

Shen Yan

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Education

- 2017-2022 University of Southern California Los Angeles, CA**
Ph.D. in Computer Science
Research Assistant at USC Information Sciences Institute
Advisor: Emilio Ferrara
Dissertation: *Fair Machine Learning for Human Behavior Understanding*
- 2014-2017 University of Chinese Academy of Sciences Beijing, China**
M.S. in Computer Science
Institute of Information Engineering, Chinese Academy of Sciences
Thesis: *Differential Privacy Based Privacy-Preserving Mechanisms in Online Social Networks*
- 2010-2014 Hebei University of Technology Tianjin, China**
B.E. in Electronic Information Engineering

Work Experience

- Meta Menlo Park, CA**
Senior Research Scientist May 2022 - Present
- Conduct research on Artificial Intelligence models for understanding content and user behaviors on online social media platforms.
 - Building multimodal machine learning models and Large Language Model (LLM) applications for Meta's products.
 - Design research agendas and lead the project collaboration with cross-functional teams on various key business areas, including recommendation, ranking, advertising, etc.
- Meta Research - Central Applied Science Menlo Park, CA (Remote)**
Research Intern May 2021 - Nov. 2021
- Research on large-scale social network graph and survey data.
 - Build predictive machine learning models for user behavior understanding.
 - The internship project is published at 2022 The Web Conference.
- Information Sciences Institute Marina Del Rey, CA**
Research Assistant Jan. 2018 - May. 2022
- Conduct research on machine learning fairness and responsible AI.
 - Design and implement predictive models on multimodal physiological and psychological data.
 - Software development for research project deliveries.

Selected Projects

Fair Machine Learning for Multimodal Human Behavior Understanding

Los Angeles, CA

Research Assistant

Aug. 2019 - May 2022

- Develop machine learning models that will identify, account for, and mitigate the biases of multimodal human behavior modeling methods.
- Improve AI fairness without sensitive information for various machine learning applications including classification, multimodal learning, federated learning, etc.

IARPA MOSAIC: Tracking Individual Performance with Sensors (TILES)

Los Angeles, CA

Research Assistant

Jan. 2018 - Aug. 2020

- Modeling multimodal human behavior data including physiological signals, environmental sensors, psychological surveys, etc.
- Core member of the modeling team, in charge of building predictive models.

Understanding Cyberbullying across Online Social Platforms

Los Angeles, CA

Sept. 2018 - May 2022

- Proposed a framework to identify cyberbullying events based on interaction networks and linguistic properties.
- Improved aggressive content detection by identifying the mixture of subjects and sentiments in online conversations.
- Characterized user roles (e.g., bully, victim, victim supporter) and analyzed the user interaction dynamics in cyberbullying events.

Fine-Grained Differential Private Data Mining for Online Social Networks

Beijing, China

Aug. 2015 - June 2017

- Designed fine-grained differential privacy mechanisms for data mining and collaborative filtering algorithms.
- Used the social network structure to provide customized privacy protection level and defend collusion attacks.

Publications

- Y.-H. Ezzeldin*, **S. Yan***, C. He, E. Ferrara, and S. Avestimehr, “**FairFed: Enabling group fairness in Federated Learning,**” in proc. The 37th AAAI Conference on Artificial Intelligence (AAAI’23), Feb. 2023. (**co-first author**)
- **S. Yan**, K.M. Altenburger, Y.-C. Wang, and J. Cheng, “**What does perception bias on social networks tell us about friend count satisfaction?**” in proc. The ACM Web Conference 2022 (WWW’22), pp. 2687-2695, Apr. 2022.
- **S. Yan**, H.-T. Kao, S. Narayanan, K. Lerman, and E. Ferrara, “**Mitigating the bias of heterogeneous human behavior in affective computing,**” in proc. 9th International Conference on Affective Computing & Intelligent Interaction (ACII’21), pp. 1-8, Sept. 2021.
- H.-T. Kao, **S. Yan**, H. Hosseinmardi, S. Narayanan, K. Lerman, and E. Ferrara, “**User-based collaborative filtering mobile health system,**” *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, vol. 4(4), pp. 1-17, Dec. 2020.
- **S. Yan**, H.-T. Kao, and E. Ferrara, “**Fair class balancing: Enhancing model fairness without observing sensitive attributes,**” in proc. 29th ACM International Conference on Information and Knowledge Management (CIKM’20), pp. 1715-1724, Oct. 2020.
- **S. Yan**, D. Huang, M. Soleymani, “**Mitigating biases in multimodal personality assessment,**” in proc. 22nd ACM International Conference on Multimodal Interaction (ICMI’20), pp. 361-369, Oct. 2020.

