


Jake Robertson

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ACADEMIC EXPERIENCE

ELLIS Institute Tübingen

Doctoral Candidate, Machine Learning Lab Freiburg

Tübingen, BW, Germany

Nov. 2024 – Present

University of Freiburg

Master's of Computer Science, Artificial Intelligence (1.7 Avg.)

Freiburg, BW, Germany

Oct. 2021 – July 2024

University of Helsinki

Exchange, Bachelor's Programme in Computer Science (4/5 Avg.)

Helsinki, Finland

Sep. – Dec. 2019

Queen's University

Bachelor's of Computing (Honours), Computer Science (3.51/4.3 Avg.)

Kingston, Ontario, Canada

2017 – 2021

RESEARCH INTERESTS

Machine Learning · Fairness · AI Ethics · Interpretability · Transparency · Trustworthiness · Deep Learning · Causal ML · Evolutionary Computing · Multi-Objective Optimization · Reinforcement Learning · Sociotechnical Systems

RELEVANT COURSES

Bachelor's: Artificial Intelligence · Image Processing and Computer Vision · Reinforcement Learning

Master's: Machine Learning · Deep Learning · Knowledge Representation and Reasoning · Fair and Interpretable Machine Learning Seminar · Automated Machine Learning · Deep Learning Lab Course · Reinforcement Learning · Mobile Robotics · High Performance Computing · Deep Learning for Tabular Data Seminar · Computational Economics

RESEARCH EXPERIENCE

Doctoral Candidate

Nov. 2024 – Present

ELLIS Institute Tübingen, Supervisor: Prof. Dr. Frank Hutter

- Working on prior-data-fitted networks (PFNs) for causal fairness [5], causal inference [4], and interpretability.

Graduate Student Research Assistant

Aug. 2022 – July 2024

ML Freiburg, Supervisors: Prof. Dr. Frank Hutter, Dr. Noor Awad, Dr. Janek Thomas, Noah Hollmann

- First-author workshop publications introducing a novel transformer pre-trained to remove the causal effect of protected attributes from real world data [6]. Resulted in workshop publications at the ICML Next Generation AI Safety Workshop and the AutoML Conference.
- First-author publication introducing a human-in-the-loop fairness-aware optimization framework [3], resulting in publication in the Seventh AAAI/ACM Conference on AI Ethics and Society (AIES '24).
- Led large-scale experiments for a benchmarking suite to facilitate research on Multi-Objective Hyperparameter Optimization. Second-author on the corresponding manuscript (under review).
- Research Engineer on the NASLib project, an open-source Python library to democratize Neural Architecture Search (NAS) research. Prepared codebase for a live demo at the 2022 AutoML Conference.

Undergraduate Student Researcher

Sep. 2020 – Sep. 2021

MIB Lab, Queen's University, Supervisors: Prof. Dr. Ting Hu & Prof. Dr. Catherine Stinson

- First-authored publication with AI ethics researcher Dr. Catherine Stinson on the application of the multi-objective genetic algorithm for feature interaction to interpret and understand the source of complex bias in ML predictions.
- Paper accepted for full publication [2] and conference-wide lightening talk (watch here) at the AAAI/ACM Artificial Intelligence, Ethics, and Society Conference (AIES '22). One of two Master's students presenting at the conference.

NSERC USRA Fellow

May – Sep. 2020

MIB Lab, Queen's University, Supervisor: Prof. Dr. Ting Hu

- Selected by the Natural Sciences Research Council of Canada (NSERC) to receive an Undergraduate Student Research Award (USRA) for a funded research project in the Machine Intelligence and Biocomputing (MIB) Lab.
- First-authored publication on the application of the multi-objective genetic algorithm to aid the discovery of feature synergy for scientific discovery in medical and climate-change data sets.
- Paper accepted for poster publication [1] at the Genetic and Evolutionary Computation Conference (GECCO '21).

¹Nationality: Canadian

²Date of Birth: 07.04.1999

PUBLICATIONS

- [1] Jake **Robertson** and Ting Hu. “An Evolutionary Approach to Interpretable Learning”. In: *Proceedings of the Genetic and Evolutionary Computation Conference Companion*. 2021. URL: <https://doi.org/10.1145/3449726.3459460>.
- [2] Jake **Robertson**, Catherine Stinson, and Ting Hu. “A Bio-Inspired Framework for Machine Bias Interpretation”. In: *Proceedings of the 2022 AAAI/ACM Conference on AI, Ethics, and Society*. 2022. URL: <https://doi.org/10.1145/3514094.3534126>.
- [3] Jake **Robertson** et al. “A Human-in-the-Loop Fairness-Aware Model Selection Framework for Complex Fairness Objective Landscapes”. In: *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society*. 2024. URL: <https://ojs.aaai.org/index.php/AIES/article/view/31719>.
- [4] Jake **Robertson** et al. *Do-PFN: In-Context Learning for Causal Effect Estimation*. 2025. arXiv: 2506.06039 [cs.LG]. URL: <https://arxiv.org/abs/2506.06039>.
- [5] Jake **Robertson** et al. *FairPFN: A Tabular Foundation Model for Causal Fairness*. 2025. arXiv: 2506.07049 [cs.LG]. URL: <https://arxiv.org/abs/2506.07049>.
- [6] Jake **Robertson** et al. *FairPFN: Transformers Can do Counterfactual Fairness*. 2024. arXiv: 2407.05732 [cs.LG]. URL: <https://arxiv.org/abs/2407.05732>.

INDUSTRY EXPERIENCE

Software Engineering Intern <i>BNY Mellon – Eagle Investment Systems (Data and Analytic Solutions)</i> <ul style="list-style-type: none">• Designed and developed an NLP application to extract keywords from company-wide employee satisfaction survey and presented results at the company headquarters, receiving positive feedback from senior leadership (read here)	May – Sep. 2019 <i>Toronto, Canada</i>
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AWARDS & DISTINCTIONS

ELLIS PhD Program (Shortlisted) <i>European Lab for Learning and Intelligent Systems</i>	<i>Jan. 2024</i>
ELIZA Master’s Scholarship <i>Zuse School ELIZA, TU Darmstadt</i>	<i>Oct. 2023</i>
Deep Learning Course Competition (2nd place) <i>Deep Learning Course, University of Freiburg</i>	<i>Jan. 2022</i>
Dean’s Honour List <i>Queen’s University, Faculty of Arts and Science</i>	<i>Nov. 2021</i>
Undergraduate Student Research Award (USRA) <i>Natural Sciences and Engineering Research Council of Canada (NSERC)</i>	<i>Mar. 2020</i>
QHacks Best Green Hack <i>Toronto-Dominion (TD) Bank</i>	<i>Feb. 2020</i>
Principal’s Entrance Scholarship <i>Queen’s University, Faculty of Arts and Science</i>	<i>Dec. 2016</i>
J.D Irving Scholarship <i>J.D. Irving Limited</i>	<i>Dec. 2016</i>