

# Tong Wang

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Google Scholar

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EMPLOYMENT	<b>Yale University, School of Management</b> Assistant Professor of Marketing Faculty Fellow at Center for Algorithms, Data, and Market Design	New Haven, CT 2023 - PRESENT
	<b>University of Iowa, Tippie College of Business</b> Assistant Professor of Business Analytics (promotion and tenure awarded in 2023)	Iowa City, IA 2016 - 2023
EDUCATION	<b>Massachusetts Institute of Technology</b> Ph.D. in Computer Science M.S. in Electrical Engineering and Computer Science	Cambridge, MA 2012 - 2016 2010 - 2012
	<b>Beijing University of Posts and Telecommunications</b> B.S. in Electrical Engineering with <i>Highest Distinction</i>	Beijing, China 2006 - 2010
RESEARCH OVERVIEW	I work on two types of research. 1) I develop new <b>interpretable machine learning</b> models that enable human understanding of the decision-making processes. 2) I use machine learning methods to solve business problems, understand phenomena, or discover insights.	
PUBLICATIONS	† student under my supervision * corresponding author + Equal Contribution	
WORKING PAPERS	<ol style="list-style-type: none"><li>1. Can Advanced LLMs Coach Smaller LLMs? Knowledge Distillation for Goal-Oriented Dialogs <b>Tong Wang</b>, K. Sudhir and Dat Hong</li><li>2. Why it Works: Can LLM Hypotheses Improve AI Generated Marketing Content? <b>Tong Wang</b>, K. Sudhir and Hengguang Zhou (<i>Top downloads on SSRN</i>)</li><li>3. Modeling Serialized Media Engagement Dynamics via Adversarial IRL with Content Embeddings Peter Lee, K. Sudhir and <b>Tong Wang</b></li><li>4. From Model Explanation to Data Misinterpretation: Uncovering the Pitfalls of Post Hoc Explainers in Business Research Ronilo Ragodos<sup>†</sup>, <b>Tong Wang</b><sup>*</sup>, Lu Feng, and Yu Jeffrey Hu</li></ol>	
PUBLISHED	<b>MARKETING AND MANAGEMENT</b>  [J1]. Making Early and Accurate Deep Learning Predictions to Help Disadvantaged Individuals in Medical Crowdfunding <b>Tong Wang</b> , Fujie Jin, Lu Feng, Yuan Cheng, Yu Hu POM - <i>Production and Operations Management</i> , 2024  [J2]. Paralanguage Classifier (PARA): An Algorithm for Automatic Coding of Paralinguistic Nonverbal Parts of Speech in Text Andrea Luangrath, Yixiang Xu, <b>Tong Wang</b> JMR - <i>Journal of Marketing Research</i> , 2022	

- [J3]. Evaluating the Effectiveness of Marketing Campaigns for Malls Using A Novel Interpretable Machine Learning Model

