





Mohammad Ali Javidian, Ph.D.

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Research Interests

- Probabilistic Graphical Models: Bayesian Networks, Chain Graphs, Markov Networks; Causality; Transfer Learning; Quantum Computing.

Education




- 2015 – 2019  **Ph.D.** in Computer Science and Engineering, **University of South Carolina, USA.**
Thesis title: *Properties, Learning Algorithms, and Applications of Chain Graphs and Bayesian Hypergraphs*. Advisor: Marco Valtorta, Ph.D.
- 2011 – 2013  **M.Sc.** in Computer Science, **Sharif University of Technology, Iran.**
Thesis title: *Disappointment in Social Choice Protocols*. Advisor: Rasoul Ramezani, Ph.D.
- 2004 – 2007  **M.Sc.** in Mathematics, **Shiraz University, Iran.**
Thesis title: *Invariant Subspaces for the Backward Shift on Hilbert Spaces of Analytic Functions with Regular Norm*. Advisor: Bahram Khani Robati, Ph.D.
- 1999 – 2003  **B.Sc.** in Mathematics, **Shahid Bahonar University of Kerman, Iran.**

Research Positions

- Sep 2020–Now  **Postdoctoral researcher**, *Purdue University*, West Lafayette, IN, USA.
Working with Prof. Zubin Jacob and Prof. Vaneet Aggarwal on the development of novel algorithmic and theoretically principled methods for quantum entropic causal inference.
- Sep 2019–Now  **Research Assistant/Post-Doctoral Fellow**, *University of South Carolina*, Columbia, SC, USA.
Working with Dr. Pooyan Jamshidi on performance debugging of highly-configurable software systems, collaborating very closely with Prof. Marco Valtorta.
- Jan 2019–Aug 2019  **Research Assistant**, *University of South Carolina*, Columbia, SC, USA.
Working with Dr. Pooyan Jamshidi on causal structure learning and their applications in machine learning systems, collaborating very closely with Prof. Marco Valtorta.
- Jan 2017–Dec 2018  **Research Assistant**, *University of South Carolina*, Columbia, SC, USA.
Working with Prof. Marco Valtorta on probabilistic graphical models: interpretations, expressiveness and learning algorithms.
- Mar 2012–Sep 2013  **Research Assistant**, *Sharif University of Technology*, Tehran, Iran.
Working with Dr. Rasoul Ramezani on social choice theory and voting protocols.
- Feb 2006–Sep 2007  **Research Assistant**, *University of Shiraz*, Shiraz, Iran.
Working with Dr. Bahram Khani Robati on functional analysis: Hilbert and Bergman spaces.

Research Publications

Journal Articles

-  **Mohammad Ali Javidian**, & Valtorta, M. (2021). A decomposition-based algorithm for learning the structure of multivariate regression chain graphs. *International Journal of Approximate Reasoning*, 136, 66–85.
-  **Mohammad Ali Javidian**, Valtorta, M., & P. Jamshidi. (2020). AMP chain graphs: Minimal separators and structure learning algorithms. *Journal of Artificial Intelligence Research (JAIR)*.
-  **Mohammad Ali Javidian**, Wang, Z., Lu, L., & Valtorta, M. (2020). On a hypergraph probabilistic graphical model. *Annals of Mathematics and Artificial Intelligence*.

Conference Proceedings

- 1 **Mohammad Ali Javidian**, Valtorta, M., & P. Jamshidi. (2021). An order-independent algorithm for learning chain graphs, In *Proceedings of the 34th International FLAIRS Conference*.
- 2 Rahman, M. M., Rasheed, A., Khan, M. M., **Mohammad Ali Javidian**, P. Jamshidi, & Mamun-Or-Rashid, M. (2021). Accelerating recursive partition-based causal structure learning using an improved structure refinement approach, In *Proceedings of the 20th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2021)*.
- 3 **Mohammad Ali Javidian**, P. Jamshidi, & Valtorta, M. (2020). Learning LWF chain graphs: A Markov blanket discovery approach, In *Proceedings of the Uncertainty in Artificial Intelligence (UAI'20)*.
- 4 **Mohammad Ali Javidian**, Jamshidi, P., & Ramezani, R. (2019). Avoiding social disappointment in elections, In *Proceedings of the International Conference on Autonomous Agents and Multiagent Systems (AAMAS'19)*.
- 5 **Mohammad Ali Javidian**, Valtorta, M., & P. Jamshidi. (2019). Order-independent structure learning of multivariate regression chain graphs, In *Proceedings of the International Conference on Scalable Uncertainty Management (SUM'19)*.
- 6 **Mohammad Ali Javidian**, & Valtorta, M. (2018c). Finding minimal separators in LWF chain graphs, In *Proceedings of the International Conference on Probabilistic Graphical Models (PGM'18)*.

