  + CUHK Business school (virtual). Sept 2022.
  + ISMS Marketing Science Conference 2022 (virtual). June 2022.
* “Surrogate for Long-Term User Experience in Recommender Systems.”
  + Netflix Research Seminar Talk. Oct 2023.
  + DataFun Summit 2023 (virtual). Aug 2023.
  + Bay Area Machine Learning Symposium (BayLearn) 2022. Oct 2022.
  + Google Search Tech Talk. Sept 2022.
  + 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining. Aug 2022.
  + Google Research Brain Dump. Feb 2022.
  + Google Research Conference 2021. Oct 2021.
  + Google Research Reinforcement Learning Workshop. July 2021.
* “Can Small Heads Help? Understanding and Improving Multi-Task Generalization.”
  + Snap Inc Tech Talks. Nov 2022.
  + ACM The Web Conference 2022. Apr 2022.
* “User Intent Modeling in Recommender Systems.”
  + CONSEQUENCES+REVEAL '22: Causality, Counterfactuals, Sequential Decision-Making & Reinforcement Learning,16th ACM Conference on Recommender Systems (Recsys 2022 Workshop). Sept 2022 ([***Invited Speaker and Panelist***](https://sites.google.com/corp/view/consequences2022/invited-speakers?authuser=0)).
* “Moonshot Ally: Assistive Machine Learning for Long-Term User Journeys.”
  + Google Brain Summit. Sept 2022.
* “Understanding and Improving Fairness-Accuracy Trade-offs in Multi-Task Learning.”
  + Mays Business School, Texas A&M University. July 2022.
  + ISMS Marketing Science Conference 2022 (virtual). June 2022.
  + Bay Area Machine Learning Symposium (BayLearn) 2021. Oct 2021.
  + 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining. Aug 2021.
  + Faire Wholesale, Inc. July 2021.
* “Food Discovery with Uber Eats: Recommending for the Marketplace.”
  + SigOpt. Aug 2019.
  + Facebook Research. June 2019.
  + Airbnb. June 2019.
* “Uber Eats Restaurant Ranking and Recommendation.”
  + Moving the World with Data Meetup. San Francisco, CA, Oct 2018.
  + AI Applications @ Uber Eats Meetup. San Francisco, CA, Oct 2017.

* “Robust Approximate Lasso for High-Dimensional Regression.”
  + IBM Thomas J. Watson Research Center. Feb 2016.
  + Yale University. Sept 2015.
  + 2015 Joint Statistical Meetings (JSM), Aug 2015.
  + NSF Workshop for Empr Process and Mod Stat Decision Theory. May 2015.

* “Bayesian time series for online query frequency prediction.”
  + Internet Services & Research Center, Microsoft Research, Aug 2015.

**INDUSTRY EXPERIENCE**

**Google Brain,** Mountain View, CAOct 2019 – May 2023

* Selected projects:

**Surrogate for Long-Term Consumer Experience in Recommender Systems**

* Developed a framework to identify sequential and temporal consumer behavior patterns that are predictive of long-term consumer experience in recommender systems, which is a sparse, noisy and long-horizon signal that is hard to optimize directly. Online large-scale field experiments on an RL-based recommendation system demonstrated significant improvements in key business metrics including consumer growth and retention, achieving 20% of the annual goal of a 10-person team.
* Paperaccepted to KDD 2022. Quote from a Vice President at Google: “This is an excellent paper. I think the entire Core Experiences team (900+ employees) would benefit from reading it, and I would like to send it to everyone in the Core Experiences team.”

**Understanding and Modeling Consumer Intent for Long-Term Optimization**

* Developed a framework for extracting consumer intents (e.g. exploration or variety-seeking intent) on the personalized platforms, and a scalable personalized diversification framework based on the predicted intents for long-term optimization.
* [Invited talk at Recsys 2022](https://sites.google.com/corp/view/consequences2022/invited-speakers?authuser=0). Work deployed globally with significant movement in consumer retention.

