Elliot Creager

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Current position

2022– *Assistant Professor*, University of Waterloo

Previous experience

2021–2022 *Graduate Fellow*, Schwartz Reisman Inst. for Technology and Society, Toronto, Ontario
2020–2021 *Student Researcher*, Google Brain, Toronto, Ontario
2019 *Research Intern*, Google Brain, Toronto, Ontario
2017–2019 *Research Scientist*, Analog Devices, Inc., Cambridge, Massachusetts
2016 *Research Intern*, Analog Devices, Inc.
2015 *Research Intern*, Analog Devices, Inc.

Education

2020 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

A. Mani, I. Chandratreya, **E. Creager**, C. Vondrick, and R. Zemel, "SurfsUp: Learning Fluid Simulation for Novel Surfaces", *ICCV 2023*

S. Pitis, **E. Creager**, A. Mandlekar, and A. Garg, "MoCoDA: Model-based Counterfactual Data Augmentation", *NeurIPS 2022*

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)

E. Creager, J.-H. Jacobsen, and R. Zemel, "Environment Inference for Invariant Learning", *ICML 2021*

S. Pitis, **E. Creager**, and A. Garg, "Counterfactual Data Augmentation for Locally Factored Dynamics", *NeurIPS 2020* (also "outstanding paper" at *ICML 2020 Object-oriented Learning Workshop*)

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*

E. Creager, D. Madras, T. Pitassi, and R. Zemel, "Causal Modeling for Fairness in Dynamical Systems", *ICML 2020*

D. Madras, **E. Creager**, T. Pitassi, and R. Zemel, "Fairness Through Causal Awareness: Learning Latent-Variable Models for Biased Data", *ACM FAT* 2019*

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*

C.-H. Chang, **E. Creager**, A. Goldenberg, and D. Duvenaud, "Explaining Image Classifiers by Counterfactual Generation", *ICLR 2019*

D. Madras*, **E. Creager***, T. Pitassi, and R. Zemel, "Learning Adversarially Fair and Transferable Representations", *ICML 2018*

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

P. A. Alamdari, T. Q. Klassen, **E. Creager**, and S. McIlraith, "Remembering to Be Fair: On Non-Markovian Fairness in Sequential Decision Making", *NeurIPS 2023 Workshop on Algorithmic Fairness Through the Lens of Time*

B. Eyre, **E. Creager**, D. Madras, V. Papyan, and R. Zemel, "Out of the Ordinary: Spectrally Adapting Regression for Covariate Shift", *ICML 2023 Workshop on Spurious Correlations, Invariance, and Stability*

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*

D. Dickson and **E. Creager**, "Measuring User Recourse in a Dynamic Recommender System", *ICML 2021 Workshop on Algorithmic Recourse*

∗ denotes equal contribution

E. Creager and R. Zemel, "Online Algorithmic Recourse by Collective Action", *ICML 2021 Workshop on Algorithmic Recourse*

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)

W. Grathwohl*, **E. Creager** *, S.K.S. Ghasemipour*, R. Zemel, "Gradient-Based Optimization of Neural Network Architecture", *ICLR 2018 Workshop*

Teaching

Course instructor

2021 *Algorithm Design and Analysis*, University of Waterloo
2020 *Introduction to Artificial Intelligence*, University of Toronto

Conference tutorials

2020 *Algorithmic Fairness: at the Intersections*, NeurIPS

Teaching assistant

2019 *Introduction to Machine Learning*, University of Toronto
2018 *Introduction to Machine Learning*, University of Toronto
2017 *Probabilistic Learning and Reasoning*, University of Toronto
2016 *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
2017 *Probabilistic Learning and Reasoning*, University of Toronto
2016 *Introduction to Artificial Intelligence*, University of Toronto
2015 *Digital Audio Signal Processing*, McGill University
2014 *Communications Systems*, Brown University
2013 *Communications Systems*, Brown University

Invited talks

2021 *Out of the Ordinary: Spectrally Adapted Regression for Covariate Shift*, McGill Equity and Equality Using AI and Learning algorithms (EQUAL) lab meeting, Montreal, Canada
2020 *Methods for Counterfactual Data Augmentation in Reinforcement Learning*, Forging a Path: Causal Inference for Improved Policy Workshop, Toronto, Canada
2019 *Can "Adversaries" Play a Positive Role in Ethical AI?*, Vector Machine Learning Security and Privacy Workshop, Toronto, Canada
2018 *Counterfactual Reasoning in Reinforcement Learning and Algorithmic Fairness*, DEFirst reading group at Mila (Quebec AI Institute), Montreal, Canada

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

Academic service

Program Committee, Canadian Artificial Intelligence Conference
Program Committee, Workshop on Recommendation Ecosystems: Modeling, Optimization and Incentive Design (AAAI)
Program Committee, Workshop on Robustness of Few-shot and Zero-shot Learning in Foundation Models (NeurIPS)
Program Committee, Workshop on Regulating Machine Learning (NeurIPS)
Program Committee, Workshop on Distribution Shifts: New Frontiers with Foundation Models (NeurIPS)
Program Committee, Workshop on Causal Representation Learning (NeurIPS)
Program Committee, Conference on Health, Inference, and Learning (CHIL)
Program Committee, Workshop on Distribution Shifts (NeurIPS)
Program Committee, Workshop on Robustness in Sequence Modeling (NeurIPS)
Program Committee, Workshop on A Causal View on Dynamical Systems (NeurIPS)
Program Committee, Workshop on Algorithmic Fairness Through the Lens of Causality and Privacy (NeurIPS)
Program Committee, Workshop on Continuous-time Methods for ML (ICML)
Program Committee, Workshop on Principles of Distribution Shifts (ICML)
Program Committee, Workshop on Spurious Correlations, Invariance, and Stability (ICML)
Program Committee, Workshop on Distribution Shifts: Connecting Methods and Applications (NeurIPS)
Program Committee, Workshop on Algorithmic Fairness Through the Lens of Causality and Robustness (NeurIPS)
Ethics Reviewer, NeurIPS
Program Committee, ICML
Co-organizer, Resistance AI Workshop (NeurIPS)
Program Committee, ACM FAccT Conference
Program Committee, Workshop on Algorithmic Fairness Through the Lens of Causality

and Interpretability (NeurIPS)
Program Committee, NeurIPS
Program Committee, Fair Machine Learning for Health Workshop (NeurIPS)