

CURRICULUM VITAE

ZHANG Jiji

EDUCATION

PhD in Logic, Computation and Methodology, Carnegie Mellon University, 2006

MS in Logic and Computation, Carnegie Mellon University, 2003

BA in Logic and Philosophy, Beijing University, 2000

WORKING EXPERIENCE

Professor, Department of Religion and Philosophy, Hong Kong Baptist University, 2021 -

Consultant, Noah's Ark Lab, Huawei Technologies, 2019 -

Head, Department of Philosophy, Lingnan University, 2018 – 2020

Associate Professor, Department of Philosophy, Lingnan University, 2011 - 2020

Associate Director, Core Curriculum and General Education, Lingnan University, 2013 - 2018

Assistant Director, Master of Arts in Practical Philosophy Program, Lingnan University, 2011 - 2013

Assistant Professor, Department of Philosophy, Lingnan University, 2008 - 2011

Assistant Professor, Division of the Humanities and Social Sciences, California Institute of Technology, 2006 - 2008

MAIN RESEARCH INTERESTS

Causal Inference, Formal Epistemology, Philosophy of Science, Artificial Intelligence

PUBLICATIONS

Journal Articles

Huang, B., Zhang, K., **Zhang, J.**, Ramsey, J., Sanchez-Romero, R., Glymour, C., and Schölkopf, B. (2020). “Causal Discovery from Heterogeneous/Nonstationary Data”, *Journal of*

Machine Learning Research, 21: 1-53.

Zhang, J., Seidenfeld, T., and Liu, H. (2019). “Subjective Causal Networks and Indeterminate Suppositional Credences”, *Synthese*, doi: 10.1007/s11229-019-02512-2.

Zhang, J., Liu, H., and Seidenfeld, T. (2018). “Agreeing to Disagree and Dilation”, *International Journal of Approximate Reasoning*, 150-162.

Zhalama, **Zhang, J.**, and Mayer, W. (2017). “Weakening Faithfulness: Some Heuristic Causal Discovery Algorithms”, *International Journal of Data Science and Analytics*, 3(2): 93-104.

Zhang, J., and Spirtes, P. (2016). “The Three Faces of Faithfulness”, *Synthese*, 193(4): 1011-1027.

Zhang, J., and Zhang, K. (2015). “Likelihood and Consilience: on Forster’s Counterexamples to the Likelihood Theory of Evidence”, *Philosophy of Science*, 82(5): 930-940.

Zhang, K., Wang, Z., **Zhang, J.**, and Schölkopf, B. (2015). “On Estimation of Functional Causal Models: General Results and Application to the Post-Nonlinear Causal Model”, *ACM Transactions on Intelligent Systems and Technology*, 7(2): 13:1-13:22.

Spirtes, P., and **Zhang, J.** (2014). “A Uniformly Consistent Estimator of Causal Effect Under the k-Triangle-Faithfulness Assumption”, *Statistical Science*, 29(4): 662-678.

De Clercq, R., Lam, W., and **Zhang, J.** (2014). “Is There a Problem with the Causal Criterion of Event Identity?”, *American Philosophical Quarterly*, 51(2): 109-119.

Zhang, J. (2013). “Can the Incompatibilist Get Past the No Past Objection?”, *dialectica*, 67(3): 345-352.

Zhang, J. (2013). “A Comparison of Three Occam’s Razors for Markovian Causal Models”, *British Journal for the Philosophy of Science*, 64(2): 423-448.

Zhang, J., Lam, W., and De Clercq, R. (2013). “A Peculiarity in Pearl’s logic of Interventionist Counterfactuals”, *Journal of Philosophical Logic*, 42(5): 783-794.

Zhang, J. (2012). “A Lewisian Logic of Causal Counterfactuals”, *Minds and Machines*, 23(1): 77-93.

Zhang, J., and Spirtes, P. (2011). “Intervention, Determinism, and the Causal Minimality Condition”, *Synthese*, 182(3): 335-347.

- Glymour, C., Danks, D., Glymour, B., Eberhardt, F., Ramsey, J., Scheines, R., Spirtes, P., Teng, C. M., **Zhang, J.** (2010). “Actual Causation: A Stone Soup Essay”, *Synthese*, 175(2): 169-192.
- Zhang, J.** (2009). “Underdetermination in Causal Inference”, *Studies in Logic*, 2(4): 16-47.
- Zhang, J.** (2008). “On the Completeness of Orientation Rules for Causal Discovery in the Presence of Latent Confounders and Selection Bias”, *Artificial Intelligence*, 172(16): 1873-1896.
- Zhang, J.** (2008). “Error Probabilities for Inference of Causal Directions”, *Synthese*, 163(3): 409-418.
- Zhang, J.** (2008). “Causal Reasoning with Ancestral Graphs”, *Journal of Machine Learning Research*, 9: 1437-1474.
- Zhang, J.** and Spirtes, P. (2008). “Detection of Unfaithfulness and Robust Causal Inference”, *Minds and Machines*, 18(2): 239-271.

