

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, generative, and multimodal 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 9 papers (4 first-authored) 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 text-to-image diffusion 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), under review for Communications of the ACM.

2. **Xudong Shen**, Chao Du, Tianyu Pang, Min Lin, Yongkang Wong, Mohan Kankanhalli, “Fine-tuning Text-to-Image Diffusion Models for Fairness”, arXiv:2311.07604, (2023), under review for ICLR 2024.
3. **Xudong Shen**, Tianhui Tan, Tuan Q. Phan, Jussi Keppo, “Improved Identification of Gender Discrimination Drivers in Online P2P Lending”, (2023), 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, (2023), working paper.

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

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

SERVICE

- Reviewer:** EMNLP 2022, ICLR 2023, WACV 2023, ACL 2023.
- Area Chair:** NeurIPS 2023 Regulatable ML Workshop.
- Organizer:** MD4SG Algorithms, Law, and Policy working group AY 2023/2024 spring term.

ADDITIONAL TRAINING

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