- J. Jiang, E. Chen, **S. Yan**, K. Lerman, and E. Ferrara, “**Political polarization drives online conversations about COVID-19 in the United States,**” *Human Behavior and Emerging Technologies*, vol. 2, pp. 200-211, July 2020.
- **S. Yan**, H. Hosseinmardi, H.-T. Kao, S. Narayanan, K. Lerman, and E. Ferrara, “**Estimating affects with wearable sensors,**” *Journal of Healthcare Informatics Research*, Springer, pp. 1-34, Mar. 2020.
- **S. Yan**, H. Hosseinmardi, H.-T. Kao, S. Narayanan, K. Lerman, and E. Ferrara, “**Estimating individualized daily self-reported affect with wearable sensors,**” in proc. 7th IEEE International Conference on Healthcare Informatics (ICHI’19), pp. 1-9, June 2019.
- **S. Yan**, “**Modeling behavioral traits and well-being using human biosignals: Challenges and methods,**” in proc. 7th IEEE International Conference on Healthcare Informatics (ICHI’19), pp. 1-2, June 2019.
- H.-T. Kao, **S. Yan**, D. Huang, N. Bartley, H. Hosseinmardi, and E. Ferrara, “**Understanding cyberbullying on Instagram and Ask.fm via social role detection,**” in proc. 4th Workshop on Computational Methods in Online Misbehavior Co-located with The Web Conference (CyberSafety’19), pp. 183-188, May 2019.
- H.-T. Kao, H. Hosseinmardi, **S. Yan**, M. Hasan, S. Narayanan, K. Lerman, and E. Ferrara, “**Discovering latent psychological structures from self-report assessments of hospital workers,**” in proc. 2018 5th International Conference on Behavioral, Economic, and Socio-Cultural Computing (BESC’18), pp. 156-161, Nov. 2018.
- A. Deb, A. Majmundar, S. Seo, A. Matsui, R. Tandon, **S. Yan**, J. Allem, and E. Ferrara, “**Social bots for online public health interventions,**” in proc. The 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM’18), pp. 186-189, Aug. 2018.
- M. Wang, W.-T. Zhu, **S. Yan**, Q. Wang, “**SoundAuth: Secure zero-effort two-factor authentication based on audio signals,**” in proc. 6th IEEE Conference on Communications and Network Security (CNS’18), pp. 1-9, May 2018.
- **S. Yan**, S. Pan, W.-T. Zhu, and K. Chen, “**DynaEgo: Privacy-preserving collaborative filtering recommender system based on social-aware differential privacy,**” in K. Y. Lam, C. H. Chi, and S. Qing (Eds.): 18th International Conference on Information and Communications Security (ICICS’16), *Lecture Notes in Computer Science*, vol. 9977, pp. 347–357, Nov. 2016.
- L. Yang, F. Fang, X. Lu, W. T. Zhu, Q. Wang, **S. Yan**, and S. Pan, “**A secure and fast dispersal storage scheme based on the learning with errors problem,**” in proc. 12th EAI International Conference on Security and Privacy in Communication Networks (SecureComm’16), pp. 392–411, Oct. 2016.
- **S. Yan**, S. Pan, Y. Zhao, and W.-T. Zhu, “**Towards privacy-preserving data mining in online social networks: Distance-grained and item-grained differential privacy,**” in J. K. Liu and R. Steinfield (Eds.): 21st Australasian Conference on Information Security and Privacy (ACISP’16), Part I, *Lecture Notes in Computer Science*, vol. 9722, pp. 141–157, July 2016.
- S. Pan, **S. Yan**, and W.-T. Zhu, “**Security analysis on privacy-preserving cloud aided biometric identification schemes,**” in J. K. Liu and R. Steinfield (Eds.): 21st Australasian Conference on Information Security and Privacy (ACISP’16), Part II, *Lecture Notes in Computer Science*, vol. 9723, pp. 446–453, July 2016.

Services

Program Committee/Reviewers

ACM Conference on Web Science (WebSci)	2020 - 2022
ACM CHI Conference on Human Factors in Computing Systems (CHI)	2022
ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)	2022
ACM International Conference on Multimodal Interaction (ICMI)	2022
ACM Conference On Computer-Supported Cooperative Work And Social Computing (CSCW)	2022
International Journal of Computer Vision (IJCV)	2021
International World Wide Web Conference (WWW)	2019 - 2021
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)	2020

International Conference on Data Mining (ICDM)	2019
International Conference on Advances in Social Networks Analysis and Mining (ASONAM)	2019
International AAAI Conference on Web and Social Media (ICWSM)	2019, 2022-2024
Communications of the ACM	2024

Skills

- Programming Language: Python, C++, MATLAB, SQL, Presto, scikit-learn, PyTorch
- Research Background: AI Fairness, Computational Social Science, Trustworthy AI, Healthcare Informatics, Differential Privacy, Network Science