Refereed Conference Proceedings

- Lin, H., and **Zhang, J.** (2020). “On Learning Causal Structures from Non-experimental Data without Any Faithfulness Assumption”, *Proceedings of the 31st International Conference on Algorithmic Learning Theory (ALT)*, PMLR 117: 554-582.
- Jaber, A., **Zhang, J.**, and Bareinboim, E. (2019). "Identification of conditional causal effects under Markov equivalence", *Proceedings of the 33rd Annual Conference on Neural Information Processing Systems(NeurIPS)*.
- Zhalama, **Zhang, J.**, Eberhardt, F., Mayer, W., and Li, J. (2019). “ASP-based Discovery of Semi-Markovian Causal Models under Weaker Assumptions”, *Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI)*, 1488-1494.
- Jaber, A., **Zhang, J.**, and Bareinboim, E. (2019). “On Causal Identification under Markov Equivalence”, *Proceedings of the IJCAI Best Sister Conferences*, 6181-6185.
- Jaber, A., **Zhang, J.**, and Bareinboim, E. (2019). “Causal Identification under Markov Equivalence: Completeness Results”, *Proceedings of the 36th International Conference on Machine Learning (ICML)*, PMLR 97: 2981-2989.

- Jaber, A., **Zhang, J.**, and Bareinboim, E. (2018). “Causal Identification under Markov Equivalence”, *Proceedings of the 34th Conference on Uncertainty in Artificial Intelligence (UAI)*, 978-987.
- Jaber, A., **Zhang, J.**, and Bareinboim, E. (2018). “A Graphical Criterion for Effect Identification in Equivalence Classes of Causal Diagrams”, *Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI)*, 5024-5030.
- Zhang, J.**, Liu, H., and Seidenfeld, T. (2017). “Agreeing to Disagree and Dilation”, *Proceedings of the 10th International Symposium on Imprecise Probability: Theories and Applications (ISIPTA)*, PMLR 62: 370-381.
- Huang, B., Zhang, K., **Zhang, J.**, Schölkopf, B., and Glymour, C. (2017). “Behind Distribution Shift: Mining Driving Forces of Changes and Causal Arrows”, *Proceedings of the IEEE International Conference on Data Mining (ICDM)*, 913-918.
- Zhalama, **Zhang, J.**, Eberhardt, F., and Mayer, W. (2017). “SAT-based causal discovery under weaker assumptions”, *Proceedings of the 33rd Conference on Uncertainty in Artificial Intelligence (UAI)*, 630-639.
- Zhang, K., Huang, B., **Zhang, J.**, Schölkopf, B., and Glymour, C. (2017). “Causal Discovery from Nonstationary/Heterogeneous Data: Skeleton Estimation and Orientation Determination”, *Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI)*, 1347-1353.
- Zhang, K., **Zhang, J.**, Huang, B., Schölkopf, B., and Glymour, C. (2016). “On the Identifiability and Estimation of Functional Causal Models in the Presence of Outcome-Dependent Selection”, *Proceedings of the 32nd Conference on Uncertainty in Artificial Intelligence (UAI)*, 825-834.
- Zhang, K., **Zhang, J.**, and Schölkopf, B. (2015). “Distinguishing Cause from Effect Based on Exogeneity”, *Proceedings of the 15th Conference on Theoretical Aspects of Rationality and Knowledge (TARK)*, 261-271.
- Zhang, J.**, and Silva, R. (2011). “Discussion of ‘Learning Equivalence Classes of Acyclic Models from Multiple Datasets with Overlapping Variables’”, *Proceedings of the 14th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 201-203.
- Zhang, J.** (2007). “A Characterization of Markov Equivalence Classes for Causal Models with Latent Variables”, *Proceedings of the 23rd Conference on Uncertainty in Artificial Intelligence (UAI)*, 450-457.