**Uber Technologies Inc.,** San Francisco, CASept 2016 - Sept 2019

* Tech lead on Uber Eats home feed ranking and recommendation; Founding member of Uber Eats Data Science team which became a team of 80+ during my time there. Selected projects:

**Multi-Objective Recommendation for a Three-Sided Marketplace**

* Developed a personalized multi-objective optimization framework for Uber Eats restaurant recommendation. Online A/B experiments showed significant increases in consumer retention, basket value and orders for global markets, which translate to $xx million weekly gain in revenue. My work was deployed globally as the recommender system for Uber Eats’ homepage.
* Patented the work as first author.
* Media Coverage: First-authored [tech blog](https://eng.uber.com/uber-eats-recommending-marketplace/) was selected as [top 10 machine learning articles of the month](https://medium.mybridge.co/machine-learning-top-10-articles-for-the-past-month-v-oct-2018-ca24dadbe495) (0.7%) by an independent publisher. Won “Most Impressive Business Impact” award by Uber.

**Holistic Optimization with Heterogeneous & Hierarchical Contents**

* Proposed and developed *HRank*, a holistic recommendation framework for personalized optimal homepage layout, combining machine learning and probabilistic modeling for consumers’ browsing behavior on heterogeneous and hierarchical contents.
* *HRank* was deployed globally, which brought a significant increase in consumer conversion rate, amounting to $xx million weekly gainin revenue.
* My work was featured in Uber’s company-wide Machine Learning Orientation video which was circulated among 500+ ML engineers and applied scientists.

**Microsoft Research**, Redmond, WA June 2015 - Aug 2015

**Morgan Stanley**, New York City, NY June 2014 - Aug 2014

**ACADEMIC SERVICES**

**Reviewer:** Management Science 2023 - Present

**Program Committee Member:** Workshop on Platform Analytics (WoPA) 2024

**Program Committee Member:** Recsys 2023 - Present

**Reviewer**: Recsys, KDD, NeurIPS, ICML, CIKM, TheWebConf. 2019 - Present

**Reviewer**: Google PhD Fellowship. 2021 – 2022

**Session chair**, Conference on Information Systems and Technology (CIST) 2022. June 2022

**Organizer** and **session chair**, Workshop on Action, Task and User Journey Modeling. Oct 2022

**Session chair**, ISMS Marketing Science Conference 2022. June 2022

**Session chair**, Long-term Dynamics for Responsible Recommendation Systems Workshop’21. Nov 2021

**TPC member**, Reinforcement Learning for Real Life (RL4RealLife) Workshop @ ICML 2021. July 2021

**TEACHING EXPERIENCE**

**Guest Lecture / Tutorials**

* A Gentle Introduction to Recommender Systems.
  + Yale School of Management (SOM). Apr 2023
  + USC Marshall School of Business. Feb 2023
  + Stern School of Business, New York University. June 2022
  + Heinz College, Carnegie Mellon University. Sept 2021
* Experimentation and A/B Testing Best Practices.
  + Uber Technologies. Oct 2018

**Mentorship**

* Mentor for Undergraduate Consortium at KDD 2022 (KDD-UC) June 2022 - June 2023
* [CSRMP](https://research.google/outreach/csrmp/) mentor for students from historically marginalized groups. Nov. 2021 - May 2023
* Mentor for one **student researcher** and two **interns** at Google Brain May 2021 - May 2023
* Mentor for two **full-time** team members and one **intern** at Uber. June 2017 - Sept 2019

**Assistant Instructor at Princeton University**

* ORF 504: Financial Econometrics Spring 2016
* ORF 245: Fundamentals of Statistics Spring 2014, Spring 2015, Fall 2015
* ORF 405: Regression and Applied Time Series Analysis Fall 2013, Fall 2014

**SELECTED AWARDS**

Best Paper Award, CIST 2022 Oct 2022

Cummins Merit Fellowship, Princeton University Jan 2013

Guo Moruo Scholarship, USTC (<1%, highest award for undergrad) May 2012

Outstanding Research Award, USTC Feb 2012

CSST Award, UCLA (6 out of 90) Sept 2011

National Scholarship, Ministry of Education of China (<1%) Nov 2010, Nov 2009