Workshop and Symposium Papers

- 1 **Mohammad Ali Javidian**, V. Aggarwal, & Jacob, Z. (2021). Quantum causal inference: An entropic approach [8th Causal Inference Workshop at UAI (causalUAI2021), Online].
- 2 Krishna, R., Iqbal, S., **Mohammad Ali Javidian**, Ray, B., & Jamshidi, P. (2020). CAUPER: A causal inference tool to repair non-functional performance faults [NeurIPS 2020 Workshop on Machine Learning for Systems (MLFS2020), Zoomville].
- 3 **Mohammad Ali Javidian**, P. Jamshidi, & Valtorta, M. (2019). Transfer learning for performance modeling of configurable systems: A causal analysis [First AAAI Spring Symposium "Beyond Curve Fitting: Causation, Counterfactuals, and Imagination-based AI", Stanford, CA].
- 4 Wang, Z., **Mohammad Ali Javidian**, Lu, L., & Valtorta, M. (2019). The causal interpretations of Bayesian hypergraphs [First AAAI Spring Symposium "Beyond Curve Fitting: Causation, Counterfactuals, and Imagination-based AI", Stanford, CA].
- 5 **Mohammad Ali Javidian**, & Valtorta, M. (2018a). On the properties of MVR chain graphs [Workshop proceedings of the International Conference on Probabilistic Graphical Models (PGM'18), Prague].
- 6 **Mohammad Ali Javidian**, & Valtorta, M. (2018b). Finding minimal separators in ancestral graphs [Causal Inference Workshop at the Uncertainty in Artificial Intelligence (UAI'18), Monterey, CA].

Teaching Experience

Fall 2016	<ul style="list-style-type: none"> ■ Teaching Assistant, <i>University of South Carolina</i>, Columbia, SC, USA. CSCE 330, Programming Language Structures CSCE 355, Foundations of Computation
Summer 2016	<ul style="list-style-type: none"> ■ Instructor, <i>University of South Carolina</i>, Columbia, SC, USA. CSCE 101, Introduction to Computer Concepts
Fall 2015–Spring 2016	<ul style="list-style-type: none"> ■ Teaching Assistant (Lab TA), <i>University of South Carolina</i>, Columbia, SC, USA. CSCE 145–6, Algorithmic Design I,II
Spring 2014	<ul style="list-style-type: none"> ■ Instructor, <i>Sharif University of Technology</i>, Tehran, Iran. Math 141–2, Calculus I,II
2007–2011	<ul style="list-style-type: none"> ■ Instructor, <i>Azad University of Shiraz (SAMA)/Neyriz/Sepidan</i>, Fars, Iran. Discrete Mathematics, Calculus I,II, Numerical Analysis
2003–2004	<ul style="list-style-type: none"> ■ Teacher, <i>High Schools in Darab</i>, Fars, Iran. Discrete Mathematics, Calculus, Statistics, Linear Algebra

Mentoring Experience

- **AI Sys Lab**, *University of South Carolina*, Columbia, SC, USA.
 Project: Performance Debugging of Software Systems.
 Mentee: Md Shahriar Iqbal (graduate student)

Mentoring Experience (continued)

- Summer 2020-now **AI Sys Lab**, *University of South Carolina*, Columbia, SC, USA.
Project: Causal Transfer Learning in Software Systems.
Mentee: Om Pandey (undergraduate student)
Mentee: Ahana Biswas (undergraduate student, started: April 2021)
Mentee: Cody Shearer (undergraduate student, Summer 2020-March 2021)
- Summer 2019 **AI Sys Lab**, *University of South Carolina*, Columbia, SC, USA.
Project: Bayesian Structure Learning (McNAIR Junior Fellows)
Mentee: Tristan Klintworth (undergraduate student)

Professional Service

- **Program Committee member**, UAI 2021, Online.
- **Reviewer**, AISTATS 2021, Virtual.
- **Reviewer**, IJAR, Journal. (I reviewed one paper for this journal.)
- **Program Committee member**, PGM 2020, Aalborg.
- **Reviewer**, UAI 2020, Toronto.
- **Reviewer**, SEAMS 2020, Seoul.
- **Reviewer**, SEAMS 2019, Montreal.
- **Program Committee member**, PGM 2018, Prague.
- **Reviewer**, UAI 2018, California.
- **Reviewer**, PLOS One, Journal. (I reviewed one paper for this journal.)
- **Reviewer**, UAI 2017, Sydney.