KONSTANTIN GENIN

Cluster of Excellence
Machine Learning: New Perspectives for Science
Eberhard Karls Universität Tübingen
Tübingen, Germany

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AREA OF SPECIALIZATION

Philosophy of Machine Learning and Statistics, Philosophy of Science, Formal Epistemology

ACADEMIC POSITIONS

Leader of Independent Research Group: Spring 2020—Present
"Epistemology and Ethics of Machine Learning,"
at the Cluster of Excellence:
"Machine Learning: New Perspectives for Science,"
Eberhard Karls Universität, Tübingen.

Postdoctoral Fellow, Department of Philosophy Fall 2018—Spring 2020
Faculty of Arts and Sciences, University of Toronto.

EDUCATION

Doctor of Philosophy, Logic, Computation and Methodology Fall 2012—Spring 2018
Department of Philosophy, Carnegie Mellon University
Dissertation Title: *The Topology of Statistical Inquiry.*
Dissertation Advisor: Kevin T. Kelly.

Master of Science, Logic, Computation and Methodology Fall 2012—Spring 2015
Department of Philosophy, Carnegie Mellon University
Thesis Title: *Theory Choice, Theory Change, and Inductive Truth-Conduciveness.*
Thesis Advisor: Kevin T. Kelly.

Bachelors of Arts, Mathematics and Philosophy Fall 2005—Spring 2009
Departments of Mathematics and Philosophy resp., Brown University
Magna Cum Laude

SUPERVISION

Postdoctoral Fellow, Dr. Vlasta Sikimić March 2022—Present
Group Member "Epistemology and Ethics of Machine Learning,"

Project Title: *Ethics, Privacy and Fairness in Digital Education Environments.*

Postdoctoral Fellow, Dr. Sander Beckers Summer 2021—Present
Group Member "Epistemology and Ethics of Machine Learning,"
Project Title: *Causal Reasoning for the Ethical Developement of AI.*

Masters Student, Nikita Agarwal Summer 2021—Present
Group Member "Epistemology and Ethics of Machine Learning,"
Project Title: *Learning Conditional Independence and Dependence*

PUBLICATIONS

Konstantin Genin, Conor Mayo-Wilson (forthcoming) "Success Concepts for Causal Discovery," *Behaviormetrika*.

Konstantin Genin (forthcoming) "On Falsifiable Statistical Hypotheses," *Philosophies,* 7(2).

Konstantin Genin (2021) "Statistical Undecidability in Linear, Non-Gaussian Models in the Presence of Latent Confounders," In Proceedings *Thirty-Fifth Conference on Neural Information Processing Systems* (NeurIPS, 2021).

Konstantin Genin, Thomas Grote (2021) "Randomized Controlled Trials in Medical AI: A Methodological Critique," *Philosophy of Medicine*, 2(1).

Konstantin Genin, Conor Mayo-Wilson (2020). "Statistical Decidability in Linear, Non-Gaussian Models," Spotlight in *Causal Discovery and Causality-Inspired Machine Learning Workshop* at the *Thirty-Fourth Conference on Neural Information Processing Systems* (NeurIPS, 2020).

Konstantin Genin, Franz Huber (2020). "Formal Representations of Belief," in Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy.*

Konstantin Genin (2019). "Full and Partial Belief," in Richard Pettigrew and Jonathan Weisberg, eds., *The Open Handbook of Formal Epistemology.* PhilPapers Foundation. pp. 437-498.

Konstantin Genin, Kevin T. Kelly (2018). "Theory Choice, Theory Change and Inductive Truth-Conduciveness," *Studia Logica,* 107(5): 948-989.

Konstantin Genin, Kevin T. Kelly (2017). "The Topology of Statistical Verifiability," in

Jérôme Lang, ed., *Proceedings of the Sixteenth Conference on Theoretical Aspects of Rationality and Knowledge* (TARK), pp. 236-250.

Kevin T. Kelly, Konstantin Genin, Hanti Lin (2016). "Realism, Rhetoric, and Reliability," *Synthese,* 193(4): 1191-1223.

Konstantin Genin, Kevin T. Kelly (2015). "Theory Choice, Theory Change, and Inductive Truth-Conduciveness," in R. Ramanujam, ed., *Proceedings of the Fifteenth Conference on Theoretical Aspects of Rationality and Knowledge* (TARK), pp. 111-121.

Kevin T. Kelly, Konstantin Genin (2014). "Complexity, Ockham's Razor, and Truth," in M. Lissack and A. Graber, eds., *Modes of Explanation: Affordances for Action and Prediction.* Palgrave Macmillian, pp. 121-131.

Ryan Carlson, Konstantin Genin, Martina Rau, Richard Scheines (2013). "Student Profiling from Tutoring System Log Data: When do Multiple Graphical Representations Matter?" in S.K. D'Mello et. al. eds., *Proceedings of the 6th International Conference on Educational Data Mining* (EDM, 2013), pp. 12-20.

