MATT J. KUSNER

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EMPLOYMENT

University College London *September 2019 - Present*
Associate Professor in Machine Learning, Department of Computer Science
Turing Fellow, The Alan Turing Institute

University of Oxford *October 2018 - September 2019*
Associate Professor in Machine Learning, Department of Computer Science
Tutorial Fellow at Jesus College

European Lab for Learning & Intelligent Systems (ELLIS) *Jul 2021 - Present*
ELLIS Scholar

The Alan Turing Institute
Turing Fellow *October 2018 - Present*
Research Fellow *August 2016 - October 2018*

EDUCATION

Cornell University *August 2015 - August 2016*
Visiting Ph.D. student in Dept. of Computer Science
Advisor: Kilian Q. Weinberger

Washington University in St. Louis *August 2011 - August 2016*
Ph.D. from Dept. of Computer Science & Engineering
Advisor: Kilian Q. Weinberger

PUBLICATIONS

Nitin Agrawal, James Bell, Adri Gascn, Matt J. Kusner
MPC-Friendly Commitments for Publicly Verifiable Covert Security
The Conference on Computer and Communications Security (CCS), 2021

Jean Kaddour, Yuchen Zhu, Qi Liu, Matt J. Kusner, Ricardo Silva
Causal Effect Inference for Structured Treatments
Neural Information Processing Systems (NeurIPS), 2021

Hanchen Wang, Qi Liu, Xiangyu Yue, Joan Lasenby, Matt J. Kusner
Unsupervised Point Cloud Pre-Training via View-Point Occlusion, Completion
The International Conference on Computer Vision (ICCV), 2021

Valentina Zantedeschi, Matt J. Kusner, Vlad Niculae **Learning Binary Decision Trees by Argmin Differentiation** *The International Conference on Machine Learning (ICML), 2021*

Limor Gultchin, David Watson, Matt J. Kusner, Ricardo Silva
Operationalizing Complex Causes: A Pragmatic View of Mediation
The International Conference on Machine Learning (ICML), 2021

Afsaneh Mastouri* Yuchen Zhu*, Limor Gultchin, Anna Korba, Ricardo Silva, Matt J. Kusner, Arthur Gretton, Krikamol Muandet

Proximal Causal Learning with Kernels: Two-Stage Estimation and Moment Restriction
The International Conference on Machine Learning (ICML), 2021 $*$ indicates equal contribution

Qi Liu, Matt J. Kusner, Phil Blunsom
Counterfactual Data Augmentation for Neural Machine Translation
North American Chapter of the Association for Computational Linguistics (NAACL), 2021

Niki Kilbertus, Matt J. Kusner, Ricardo Silva
A Class of Algorithms for General Instrumental Variable Models
Neural Information Processing Systems (NeurIPS), 2020

John Bradshaw, Brooks Paige, Matt J. Kusner, Marwin H. S. Segler, Jos Miguel Hernndez-Lobato
Barking up the right tree: an approach to search over molecule synthesis DAGs
Neural Information Processing Systems (NeurIPS), 2020. Spotlight Presentation

Matt J. Kusner, Joshua R. Loftus
The long road to fairer algorithms
Nature (Comment), 2020

Limor Gultchin, Matt J. Kusner, Varun Kanade, Ricardo Silva
Differentiable Causal Backdoor Discovery
The International Conference on Artificial Intelligence and Statistics (AISTATS), 2020

John Bradshaw, Brooks Paige, Matt J. Kusner, Marwin H. S. Segler, Jos Miguel Hernndez-Lobato
A Model to Search for Synthesizable Molecules
Neural Information Processing Systems (NeurIPS), 2019

Niki Kilbertus, Philip J. Ball, Matt J. Kusner, Adrian Weller, Ricardo Silva
The Sensitivity of Counterfactual Fairness to Unmeasured Confounding
The Conference on Uncertainty in Artificial Intelligence (UAI), 2019

Matt J. Kusner, Chris Russell, Joshua R. Loftus, Ricardo Silva
Making Decisions that Reduce Discriminatory Impact
The International Conference on Machine Learning (ICML), 2019

Nitin Agrawal*, Ali Shahin Shamsabadi*, Matt J. Kusner, Adri Gascn
QUOTIENT: Two-Party Secure Neural Network Training and Prediction
The Conference on Computer and Communications Security (CCS), 2019

