Xudong Shen

CONTACT

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EDUCATION

Ph.D. in Computer Science, *National University of Singapore*, Singapore — 2019-Present

B.A. in Naval. Arch. & Ocean Eng., *Zhejiang University*, China — 2015-2019

SKILLS

Responsible AI:

Familiar with (*i*) the technical methods for ensuring the social alignment of AI and (*ii*) the legal and policy aspects of AI regulation.

Machine Learning (ML):

Experienced with (*i*) the ML pipeline in `Python`; (*ii*) with image, sensor, sequential, language, and FinTech data; and (*iii*) with vision, NLP, multimodal, and generative models.

Statistics:

Big data analysis and structural modelling using the `R` and `Python` stack. Experienced with survival modelling, financial default analysis, and social network data analysis.

EXPERIENCE

Doctoral Researcher, **N-CRiPT Centre**, NUS, Singapore — 2019–Present

(a) Conduct research in ML and FinTech: (*i*) guarantee fairness in downstream tasks via pre-trained fair representations, (*ii*) structural modeling of million online peer-to-peer lending transaction data to estimate default risk, profitability, and discrimination.

(b) Communicated scientific insights to both academic and industry audience in 6 papers (2 first-authored, 3 published in leading journals and conferences) and 3+ talks.

(c) Assisted teaching the course *Computational Methods for Business Analytics* twice, totally 150+ hours to 200+ undergraduate students. Prepared weekly recap materials, videos, and Q&A sessions.

(d) Actively contributed (60+ commits) to community-driven projects in NLP, including BIG-Bench, BigScience, and NL-Augmenter, and LLM's Inverse Scaling.

(e) Worked on responsible AI through (*i*) the Algorithms, Law, and Policy working group at MD4SG and (*ii*) facilitating the Responsible, Regutable AI working group at NUS.

Research Intern, **Sea AI Lab**, Sea Limited, Singapore — Nov. 2022–Sep. 2023

(a) Worked on finetuning diffusion-based image generation models for fairness, driving collaboration with 5 researchers from 2 institutes (NUS & Sea AI Lab).

Undergrad. Researcher, **Second Institute of Oceanography**, China — Jul. 2017–Jul. 2019

(a) Worked on the full stack of satellite remote sensing image segmentation using `Python` & `Matlab`, incl. data preprocessing, labeling, neural net training and validating.

Undergrad. Researcher, **Waseda University**, Japan — Sep. 2018–Feb. 2019

(a) Analyzed the effectiveness of Japan's policy toward the elimination of Persistent Organic Pollutants (POPs), and proposed policy recommendations to China.

Undergrad. Researcher, **York University**, Canada — May–Aug. 2018

(a) Worked on fluid dynamics simulation of a hydrodynamically focused printing process for printed electronics, using `COMSOL` and `FLUENT`, in collaboration with 5 other researchers.

WORKING PAPERS & PREPRINTS

1. Xudong Shen, Hannah Brown, Jiashu Tao, Martin Strobel, Yao Tong, Akshay Narayan, Harold Soh, Finale Doshi-Velez, "Towards Regulatable AI Systems: Technical Gaps and Policy Opportunities", arXiv:2306.12609, (2023).

2. Xudong Shen, Chao Du, Tianyu Pang, Min Lin, Yongkang Wong, Mohan Kankanhalli, "Finetuning Text-to-Image Diffusion Models for Fairness", under review for ICLR 2023.

3. Xudong Shen, Tianhui Tan, Tuan Q. Phan, Jussi Keppo, "Improved Identification of Gender Discrimination Drivers in Online P2P Lending", working paper.

4. Ayse Gizem Yasar, ..., Xudong Shen, ..., "AI and the EU Digital Markets Act: Addressing the Risks of Bigness in Generative AI", arXiv:2308.02033.

PUBLICATIONS

1. Ziwei Xu, Xudong Shen, Yongkang Wong, Mohan Kankanhalli: "Unsupervised Motion Representation Learning with Capsule Autoencoders". In *NeurIPS* (2021).

2. Xudong Shen, Yongkang Wong, Mohan Kankanhalli: "Fair Representation: Guaranteeing Approximate Multiple Group Fairness for Unknown Tasks". In *IEEE Trans. PAMI* (2022).

3. Yizhong Wang, Swaroop Mishra, Pegah Alipoormolabashi, Yeganeh Kordi, ..., Xudong Shen, ...: "Benchmarking Generalization via In-Context Instructions on 1,600+ Language Tasks". In *EMNLP* (2022).

4. Aarohi Srivastava, Abhinav Rastogi, Abhishek Rao, Abu Awal Md Shoeb, ..., Xudong Shen, ...: "Beyond the Imitation Game: Quantifying and Extrapolating the Capabilities of Language Models". In *JMLR* (2023).

5. Kaustubh D Dhole, Varun Gangal, Sebastian Gehrmann, Aadesh Gupta, ..., Xudong Shen, ...,: "NL-Augmenter: A Framework for Task-Sensitive Natural Language Augmentation". In *Northern European Journal of Language Technology (NEJLT)* (2023).

6. Xudong Shen, Tianhui Tan, Tuan Q. Phan, Jussi Keppo: "Gender Animus Can Still Exist Under Favorable Disparate Impact: a Cautionary Tale from Online P2P Lending". In *ACM Conference on Fairness, Accountability, and Transparency (FAccT)* (2023).

7. Ian McKenzie, Alexander Lyzhov, Michael Pieler, Alicia Parrish, ..., Xudong Shen, ..., "Inverse Scaling: When Bigger Isnt Better", In *TMLR* (2023).

INVITED TALKS

Workshop on Enormous Language Models, *ICLR 2021*, Online	2021
N-CRiPT Seminar, *National University of Singapore*, Singapore	2022
International Conference on Smart Finance 2022, Online (Hong Kong)	2022

SERVICE

Reviewer: EMNLP 2022, ICLR 2023, WACV 2023, ACL 2023.

Area Chair: NeurIPS 2023 Regulatable ML Workshop.

ADDITIONAL TRAINING

Master Kong Dream Scholarship Program, *Waseda University*, Japan	Sep. 2018-Feb. 2019
Globalink Research Internship, *York University*, Canada	May.-Aug. 2018
Erasmus+ Student Mobility, *Università di Trento*, Italy	Feb.-Jun. 2017