

Changjian Shui

 Google Scholar •  cjshui.github.io

Research Summary

My research aims to develop *reliable* and *responsible* Machine learning (ML) algorithms and theories. **Reliable ML** not only provides accurate predictions, but also adheres to robustness, fairness, and transparency, thus instilling confidence in its use and outcomes. (see more in AI Safety). **Responsible ML** ensures ethical decision-making and equitable outcomes while considering the broader societal impact. (see more in Responsible ML).

Education

Université Laval <i>Ph.D in Electrical Engineering</i> Supervisors: Prof. Christian Gagné, Prof. Boyu Wang	Canada 2017.05-2022.03
Université Paris Saclay <i>Master in Applied Mathematics, Affiliated to École Normale Supérieure Paris Saclay</i> <i>cum laude, 14.75/20</i>	France 2015.09-2016.10
Télécom ParisTech <i>Diplôme d'ingénieur</i>	France 2013.08-2015.06
Southeast University <i>Bachelor of Electronic Science and Engineering</i>	China 2009.07-2013.06

Working Experience

Vector Institute <i>Postdoctoral Fellow</i> Mentor: Rahul G. Krishnan	Toronto, Canada 2023.12-Now
McGill University <i>Postdoctoral Fellow, Affiliated to Mila (Quebec AI Institute)</i> Supervisor: Prof. Tal Arbel	Montreal, Canada 2022.05-2023.05

Selected Publications

Detailed publications can be found in Google Scholar

[Reliable Machine Learning](#).....

- **On the Stability-Plasticity Dilemma in Continual Meta-Learning: Theory and Algorithm.** Qi Chen, [Changjian Shui](#), Ligong Han, Mario Marchand. *Neural Information Processing Systems (NeurIPS)*, 2023, acceptance rate = 26.1%
- **On Learning Fairness and Accuracy on Multiple Subgroups.** [Changjian Shui](#), Gezheng Xu, Qi Chen, Jiaqi Li, Charles Ling, Tal Arbel, Boyu Wang, Christian Gagné. *Neural Information Processing Systems (NeurIPS)*, 2022, acceptance rate = 25.6%
- **Fair Representation Learning through Implicit Path Alignment.** [Changjian Shui](#), Qi Chen, Jiaqi Li, Boyu Wang, Christian Gagné. *International Conference on Machine Learning (ICML)*, 2022,

acceptance rate = 21.9%

- **Generalization Bounds For Meta-Learning: An Information-Theoretic Analysis.** Qi Chen, Changjian Shui, Mario Marchand. *Neural Information Processing Systems (NeurIPS)*, 2021, *spotlight, 3% of the submissions*.
- **On the benefits of representation regularization in invariance based domain generalization.** Changjian Shui, Boyu Wang and Christian Gagné. *Machine Learning Journal (MLJ)*, 2022.

Applications

- **Latent Trajectory Learning for Limited Timestamps under Distribution Shift over Time** Qihao Zeng, Changjian Shui, Long-Kai Huang, Peng Liu, Xi Chen, Charles Ling, and Boyu Wang. *International Conference on Learning Representations (ICLR)*, 2024, *oral, 1.2% of the submissions*.
- **Mitigating Calibration Bias Without Fixed Attribute Grouping for Improved Fairness in Medical Imaging Analysis.** Changjian Shui, Justin Szeto, Raghav Mehta, Douglas Arnold, Tal Arbel. *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2023, *early acceptance rate = 14%*
- **Aggregating From Multiple Target-Shifted Sources.** Changjian Shui, Zijian Li, Jiaqi Li, Christian Gagné, Charles Ling, Boyu Wang. *International Conference on Machine Learning (ICML)*, 2021, *acceptance rate = 21.5%*
- **Deep Active Learning: Unified and Principled Method for Query and Training.** Changjian Shui, Fan Zhou, Christian Gagné, Boyu Wang. *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2020, *acceptance rate = 28.7%*

PhD Thesis

Principled deep learning approaches for learning limited labeled data through distribution matching

Université Laval, Quebec, 2022.03

Evaluation committee: Aaron Courville, Mario Marchand, Thierry Duchesne

Honors and Awards

- Vector Postdoctoral Fellowship.
- UNIQUE Conference Travel Grants (Unifying Neuroscience and Artificial Intelligence, Québec), 2023
- Expert Reviewer, TMLR, 2023
- Travel Grant Award, NeurIPS, 2022
- Top Reviewer Award (Top 10%), NeurIPS, 2022
- Honorable Prize, Presentation in *Semaine NumériQC*, Québec, 2022
- Highlighted Reviewer Award (Top 10%), ICLR, 2022
- Outstanding Reviewer Award (Top 8%), NeurIPS, 2021
- Best Reviewer Award (Top 10%), ICML, 2021

- Outstanding Reviewer Award (Top 10%), ICLR, 2021
- Top 25% Reviewer, AAAI, 2021
- 3rd Prize, Presentation in *Journée de la relève en intelligence et données*, Québec, 2021
- Travel Grant Award, IJCAI, 2019
- Scholarships of Insitut Mines-Télécom, 2013-2014

Research blogs

- Invariance and Learning Fair Representation
- Fast sequential decision-making via prior knowledge

Skills

Programming Languages MATLAB, Python, Latex , C/C++, HMTL, JAVA
Library Pytorch, Tensorflow, JAX

Languages.....

- Chinese (Mother language)
- English (Advanced)
- French (Advanced)