

# Elliot Creager

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## Current position

2023 - *Assistant Professor*, University of Waterloo

## Previous experience

2020 - 2021 *Graduate Fellow*, Schwartz Reisman Inst. for Technology and Society, Toronto, Ontario  
2019 - 2020 *Student Researcher*, Google Brain, Toronto, Ontario  
2019 *Research Intern*, Google Brain, Toronto, Ontario  
2015 - 2017 *Research Scientist*, Analog Devices, Inc., Cambridge, Massachusetts  
2014 *Research Intern*, Analog Devices, Inc.  
2013 *Research Intern*, Analog Devices, Inc.

## Education

2023 Ph.D. in Computer Science, University of Toronto  
2015 M.A. in Music Technology, McGill University  
2013 Sc.B. in Electrical Engineering (Honors) and A.B. in Music, Brown University

## Publications

### Conferences

- 2024b P. A. Alamdari, T. Q. Klassen, **E. Creager**, and S. McIlraith, “Remembering to Be Fair: On Non-Markovian Fairness in Sequential Decision Making”, *ICML 2024*
- 2024a B. Eyre, **E. Creager**, D. Madras, V. Pappayan, and R. Zemel, “Out of the Ordinary: Spectrally Adapting Regression for Covariate Shift”, *ICML 2024*
- 2023a A. Mani, I. P. Chandratreya, **E. Creager**, C. Vondrick, and R. Zemel, “SurfsUp: Learning Fluid Simulation for Novel Surfaces”, *ICCV 2023*
- 2022a S. Pitisi, **E. Creager**, A. Mandlekar, and A. Garg, “MoCoDA: Model-based Counterfactual Data Augmentation”, *NeurIPS 2022*
- 2021b F. Trauble, **E. Creager**, N. Kilbertus, F. Locatello, A. Dittadi, A. Goyal, B. Schölkopf, and S. Bauer, “On Disentangled Representations Learned from Correlated Data”, *ICML 2021* (Oral)
- 2021a **E. Creager**, J.-H. Jacobsen, and R. Zemel, “Environment Inference for Invariant Learning”, *ICML 2021*
- 2020c S. Pitisi, **E. Creager**, and A. Garg, “Counterfactual Data Augmentation for Locally Factored Dynamics”, *NeurIPS 2020* (also “outstanding paper” at *ICML 2020 Object-oriented Learning Workshop*)
- 2020b M. Mladenov, **E. Creager**, O. Ben-Porat, K. Swersky, R. Zemel, and C. Boutilier, “Optimizing Long-term Social Welfare in Recommender Systems: A Constrained Matching Approach”, *ICML 2020*
- 2020a **E. Creager**, D. Madras, T. Pitassi, and R. Zemel, “Causal Modeling for Fairness in Dynamical Systems”, *ICML 2020*
- 2019a D. Madras, **E. Creager**, T. Pitassi, and R. Zemel, “Fairness Through Causal Awareness: Learning Latent-Variable Models for Biased Data”, *ACM FAT\** 2019
- 2019c **E. Creager**, D. Madras, J.-H. Jacobsen, M.A. Weis, K. Swersky, T. Pitassi, and R. Zemel, “Flexibly Fair Representation Learning by Disentanglement”, *ICML 2019*
- 2019b C.-H. Chang, **E. Creager**, A. Goldenberg, and D. Duvenaud, “Explaining Image Classifiers by Counterfactual Generation”, *ICLR 2019*
- 2018a D. Madras\*, **E. Creager\***, T. Pitassi, and R. Zemel, “Learning Adversarially Fair and Transferable Representations”, *ICML 2018*
- 2016 **E. Creager**, N.D. Stein, R. Badeau, and P. Depalle, “Nonnegative Tensor Factorization with Frequency Modulation Cues for Blind Audio Source Separation”, *ISMIR 2016*,

### Workshops

- 2022b B. Eyre, R. Zemel and **E. Creager**, “Towards Environment-Invariant Representation Learning for Robust Task Transfer”, *ICML 2022 Workshop on Spurious Correlations, Invariance, and Stability*
- 2021d D. Dickson and **E. Creager**, “Measuring User Recourse in a Dynamic Recommender System”, *ICML 2021 Workshop on Algorithmic Recourse*
- 2021c **E. Creager** and R. Zemel, “Online Algorithmic Recourse by Collective Action”, *ICML 2021 Workshop on Algorithmic Recourse*

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\* denotes equal contribution

- 2020d R. Adragna, **E. Creager**, D. Madras, and R. Zemel, “**Fairness and Robustness in Invariant Learning: A Case Study in Toxicity Classification**”, *NeurIPS 2020 Workshop on Algorithmic Fairness Through the Lens of Causality* (Oral)
- 2018b W. Grathwohl\*, **E. Creager**\*, S.K.S. Ghasemipour\*, R. Zemel, “**Gradient-Based Optimization of Neural Network Architecture**”, *ICLR 2018 Workshop*

## Teaching

### Course instructor

- 2024 *Algorithm Design and Analysis*, University of Waterloo
- 2022 *Introduction to Artificial Intelligence*, University of Toronto