**Tong Wang**, Cheng He, Fujie Jin, Yu Jeffrey Hu  
ISR – *Information Systems Research*, 2021

**MACHINE LEARNING METHODS (JOURNAL AND TOP CONFERENCE)**

- [C1]. ProtoPairNet: Interpretable Regression through Prototypical Pair Reasoning  
Rose Gurung, Ronilo Ragodos<sup>†</sup>, Chiyu Ma, **Tong Wang**, and Chaofan Chen  
NeurIPS – *Conference on Neural Information Processing Systems*, 2025
- [J1]. PIE – A Partially Interpretable Model with Black-box Refinement  
**Tong Wang**, Yunyi Li, Jingyi Yang, Boxiang Wang  
IJOC - *INFORMS Journal on Computing*, 2025
- [C2]. Improving Decision Sparsity  
Yiyang Sun, **Tong Wang**, and Cynthia Rudin  
NeurIPS – *Conference on Neural Information Processing Systems*, 2024
- [C3]. Sparse and Faithful Explanations Without Sparse Models  
Zhi Chen, Yiyang Sun, Vittorio Orland, **Tong Wang**, and Cynthia Rudin  
AISTATS - *Artificial Intelligence and Statistics Conference*, 2024  
**Winner of INFORMS 2023 Data Mining Best Paper Award General Track**
- [J1]. Interpretable Text Classification Via Prototype Trajectory  
Dat Hong<sup>†</sup>, **Tong Wang\***, Stephen Baek  
JMLR – *Journal of Machine Learning Research*, 2023
- [C4]. ProtoX – Explaining a Reinforcement Learning Agent via Prototyping  
Ronilo Ragodos<sup>†</sup>, **Tong Wang\***, Qihang Lin, Xun Zhou  
NeurIPS – *Conference on Neural Information Processing Systems*, 2022
- [C5]. AdaAX - Explaining Recurrent Neural Networks by Learning Automata with Adaptive States  
Dat Hong<sup>†</sup>, Alberto Maria Segre, **Tong Wang\***  
KDD – *SIGKDD Conference on Knowledge Discovery and Data Mining*, 2022
- [J2]. Causal Rule Sets for Identifying Subgroups with Enhanced Treatment Effect  
**Tong Wang**, Cynthia Rudin  
IJOC – *INFORMS Journal on Computing*, 2022
- [J3]. Hybrid Predictive Model: When an Interpretable Model Collaborates with a Black-box Model  
**Tong Wang**, Qihang Lin  
JMLR – *Journal of Machine Learning Research*, 2021  
**Finalist, Best Paper Award at INFORMS Workshop on Data Mining & Decision Analytics, 2018.**
- [C6]. Transparency Promotion with Model-Agnostic Linear Competitors  
Hassan Rafique, **Tong Wang\***, Qihang Lin, Arshia Sighani  
ICML – *International Conference on Machine Learning*, 2020  
**Runner-up of Best Paper Awards at INFORMS Workshop on Data Science, 2019**
- [C7]. Interpretable Companions for Black-box Classifiers  
Danqing Pan, **Tong Wang**, Satoshi Hara  
AISTATS - *International Conference on Artificial Intelligence and Statistics*, 2020
- [C8]. Gaining Free or Low-Cost Interpretability with Interpretable Partial Substitute  
**Tong Wang**  
ICML - *International Conference on Machine Learning*, 2019
- [C9]. Multi-value Rule Sets for Interpretable Classification with Feature-Efficient Representations  
**Tong Wang**  
NeurIPS - *Conference on Neural Information Processing Systems*, 2018

- [J4]. A Bayesian Framework for Learning Rule Sets for Interpretable Classification  
**Tong Wang**, Cynthia Rudin, Finale Doshi-Velez, Yimin Liu, Erica Klampfl, Perry MacNeille  
*JMLR - Journal of Machine Learning Research*, 2017