John Bradshaw, Matt J. Kusner, Brooks Paige, Marwin H. S. Segler, José Miguel Hernández-Lobato
A Generative Model For Electron Paths
International Conference on Learning Representations (ICLR), 2019

Amartya Sanyal, Matt J. Kusner, Adrià Gascón, Varun Kanade
TAPAS: Tricks to Accelerate (encrypted) Prediction As a Service
International Conference on Machine Learning (ICML), 2018

Niki Kilbertus, Adrià Gascón, Matt J. Kusner, Michael Veale, Krishna Gummadi, Adrian Weller
Blind Justice: Fairness with Encrypted Sensitive Attributes
International Conference on Machine Learning (ICML), 2018

David Janz, Jos van der Westhuizen, Brooks Paige, Matt J. Kusner, José Miguel Hernández-Lobato
Learning a Generative Model for Validity in Complex Discrete Structures
International Conference on Learning Representations (ICLR), 2018

Chirs Russell∗, Matt J. Kusner∗, Joshua R. Loftus, Ricardo Silva
When Worlds Collide: Integrating Different Counterfactual Assumptions in Fairness
Neural Information Processing Systems (NIPS), 2017

Matt J. Kusner∗, Joshua R. Loftus∗, Chirs Russell∗, Ricardo Silva
Counterfactual Fairness (oral presentation)
Neural Information Processing Systems (NIPS), 2017

Matt J. Kusner, Brooks Paige, José Miguel Hernández-Lobato
Grammar Variational Autoencoder
International Conference on Machine Learning (ICML), 2017

Gao Huang, Chuan Guo, Matt J. Kusner, Yu Sun, Kilian Q. Weinberger, Fei Sha
Supervised Word Mover's Distance (oral presentation)
Neural Information Processing Systems (NIPS), 2016

Matt J. Kusner, Yu Sun, Karthik Sridharan, Kilian Q. Weinberger
Private Causal Inference (oral presentation)
Artificial Intelligence and Statistics (AISTATS), 2016

Gustavo Malkomes, Matt J. Kusner, Wenlin Chen, Kilian Q. Weinberger, Benjamin Moseley
Fast Distributed k-Center Clustering with Outliers on Massive Data
Neural Information Processing Systems (NIPS), 2015

Matt J. Kusner, Yu Sun, Nicholas I. Kolkin, Kilian Q. Weinberger
From Word Embeddings to Document Distances
International Conference on Machine Learning (ICML), 2015

Matt J. Kusner, Jacob R. Gardner, Roman Garnett, Kilian Q. Weinberger
Differentially Private Bayesian Optimization
International Conference on Machine Learning (ICML), 2015

Matt J. Kusner, Wenlin Chen, Quan Zhou, Zhixiang (Eddie) Xu, Kilian Q. Weinberger, Yixin Chen
Feature-Cost Sensitive Learning with Submodular Trees of Classifiers
AAAI Conference on Artificial Intelligence (AAAI), 2014

Matt J. Kusner, Stephen Tyree, Kilian Q. Weinberger, Kunal Agrawal
Stochastic Neighbor Compression
International Conference on Machine Learning (ICML), 2014

Jacob R. Gardner, Matt J. Kusner, Zhixiang (Eddie) Xu, Kilian Q. Weinberger, John P. Cunningham
Bayesian Optimization with Inequality Constraints
International Conference on Machine Learning (ICML), 2014

Zhixiang (Eddie) Xu, Matt J. Kusner, Gao Huang, Kilian Q. Weinberger
Anytime Feature Learning
International Conference on Machine Learning (ICML), 2013

Zhixiang (Eddie) Xu, Matt J. Kusner, Kilian Q. Weinberger, Minmin Chen
Cost-Sensitive Tree of Classifiers
International Conference on Machine Learning (ICML), 2013

Journal Publications

Mrinal Pahwa, Matt J. Kusner, Carl Hacker, David Bundy, Kilian Q. Weinberger, Eric Leuthardt
Optimizing the Detection of Wakeful and Sleep-Like States for Future Electrocorticographic

Brain Computer Interface Applications
PLOS ONE Journal, 2015

Zhixiang (Eddie) Xu, Matt J. Kusner, Kilian Q. Weinberger, Minmin Chen, Olivier Chapelle
Classifier Cascades and Trees for Minimizing Feature Evaluation Cost
Journal of Machine Learning Research (JMLR), 2014