### Conference tutorials

- 2022 *Algorithmic Fairness: at the Intersections*, NeurIPS

### Teaching assistant

- 2022 *Introduction to Machine Learning*, University of Toronto
- 2021 *Introduction to Machine Learning*, University of Toronto
- 2021 *Probabilistic Learning and Reasoning*, University of Toronto
- 2019 *AI and Ethics: Mathematical Foundations and Algorithms*, University of Toronto
- 2019 *Fairness and Privacy in Machine Learning*, African Institute for Mathematical Sciences (Rwanda)
- 2018 *Machine Learning and Data Mining*, University of Toronto
- 2018 *Probabilistic Learning and Reasoning*, University of Toronto
- 2017 *Introduction to Artificial Intelligence*, University of Toronto
- 2014 *Digital Audio Signal Processing*, McGill University
- 2013 *Communications Systems*, Brown University
- 2012 *Communications Systems*, Brown University

## Invited talks

- 2024 *To Build AI That Works For Everyone, Adapt Models and Coordinate Data*, Waterloo.AI Seminar Series, Waterloo, Canada
- 2023 *Out of the Ordinary: Spectrally Adapted Regression for Covariate Shift*, McGill Equity and Equality Using AI and Learning algorithms (EQUAL) lab meeting, Montreal, Canada
- 2023 *Methods for Counterfactual Data Augmentation in Reinforcement Learning*, Forging a Path: Causal Inference for Improved Policy Workshop, Toronto, Canada
- 2023 *Can “Adversaries” Play a Positive Role in Ethical AI?*, Vector Machine Learning Security and Privacy Workshop, Toronto, Canada
- 2023 *Counterfactual Reasoning in Reinforcement Learning and Algorithmic Fairness*, DEFIRST reading group at Mila (Quebec AI Institute), Montreal, Canada

- 2023 *Society and Ethics Concerns in Machine Learning*, Pursue STEM Outreach Program for High Schoolers, Toronto, Canada
- 2022 *Bias in AI: Mitigation Strategies*, Vector Institute Bias in AI Program for Industry Sponsors, Toronto, Canada
- 2021 *Fair Representation Learning with Disentanglement*, Vector Institute Endless Summer School, Toronto, Canada
- 2021 *Bias in AI: Mitigation Strategies*, Vector Institute Bias in AI Program for Industry Sponsors, Toronto, Canada
- 2021 *An Algorithmic Fairness Perspective on Robust Representation Learning* (Keynote), Domain Adaptation and Representation Transfer Workshop at MICCAI
- 2019 *Causal Modeling for Fairness in Dynamical Systems*, Microsoft Research Guest Lecture Series, Montreal, Canada
- 2018 *Learning Adversarial and Transferable Representations*, CIFAR Deep Learning and Reinforcement Learning Summer School, Toronto, Canada

## Academic service

- 2025 *Program Committee (Area Chair, Ethics Reviewer)*, ICML
- 2025 *Program Committee*, International Conference on Learning Representations (ICLR)
- 2025 *Program Committee*, AAAI Conference on Artificial Intelligence (AAAI)
- 2024 *Program Committee*, Workshop on Algorithmic Fairness Through the Lens of Metrics and Evaluation (NeurIPS)
- 2024 *Program Committee*, Workshop on Generative AI and Creativity (NeurIPS)
- 2024 *Program Committee*, Machine Learning For Health Symposium (ML4H)
- 2024 *Program Committee (Area Chair)*, NeurIPS
- 2024 *Program Committee*, Workshop on the Next Generation of AI Safety (ICML)
- 2024 *Program Committee*, Canadian Artificial Intelligence Conference
- 2024 *Program Committee*, Workshop on Recommendation Ecosystems: Modeling, Optimization and Incentive Design (AAAI)
- 2023 *Program Committee*, Workshop on Robustness of Few-shot and Zero-shot Learning in Foundation Models (NeurIPS)
- 2023-2024 *Program Committee*, Workshop on Regulating Machine Learning (NeurIPS)
- 2023 *Program Committee*, Workshop on Distribution Shifts: New Frontiers with Foundation Models (NeurIPS)
- 2023 *Program Committee*, Workshop on Causal Representation Learning (NeurIPS)
- 2023-2024 *Program Committee*, Conference on Health, Inference, and Learning (CHIL)
- 2022 *Program Committee*, Workshop on Distribution Shifts (NeurIPS)
- 2022 *Program Committee*, Workshop on Robustness in Sequence Modeling (NeurIPS)
- 2022 *Program Committee*, Workshop on A Causal View on Dynamical Systems (NeurIPS)
- 2022 *Program Committee*, Workshop on Algorithmic Fairness Through the Lens of Causality and Privacy (NeurIPS)
- 2022 *Program Committee*, Workshop on Continuous-time Methods for ML (ICML)
- 2022 *Program Committee*, Workshop on Principles of Distribution Shifts (ICML)
- 2022-2023 *Program Committee*, Workshop on Spurious Correlations, Invariance, and Stability (ICML)

2021	<i>Program Committee</i> , Workshop on Distribution Shifts: Connecting Methods and Applications (NeurIPS)
2021	<i>Program Committee</i> , Workshop on Algorithmic Fairness Through the Lens of Causality and Robustness (NeurIPS)
2021-2024	<i>Ethics Reviewer</i> , NeurIPS
2020-2024	<i>Program Committee</i> , ICML
2020	<i>Co-organizer</i> , Resistance AI Workshop (NeurIPS)
2020-2023	<i>Program Committee</i> , ACM FAccT Conference
2020	<i>Program Committee</i> , Workshop on Algorithmic Fairness Through the Lens of Causality and Interpretability (NeurIPS)
2019-2023	<i>Program Committee</i> , NeurIPS
	<i>Program Committee</i> , Fair Machine Learning for Health Workshop (NeurIPS)