- Zhang, J.** (2007). “Generalized *Do*-Calculus with Testable Causal Assumptions”, *Proceedings of the 11th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 667-674.
- Ramsey, J., **Zhang, J.**, and Spirtes, P. (2006). “Adjacency-Faithfulness and Conservative Causal Inference”, *Proceedings of the 22nd Conference on Uncertainty in Artificial Intelligence (UAI)*, 401-408.
- Sliva, R., **Zhang, J.**, and Shanahan, J. G. (2005). “Probabilistic Workflow Mining”, *Proceedings of the 11th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 275-284.
- Zhang, J.**, and Spirtes, P. (2005). “A Transformational Characterization of Markov Equivalence between Causal Models with Latent Variables”, *Proceedings of the 21st Conference on Uncertainty in Artificial Intelligence (UAI)*, 667-674.
- Ali, A., Richardson, T., Spirtes, P., and **Zhang, J.** (2005). “A Step Towards Characterizing Markov Equivalence Classes of Latent Variable Causal Models”, *Proceedings of the 21st Conference on Uncertainty in Artificial Intelligence (UAI)*, 10-17.
- Zhang, J.**, and Spirtes, P. (2003). “Strong Faithfulness and Uniform Consistency in Causal Inference”, *Proceedings of the 19th Conference on Uncertainty in Artificial Intelligence (UAI)*, 632-639.

Book Chapters

- Zhang, J.** (2017). “On the Minimization Principle in the Boolean Approach to Causal Discovery”, in Chin-Mu Yang, Kok Yong Lee, and Hiroakira Ono (eds.), *Philosophical Logic: Current Trends in Asia*.
- Zhang, J.**, and Spirtes, P. (2014). “Choice of Units and the Causal Markov Condition”, in Guichun Guo and Chuang Liu (eds.), *Scientific Explanation and Methodology of Science*, Singapore: World Scientific.
- Bicchieri C., and **Zhang, J.** (2012). “An Embarrassment of Riches: Modeling Social Preferences in Ultimatum Games”, in Uskali Mäki (ed.), *Handbook of the Philosophy of Science, Vol. 13, Philosophy of Economics*, pp. 577-596, Amsterdam: Elsevier.

Patent

- Shanahan, J. G., Silva, R., and **Zhang, J.**, “Method and Apparatus for Probabilistic Workflow

Mining”, United States Patent 20070055558, 2007.

RESEARCH GRANTS

Principal Investigator, “Parsimony in Causal Inference: Epistemic Justifications and Methodological Implications”, General Research Fund, the Research Grants Council of Hong Kong, 01/01/2021 – 31/21/2022, HKD 605,000.

Principal Investigator, “Logical Investigations of Causal Models and Counterfactual Structures”, General Research Fund, the Research Grants Council of Hong Kong, 01/09/2018 – 31/08/2020, HKD 161,358.

Principal Investigator, “Causation, Decision, and Imprecise Probabilities”, General Research Fund, the Research Grants Council of Hong Kong, 01/01/2016 – 31/12/2017, HKD 132,000.

Principal Investigator, “Philosophical Implications of Recent Advances in Causal Modeling”, General Research Fund, the Research Grants Council of Hong Kong, 01/08/2013 – 31/01/2016, HKD 358,500.

Principal Investigator, “A Constructive Examination of Standard Assumptions in Causal Discovery”, General Research Fund, the Research Grants Council of Hong Kong, 01/01/2011 – 31/12/2012, HKD 240,000.

AWARDS

Best Student Paper Award, The 34th Conference on Uncertainty in Artificial Intelligence, 2018.

Runner-up for the Best Paper Award, The 23rd Conference on Uncertainty in Artificial Intelligence, 2007.

SELECTED PRESENTATIONS

“Error Probabilities in Causal Discovery and Popper’s Two Criteria of Simplicity”, Workshop on Predictive Processing, Direction of Fit, and Causal Inference, Beijing, China, 2020.

“A Lewisian Logic of Causal Counterfactuals”, Workshop on Causality, Probability and Logic, Guangzhou, China, 2019.

“Causal Exclusion, Subjunctive Conditionals, and Generalized Causal Models”, Department of Philosophy, Beijing University, 2019.

“INUS and Occam’s Razors”, Workshop on Metaphilosophy and Philosophical Methodologies, Beijing, China, 2019.

“Causal Models with Metaphysical Dependencies”, National Philosophy of Science Meeting, Hangzhou, China, 2019.

“Causal Minimality in the Boolean Approach to Causal Inference”, The 16th Congress on Logic, Methodology, and Philosophy of Science and Technology, Prague, Czech, 2019.

“A Characterization of Lewisian Causal Models”, The 16th Asian Logic Conference, Astana, Kazakhstan, 2019.

“Automated Causal Reasoning: Challenges and Advances”, Huawei Strategy and Technology Workshop, Shenzhen, China, 2019.

“N in INUS”, Department of Philosophy, Chinese University of Hong Kong, Hong Kong, 2019.