TALKS

"Success Concepts for Causal Discovery" March, 2022
International Workshop on Causality and Philosophy
Shiga University, Kyoto (virtual).

"Against Predictive Invariance" November, 2021
with Alexander Tolbert,
Philosophy of Science Association Conference
Baltimore.

"Exploitation, or Amelioration? November, 2021
Dueling Pictures of Data-Scientific Rationality"
with Alexander Tolbert,
Philosophy of Science Association Conference
Baltimore.

"Against Predictive Invariance" October, 2021
with Alexander Tolbert,
Bias and Discrimination in Algorithmic Decision-Making
Leibniz Universität, Hannover.

"Statistical Decidability in Linear, Non-Gaussian Causal Models" September, 2021
with Conor Mayo-Wilson,

Combining Probability and Logic (Progic 2021)
Ludwing-Maximilians-Universität München, Virtual Conference.

"Statistical Decidability in Confounded, Linear Non-Gaussian Causal Models" July, 2021
Neglected Assumptions in Causal Inference Workshop
38th International Conference on Machine Learning (ICML 2021)
Virtual Conference.

"Clinical Equipoise and Causal Discovery" July, 2021
Seminar Series of the Cluster of Excellence:
"Machine Learning: New Perspectives for Science"
Eberhard Karls Universität, Tübingen (Virtual).

"Statistical Decidability in Linear, Non-Gaussian Causal Models" December, 2020
with Conor Mayo-Wilson,
Causal Discovery and Causality-Inspired Machine Learning Workshop
34th Conference on Neural Information Processing Systems (NeurIPS 2020)
Virtual Conference.

"Morals and Methodology" December, 2020
Seminar Series of the Cluster of Excellence:
"Machine Learning: New Perspectives for Science"
Eberhard Karls Universität, Tübingen (Virtual).

"Simplicity and Scientific Progress"

1. Logic and Philosophy of Science Research Group Seminar, October 2019
   Univeristy of Toronto.
2. American Philosophical Association, Central Division February 2020
   Chicago.
3. Foundations of Probability Seminar, November 2020
   Princeton (Virtual).
4. Logic and Interactive Rationality Seminar, December 2020
   Amsterdam (Virtual).

"Progressive Methods for Causal Discovery" August, 2019
16th International Congress
Logic, Methodology and Philosophy of Science and Technology (CLMPST)
Czech Technical University, Prague.

"Topological Learning Theory" June, 2019
Workshop in Philosophy and Physical Computing,
Virginia Tech, Blacksburg.

"Progressive Methods for Statistical Inquiry" March, 2019
Statistics Department Seminar,
Washington University, St Louis.

"Inductive vs. Deductive Statistical Inference" November, 2018
26th Biennial Meeting of the Philosophy of Science Association,
Seattle, Washington.

"The Topology of Statistical Inquiry" October 20, 2018
Workshop on Logic, Information, and Topology, CMU, Pittsburgh.

"Progressive Methods for Causal Discovery" September 22, 2018
Workshop on Foundations of Causal Discovery, CMU, Pittsburgh.

"Topological Epistemology of Science" June 23-29, 2018
with Kevin T. Kelly,
North American Summer School of Logic, Language and Information (NASSLLI),
CMU, Pittsburgh.

"Simplicity and Scientific Progress" June 2-3, 2018
7th CSLI Workshop on Logic, Rationality, and Intelligent Interaction,
Stanford, California.

Reply to "Two Cheers for Akrasia" (Kevin Dorst) January 2018
Meeting of the American Philosophical Association Eastern Division,
Savannah, Georgia.

"The Topology of Statistical Verifiability" July 2017
XVI^{th} Conference on Theoretical Aspects of Rationality and Knowledge,
University of Liverpool.

"How Inductive is Bayesian Conditioning?" July 2017
Workshop in Experience and Updating,
University Bochum, Germany.

"The Topology of Statistical Inquiry." June 2017
Workshop in Philosophy and Physical Computing,
Virginia Tech, Blacksburg (Invited Talk).

"What is Statistical Deduction?" June 2017
Workshop in Modality and Method,
CMU, Pittsburgh.

Reply to "Credal Omniscience and Relevance Confirmation." (Joel Pust) March 2017
Meeting of the American Philosophical Association Central Division,

Kansas City.

"Deduction, Induction, Statistics and Topology." November 2016
with Kevin T. Kelly,
Workshop in the Logical Structure of Correlated Information Change,
Institute for Logic, Language and Computation, Amsterdam.

"A Topological Explanation of Empirical Simplicity." November 2016
with Kevin T. Kelly,
Philosophy of Science Association Meeting,
Altanta.