#### **MACHINE LEARNING APPLICATIONS**

- [C10]. ConPro-GAIL: Interpretable Policy Learning via Conceptual Prototyping for Human Spatiotemporal Decision Understanding  
Ronilo Ragodos, Xun Zhou, **Tong Wang**, Yajun Pan, and Jun Luo  
ACM SIGSPATIAL 2025
- [C11]. Learning to Detect Patterns of Crime  
**Tong Wang**, Cynthia Rudin, Daniel Wagner, Rich Sevieri  
ECML/PKDD - *the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases*, 2013  
**Ideas from this paper were adopted by the New York Police Department and are running live in their Domain Awareness System (see article). Media coverage on WIRED, Boston Globe, etc**
- [J5]. Finding Patterns with a Rotten Core: Data Mining for Crime Series with Core Sets  
**Tong Wang**, Cynthia Rudin, Daniel Wagner, Rich Sevieri  
*Big Data*, 2015  
**The Second Place for the INFORMS “Doing Good with Good OR” Award, 2015**
- [J6]. Same-Day Delivery with Fair Customer Service  
Xinwei Chen, **Tong Wang**, Barrett Thomas, Marlin W. Ulmer  
*EJOR - European Journal on Operational Research*, 2022
- [J7]. Disjunctive Rule Lists  
Ronilo Ragodos<sup>†</sup>, **Tong Wang**<sup>\*</sup>  
*IJOC - INFORMS Journal on Computing*, 2022
- [J8]. A Holistic Approach to Interpretability in Financial Lending: Models, Visualizations, and Summary-Explanations  
Chaofan Chen, Kangcheng Lin, Cynthia Rudin, Yaron Shaposhnik, Sijia Wang, **Tong Wang**  
(Author names are listed alphabetically)  
*DSS – Decision Support Systems*, 2021  
**Winner of FICO Recognition Award in FICO xML Challenge, 2018**
- [J9]. Dental Anomaly Detection Using Intraoral Photos Via Deep Learning  
Ronilo Ragodos<sup>†</sup>, **Tong Wang**<sup>\*</sup>, George L. Wehby, Seth M. Weinberg, Deborah V. Dawson, Mary L. Marazita, Lina M. Moreno Uribe, Brian J. Howe<sup>\*</sup>  
*Scientific Reports*, 2022
- [J10]. Humans in the Loop: Priors and Missingness on the Road to Prediction  
Anna Filippova, Connor Gilroy, Ridhi Kashyap, Antje Kirchner, Allison C. Morgan, Kivan Polimis, Adaner Usmani, **Tong Wang**  
(Author names are listed alphabetically)  
*Socius*, 2019
- [J11]. Prevalence and Predictors of C. Difficile Infections in Those Who Had Major Surgical Procedures in USA: Analysis Using the Traditional and Machine Learning Methods  
Veerajalandhar Allareddy, **Tong Wang**, Sankeerth Rampa, Jennifer Caplin, Romesh P Nalliah, Aditya Badheka, Veerasathpurush Allareddy  
*American Journal of Surgery*, 2018