“Structural Equation Models for Both Causation and Constitution”, Conference on Causation vs Constitution, Bergen, Norway, 2018.

“Generalized Structural Equation Models”, The 4th Taiwan Philosophical Logic Colloquium, Taipei, 2018.

“Causal Structure Learning from Observational Data”, School of Data Science, City University of Hong Kong, Hong Kong, 2018.

“Subjective Causal Networks and Imprecise Suppositional Credences”, International Symposium on Logic and Uncertainty, Guangzhou, China, 2018.

“SAT-based Causal Discovery of Semi-Markovian Models under Weaker Assumptions”, International Workshop on Foundations of Causal Discovery, Pittsburgh, USA, 2018.

“Occam’s Razors in the Statistical Inference of Markovian Causal Models”, The 5th Institute of Mathematical Statistics Asia Pacific Rim Meeting, Singapore, 2018.

“A New Perspective on Occam’s Razors for Causal Models”, International Workshop on Causal Modeling and Machine Learning, Guangzhou, China, 2018.

“Parsimony in the Boolean Approach to Causal Inference”, Lingnan Workshop on Epistemology, Hong Kong, 2018.

“Causal Discovery from Nonstationary/Heterogeneous Data: Skeleton Estimation and Orientation Determination”, The 26th International Joint Conference on Artificial Intelligence, Melbourne, Australia, 2017.

“Towards a Decision-Theoretic Foundation for (Imprecise) Interventional Probabilities”, Causality Workshop, the 33rd Conference on Uncertainty in Artificial Intelligence, Sydney, Australia, 2017.

“SAT-based Causal Discovery under Weaker Assumptions”, Causality Workshop, the 33rd Conference on Uncertainty in Artificial Intelligence, Sydney, Australia, 2017.

“Towards a Decision-Theoretic Foundation for (Subjective) Causal Bayes Nets”, Workshop on Decision Theory and the Future of Artificial Intelligence, University of Cambridge, Cambridge, United Kingdom, 2017.

“Agreeing to Disagree and Dilation”, The 10th International Symposium on Imprecise Probability: Theories and Applications, Lugano, Switzerland, 2017.

“On the Boolean Minimization in Causal Inference”, Workshop on the Intersection of Logic, Mathematics, and Philosophy, Sun Yat-sen University, Zhuhai, China, 2016.

“A Characterization of (Weakly Centered) Lewisian Causal Models”, Asian Workshop of Philosophical Logic, National Taiwan University, Taipei, 2016.

“A General Independence Approach to the Inference of Causal Asymmetry”, International Workshop on Causal Inference, The Institute of Statistical Mathematics, Tokyo, Japan, 2016.

“Causal Models, Conditional Logic, and Cycles of Counterfactual Dependence”, The 15th Congress on Logic, Methodology, and Philosophy of Science, Helsinki, Finland, 2015.

“Likelihood and Consilience”, The 24th Biennial Meeting of the Philosophy of Science Association, Pittsburgh, USA, 2014.

“Triangle-Faithfulness and (More) Conservative Causal Inference”, Kyoto International Conference on Modern Statistics in the 21st Century, Kyoto, Japan, 2014.

“Weakening the Causal Faithfulness Assumption”, Workshop on Causality: Perspectives from Different Disciplines, organized by Max Planck Institute for Intelligent Systems, Vals, Switzerland, 2013.

“A Peculiarity in Pearl’s Logic of Interventionist Counterfactuals”, Workshop in Celebration of the 100th Anniversary of Department of Philosophy at Beijing University, Center for Logic, Language and Cognition, Beijing University, Beijing, China, 2012.

“Likelihood and Consilience: On Forster’s Counterexamples to the Likelihood Theory of Evidence”, International Conference on Scientific Explanation and Methodology of Science, Shanxi University, Taiyuan, China, 2012.

“Logics of Causal Counterfactuals”, Guest Lecture, Seminar on Causality, Carnegie Mellon University, Pittsburgh, USA, 2011.

“Boolean Minimization in Causal Inference and the Causal Chain Problem”, Invited Seminar, Department of Philosophy, University of Hong Kong, Hong Kong, 2011.

“What is Distinctive of Causal Reasoning?”, Guest Lecture, School of Professional and Continuing Education, University of Hong Kong, Hong Kong, 2011.

“Intervention, Determinism, and the Causal Minimality Condition”, Invited Seminar, Emmy Noether Junior Research Group, University of Konstanz, Konstanz, Germany, 2009.