"Deduction, Induction, and Statistical Inference." September 2016
with Kevin T. Kelly,
Philosophy of Scientific Experimentation 5,
University of Belgrade.

"Simplicity and Scientific Questions." June 2016
Questions and Attitudes Workshop,
Carnegie Mellon Univeristy, Pittsburgh.

"Theory Choice, Theory Change, and Inductive Truth Conduciveness."

1. Bristol-Gröningen Conference in Formal Epistemology, July 2015
   University of Bristol.
2. XV^{th} Conference on Theoretical Aspects of Rationality and Knowledge, June 2015
   Carnegie Mellon.
3. Formal Epistemology Workshop, May 2015
   University of Washington, St. Louis.
4. CSLI Workshop on Logic, Rationality, and Intelligent Interaction, May 2015
   Stanford (Invited Talk).

"A Topological Theory of Empirical Simplicity." November 2014
with Kevin T. Kelly, Hanti Lin,
Philosophy of Science Association Meeting,
Chicago.

"Learning with Ockham: Simplicity in Inductive Inference." October 2014
Cool Logic Seminar,
Institute for Logic, Language and Computation, Amsterdam.

"An Epistemic Justification of Ockham's Razor" October 2014
with Kevin T. Kelly,
René Descartes Lectures,

Tilburg University.

"The St. Petersburg Paradox." July 2014
with Remco Heesen,
Swiss Institute Exhibition,
New York City.

"Contraction and the Loss of True Belief."
with Ted Shear,

1. North American Summer School in Logic, Language, and Information, June 2014
   Univeristy of Maryland, College Park.
2. Canadian Society for History and Philosophy of Science Meeting, May 2014
   St. Catherine's, Ontario.
3. Association of Symbolic Logic North American Meeting, May 2014
   University of Colorado, Boulder.
4. Colombian Conference in Logic, Epistemology and Phil. of Science, February 2014
   Universidad de Los Andes, Bogota.

"Tracking and Statistical Knowledge." January 2014
11th Annual Graduate Student Conference in Epistemology,
University of Miami.

"When do Multiple Graphical Representations Matter?" July 2013
with Ryan Carlson, et. al.
Educational Data Mining Conference,
Memphis.

"Empirical Simplicity, Efficient Inquiry, and Ockham's Razor." June 2013
with Kevin T. Kelly, Hanti Lin,
Workshop on the Logic of Simplicity,
Carnegie Mellon, Pittsburgh.

TEACHING EXPERIENCE

Course Instructor, Eberhard Karls Universität Tübingen
Algorithmic Fairness Summer 2022

Course Instructor, Carnegie Mellon University
Causation, Law and Social Policy Spring 2018
Introduction to Political Philosophy Summer 2017

Introduction to Philosophy	Fall 2016
Causation, Law and Social Policy	Spring 2016
Introduction to Philosophy	Summer 2015
Introduction to Philosophy	Summer 2014

TA or Grader, Carnegie Mellon University

Philosophy of Science	Fall 2017
Social Structure, Public Policy and Ethics	Spring 2017
Philosophy of Religion	Spring 2014
Philosophy and Psychology	Fall 2013
Social Structure, Public Policy and Ethics	Spring 2013

DISCIPLINARY SERVICE

Conf. Organizer, *Philosophy of Science Meets Machine Learning* (PhilML 2022)	Oct 2022
Program Committee, *Euro. Conference on Machine Learning* (ECML 2022)	Spring 2022
Program Committee, *Uncertainty in Aritificial Intelligence* (UAI 2022)	Spring 2022
Referee, *Ergo*	January 2022
Referee, *Philosophies*	October 2021
Referee, *Analysis*	June 2021
Referee, *European Journal for Philosophy of Science*	May 2021
Referee, *Internet Encylopedia of Philosophy*	, January 2021
Referee, *Ergo*	July 2020
Referee, *Synthese*	July 2020
Referee, *Philosophy of Science*	October 2019
Referee, *Synthese*	October 2018
Referee, *Journal for General Philosophy of Science*	April 2018
Referee, Sixth International Conference on Logic, Rationality and Interaction	May 2017
Referee, *Erkenntnis*	May 2017
Organizer, Pitt-CMU Grad Conference in Philosophy	March 2017
Referee, *Episteme*	December 2016
Referee, *Erkenntnis*	January 2016
Referee, *Ergo*	June 2015
Referee, *Erkenntnis*	May 2015
Referee, *British Journal for Philosophy of Science*	February 2015
Referee, *Studies in History and Philosophy of Science*	July 2014
Referee, *analytica*	December 2014
Referee, Pitt-CMU Grad Conference in Philosophy	Fall 2014
Program Committee, NASSLLI	Summer 2014

MEMBERSHIPS

American Philosophical Association

Philosophy of Science Association

LANGUAGES

English — Native Speaker
Russian — Fluent
German — Intermediate
French — Beginner