# Xudong Shen

## CONTACT

- ↳ https://xudongolivershen.github.io
- ↳ https://www.linkedin.com/in/oliverxudongshen
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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

**Ethical & Safe AI**:
Familiar with (*i*) the technical methods for ensuring the social alignment of AI (LLMs, text-to-image diffusion models,...) and (*ii*) the legal and policy aspects of AI governance.

**ML and AI**:
Experienced with (*i*) vision, NLP, generative, and multimodal models; (*ii*) image, sensor, sequential, language, and FinTech data.

**Statistical Modeling**:
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 10 papers (4 first-authored) and 5+ 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) Co-organized (*i*) the Algorithms, Law, and Policy working group at MD4SG and (*ii*) 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.

## PUBLICATIONS

1. **Xudong Shen**, Hannah Brown, Jiashu Tao, Martin Strobel, Yao Tong, Akshay Narayan, Harold Soh, Finale Doshi-Velez, "Directions of Technical Innovation for Regulatable AI Systems", In *Communications of the ACM*, (forthcoming).

2. **Xudong Shen**, Chao Du, Tianyu Pang, Min Lin, Yongkang Wong, Mohan Kankanhalli, "Finetuning Text-to-Image Diffusion Models for Fairness", In *ICLR* (2024), (Oral, top 1.2%).

3. **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).

4. **Xudong Shen**, Yongkang Wong, Mohan Kankanhalli: "Fair Representation: Guaranteeing Approximate Multiple Group Fairness for Unknown Tasks". In *IEEE Trans. PAMI* (2023).

5. Ian McKenzie, ..., **Xudong Shen**, ..., "Inverse Scaling: When Bigger Isn't Better", In *TMLR* (2023).

6. Kaustubh D Dhole, ..., **Xudong Shen**, ...,: "NL-Augmenter: A Framework for Task-Sensitive Natural Language Augmentation". In *Northern European Journal of Language Technology (NEJLT)* (2023).

7. Aarohi Srivastava, ..., **Xudong Shen**, ...: "Beyond the Imitation Game: Quantifying and Extrapolating the Capabilities of Language Models". In *JMLR* (2023).

8. Yizhong Wang, ..., **Xudong Shen**, ...: "Benchmarking Generalization via In-Context Instructions on 1,600+ Language Tasks". In *EMNLP* (2022).

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

PREPRINTS

1. Ayse Gizem Yasar, Andrew Chong[†], Evan Dong[†], Thomas Krendl Gilbert[†], Sarah Hladikova[†], Roland Maio[†], Carlos Mougan[†], **Xudong Shen**[†], Shubham Singh[†], Ana-Andreea Stoica[†], Savannah Thais[†], "Integration of Generative AI in the Digital Markets Act: Contestability and Fairness from a Cross-Disciplinary Perspective", (2024), LSE working papers series. ([†] = equal contribution)

2. **Xudong Shen**, Tianhui Tan, Tuan Q. Phan, Jussi Keppo, "Improved Identification of Gender Discrimination Drivers in Online P2P Lending", (2023), working paper.

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

SERVICE

*Organizer*: MD4SG Algorithms, Law, and Policy working group AY 2023/2024 spring term.

*Area Chair*: NeurIPS 2023 Regulatable ML Workshop.

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

| 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 |