COLLABORATIONS

Causal inference. With Ricardo Silva (UCL), Chris Russell (Amazon), Josh Loftus (LSE), Varun Kanade (Oxford), Niki Kilbertus (HelmholtzAI), Adrian Weller (Cambridge), Arthur Gretton (Gatsby), Anna Korba (ENSAE/CREST), Krikamol Muandet (MPI-IS)

Deep generative models for chemistry. With John Bradshaw (MIT), Brooks Paige (UCL), Marwin Segler (MSR), José Miguel Hernández-Lobato (Cambridge), Jacob Gardner (UPenn)

Argmin differentiation. With Vlad Niculae (Amsterdam), Valentina Zantedeschi (UCL)

Learning on private data. With Niki Kilbertus (HelmholtzAI), Adrià Gascón (Google), Michael Veale (UCL), Krishna Gummadi (MPI-SWS), James Bell (Turing), Varun Kanade (Oxford)

Climate modeling. With Duncan Watson-Parris (Oxford), Matthew Christensen (PNNL)

PROFESSIONAL ACTIVITIES

NeurIPS Workshop: Algorithmic Fairness through the Lens of Causality and Interpretability
2020 *Co-organizer*

NeurIPS Workshop: Machine Learning for Molecules 2020 *Co-organizer*

NIPS Workshop: Critiquing and Correcting Trends in Machine Learning December 2018
Co-organizer *Montreal, Canada*

NIPS Workshop: Machine Learning for Molecules and Materials December 2017; 2018
Co-organizer *Long Beach, CA; Montreal, Canada*

UAI Conference August 2018
Publications Chair *Monterey, CA*

NIPS Press Conference December 2017
Invited Speaker *Long Beach, CA*

NIPS Workshop on Machine Learning for Molecules and Materials December 2017
Co-organizer *Long Beach, CA*

ICML Conference June 2016
Workflow Chair *New York, NY*

ICML Workshop: Resource-Efficient Machine Learning July 2015
Co-organizer *Lille, France*

ICML Workshop: Learning with Test-Time Budgets June 2013
Co-organizer *Atlanta, GA*

ICML 2020 Top 33% Reviewer June 2020

ICML 2019 Top 5% Reviewer June 2019

NeurIPS 2018 Top 30% Reviewer December 2018

Area Chair NeurIPS, ICLR, ICML

Program Committee NeurIPS, ICML, ICLR, AISTATS, FAT*, JMLR, AAAI, KDD

PUBLICITY

Centre for Data Ethics and Innovation (reporting on: *Counterfactual Fairness*) November 2020
https://tinyurl.com/76wfe7rb

Harvard Business Review (reporting on: *Counterfactual Fairness*) October 2020
https://tinyurl.com/3yatpnc4

Wired (on racial bias in dating app algorithms) February 2019
https://tinyurl.com/y29n58tl

Forbes (reporting on: *Counterfactual Fairness*) March 2018
https://tinyurl.com/yxbrpwxz

The Guardian (reporting on: *Counterfactual Fairness*) August 2017
https://tinyurl.com/y893qsto

The New Scientist (reporting on: *Counterfactual Fairness*) March 2017
https://tinyurl.com/l4zfkv2

The Future of Life Institute (reporting on: *Deep Manifold Traversal*) December 2015
https://tinyurl.com/y3xgnmgy

OpenTable (reporting on: *From Word Embeddings to Document Distances*) August 2015
https://tinyurl.com/y3ohyyw3

TALKS

The Federal Reserve Banks of Cleveland and Philadelphia November 10, 2021
Causality for Fair Lending

RIKEN High-dimensional Statistical Modeling Team Seminar November 9, 2021

ELLIS Workshop on Causethical ML July 26, 2021

Cambridge Tech & Society November 19, 2020

Faculty of Law, Oxford University March 18, 2019
AI for English Law Conference Panel on AI and Ethics

The Alan Turing Institute March 13, 2019
To support the Information Commissioners Office Explainability Expert Roundtable

Royal Academy of Engineering November 5, 2018
To support the Department of Digital, Culture, Media and Sport Algorithmic Bias Roundtable

Talking Machines Podcast November 1, 2018

AI and ML in Cambridge (CamAIML) March 15, 2018

Cambridge Centre for Mathematical Sciences February 20, 2018

Oxford Computational Statistics and Machine Learning Seminar February 16, 2018

The Royal Society February 12, 2018

Cambridge University Engineering Department September 12, 2017