“Intervention, Determinism, and the Causal Minimality Condition”, The 21st Biennial Meeting of the Philosophy of Science Association, Pittsburgh, USA, 2008.

“Causal Discovery and Reasoning with Ancestral Graphical Models”, Workshop on Statistical Causal Inference, Tokyo Institute of Technology, Tokyo, Japan, 2007.

“Choice of Units and the Causal Markov Condition”, The 13th International Congress for Logic, Methodology and Philosophy of Science, Beijing, China, 2007.

“Detection of Unfaithfulness and Robust Causal Inference”, International Conference on Confirmation, Induction, and Science, London School of Economics and Political Science, London, United Kingdom, 2007.

"A Characterization of Markov Equivalence Classes for Causal Models with Latent Variables", Plenary Presentation, The 23rd International Conference on Uncertainty in Artificial Intelligence, Vancouver, Canada, 2007.

“Exchangeability and Invariance”, The 4th Annual Formal Epistemology Workshop, Pittsburgh, USA, 2007.

“Generalized *Do*-Calculus with Testable Causal Assumptions”, Plenary Presentation, The 11th International Conference on Artificial Intelligence and Statistics, San Juan, Puerto Rico, 2007.

"A Characterization of Markov Equivalence Classes for Causal Models with Latent Variables", Plenary Presentation, The 23rd International Conference on Uncertainty in Artificial Intelligence, Vancouver, Canada, 2007.

"Causal Learning and Reasoning: Philosophy, Psychology and Computation", Invited Seminar, Caltech Alumni Association, Pasadena, USA, 2007.

ACADEMIC SERVICE

Area Editor, *Ergo: An Open Access Journal of Philosophy*, 2013 – present

Associate Editor, *Behaviormetrika*, 2016 – present

Senior Program Committee Member, the 26th International Joint Conference on Artificial Intelligence (IJCAI), 2021.

Program Committee Member, the 38th International Conference on Machine Learning (ICML), 2021.

Program Committee Member, the 37th Conference on Uncertainty in Artificial Intelligence (UAI), 2021.

Reviewer, the 9th International Conference on Learning Representations (ICLR), 2021.

Senior Program Committee Member, National Conference on Artificial Intelligence (AAAI), 2019-2020.

Program Committee Member, the 24th International Joint Conference on Artificial Intelligence (IJCAI), 2019.

Program Committee Member, Formal Epistemology Workshop (FEW), 2019.

Program Committee Member, International Symposium on Imprecise Probability: Theories and Applications (ISIPTA), 2019, 2021.

Program Committee Member, International Conference on Machine Learning (ICML), 2018 – 2019.

Program Committee Member, Conference on Uncertainty in Artificial Intelligence (UAI), 2014 – 2018.

Program Committee Member, Chinese National Conference on Modern Logic, 2016 – 2018

Program Committee Member, the 24th International Joint Conference on Artificial Intelligence (IJCAI), 2015.

Program Committee Member, International Conference on Artificial Intelligence and Statistics (AISTATS), 2010 – 2014

Reviewer, Neural Information Processing Systems Conference (NeurIPS), 2014 – 2016

Co-organizer, Workshop on Causality, Probability, and Logic, Guangzhou, China, 2019.

Co-organizer, Taiwan Symposium on Conditionals, Probability, and Causality, Taipei, Taiwan, 2018.

Co-organizer, Workshop on Causality: Learning, Inference, and Decision Making, Sydney, Australia, 2017

Co-organizer, Workshop on Causal Modeling & Machine Learning, International Conference on Machine Learning, Beijing, China, 2014

Co-organizer, Workshop on Causality: Perspectives from Different Disciplines, Vals, Switzerland, 2013

Referee for the following academic journals and presses: *ACM Transactions on Intelligent Systems and Technology*, *Analysis*, *Annals of Statistics*, *Artificial Intelligence*, *Australasian Journal of Philosophy*, *Behaviormetrika*, *British Journal for the Philosophy of Science*, *Cambridge University Press*, *Cognition*, *Electronic Journal of Statistics*, *Erkenntnis*, *European Journal for Philosophy of Science*, *International Journal of Approximate Reasoning*, *International Journals of Data Science and Analytics*, *International Journal of Information Technology and Decision Making*, *Journal of Causal Inference*, *Journal of Computer Science and Technology*, *Journal of Machine Learning Research*, *Journal of Philosophical Logic*, *Minds and Machines*, *MIT Press*, *National Science Review*, *Neural Computation*, *Philosophy of Science*, *Quality & Quantity*, *Studies in History and Philosophy of Science*, *Studies in Logic*, *Synthese*, *Theoria*, *Theory and Decision*.