FUNDED RESEARCH	<ul style="list-style-type: none"> <li>• Co-PI for NSF Award: 21-530 Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science. 2023</li> <li>• Interpretable Machine Learning for Assisting Electronic Chip Design, funded by InZone.AI, Jun - Aug, 2017; Jan - May, 2018</li> <li>• Research Excellence Internal Grant, awarded by Tippie College of Business, April, 2019</li> </ul>
SELECTED AWARDS	<p>Winner of the Data Mining Best Paper Award Competition, INFORMS Workshop on Data Science. Oct, 2023</p> <p>Winner of the Best Paper Award at INFORMS Workshop on Data Science Nov, 2020</p> <p>Runner-up for the Best Paper Awards at INFORMS Workshop on Data Science Oct, 2019</p> <p>Research Excellence Award, Tippie College of Business, University of Iowa 2019</p> <p>FICO Recognition Award, FICO Explainable Machine Learning Challenge Dec, 2018</p> <p>Finalist for the Best Paper Awards at 13th INFORMS DM&amp;DA Workshop Nov, 2018</p> <p>Second place winner of "Doing Good with Good OR", INFORMS Nov, 2015</p> <p>LinkedIn Intern Women in Tech Scholarship 2014</p> <p>Presidential fellowship – Joan and Irwin Jacobs fellowship, MIT 2010 - 2011</p> <p>Best Bachelor Thesis Award, BUPT 2010</p>
PRESENTATIONS	<p><i>"Why it Works: Can LLM Hypotheses Improve AI Generated Marketing Content?"</i></p> <ul style="list-style-type: none"> <li>• University of Houston Mar, 2026</li> <li>• Amazon Advertising (<b>industry talk</b>) Nov, 2025</li> <li>• INFORMS Annual Meeting, Atlanta Oct, 2025</li> <li>• Conference on Information Systems and Technology, Atlanta Oct, 2025</li> <li>• Disney, Florida (<b>industry talk</b>) Sep, 2025</li> <li>• AI and Collaborative Innovation @ NYU Sep, 2025</li> <li>• The Ohio State University Fisher College of Business Sep, 2025</li> <li>• University of Massachusetts Amherst Sep, 2025</li> <li>• Marketing Science Conference, Washington DC June, 2025</li> <li>• Symposium on Artificial Intelligence in Marketing, Wisconsin Madison May, 2025</li> <li>• Artificial Intelligence in Management conference, Los Angeles Mar, 2025</li> <li>• Offerfit, Inc (<b>industry talk</b>) Mar, 2025</li> <li>• BizAI, Dallas Mar, 2025</li> <li>• (Keynote) Conference on Artificial Intelligence, Machine Learning, and Business Analytics, Yale Dec, 2024</li> </ul> <p><i>"Can Advanced LLMs Coach Smaller LLMs? Knowledge Distillation for Goal-Oriented Dialogs"</i></p> <ul style="list-style-type: none"> <li>• University of Connecticut Operations and Information Management Apr, 2025</li> <li>• Virtual Quant Marketing Seminar Feb, 2025</li> <li>• CMU Tepper Operations Research Jan, 2025</li> <li>• NeurIPS workshop on Interpretable AI: Past, Present and Future Dec, 2024</li> <li>• Samsung Research America (<b>industry talk</b>) Dec, 2024</li> <li>• University of Berkeley Hass Nov, 2024</li> <li>• University of Rochester Simon Business School Oct, 2024</li> <li>• Fidelity AI Center (<b>industry talk</b>) Sep, 2024</li> <li>• Purdue University Mitch Daniels School of Business Sep, 2024</li> <li>• Summer Workshop on AI for Business June, 2024</li> <li>• Tsinghua University School of Economics and Management June, 2024</li> <li>• Hongkong University May, 2024</li> <li>• Chinese University of Hongkong May, 2024</li> <li>• Four School Conference May, 2024</li> <li>• BizAI, Dallas Mar, 2024</li> </ul>

PATENT	Medard, M., Ferner, U., and Wang, T., “Network Coded Storage With Multi-Resolution Codes”, US Patent App. 13/965,721. 2017.
TEACHING EXPERIENCE	Yale MGT 554 (AI for Business Decisions) University of Iowa BAIS:3500 (Data Mining - Undergrad Level) University of Iowa BAIS:6070 (Data Science - MSBA Level) University of Iowa BAIS:7000 (Interpretable machine Learning - PhD Level)
ACADEMIC SERVICES	<p><b>GRANT REVIEW</b></p> <p>National Science Foundation Panelist 2019 and 2021</p> <p><b>ORGANIZING ROLES</b></p> <p>Cluster chair for Making Sense of AI Cluster, INFORMS Annual Meeting 2022</p> <p>Web chair for Workshop on Information Technologies and Systems 2021</p> <p>Co-chair for 2019 INFORMS Workshop on Data Mining and Analytics 2019</p> <p>Chair for Data Mining Best Paper Competition, INFORMS 2017, 2018</p> <p>Council member for Data Mining Section, INFORMS, 2016 - 2018</p> <p>Session chairs at INFORMS 2016 - 2022</p> <p><b>REVIEW SERVICE</b></p> <p>COMPUTER SCIENCE CONFERENCES AND JOURNALS</p> <p>Area Chair for FAccT 2023</p> <p>Reviewer for JMLR, NeurIPS, ICML, ICLR, AISTATS, AAAI, IJCAI, FATML, TKDE, Machine Learning Journal, etc</p> <p>BUSINESS JOURNALS</p> <p>Associate Editor, INFORMS Journal on Computing 2023 - present</p> <p>Reviewer for Management Science, Information Systems Research, MIS Quarterly, Manufacturing &amp; Service Operations Management, Production and Operations Management</p>