

CompSci 276 Project Ideas - Winter 2024

For the class project, each student will engage in either (1) an idea of their own relating to the class material that they will explore or, (2) select a related research paper as the basis of the project, the topics of which will be presented in class and accompanied by a project report.

Propose two topics/papers from the resources below. Rank your choices in preference (with 1 being your most preferred topic). At least one should be from the UAI 2022 and 2023. You can also select a paper not in the lists as a 3rd choice.

Record your choices on the [Project Sign-Up Sheet](#) (filling in all appropriate fields) by Wednesday 2/28/2024.

Selected Papers:

[Simplifying Probabilistic Expressions in Causal Inference](#)

Santtu Tikka and Juha Karvanen
Journal of Machine Learning Research 18 (2017)

[Efficient Interventional Distribution Learning in the PAC Framework](#)

Arnab Bhattacharyya, Sutanu Gayen, and Saravanan Kandasamy
Proceedings of Machine Learning Research (2022)

[Language-based Causal Presentation and Learning](#)

By Hector Geffner and Blai Bonet

Papers from researchers in the field

[Elias Barenboim](#)

[Jin Tian](#)

[Rina Dechter](#)

[Peter Spirtes](#)

Papers from UAI 2023

[On Identifiability of Conditional Causal Effects](#)

Yaroslav Kivva, Jalal Etesami, Negar Kiyavash

[Probabilistic Circuits That Know What They Don't Know](#)

[oral]

Fabrizio Ventola, Steven Braun, Zhongjie Yu, Martin Mundt, Kristian Kersting

[Learning Nonlinear Causal Effect via Kernel Anchor Regression](#)

Wenqi Shi, Wenkai Xu

[Conditional Counterfactual Causal Effect for Individual Attribution](#)

[spotlight]

Ruiqi Zhao, lei zhang, Shengyu Zhu, Zitong Lu, Zhenhua Dong, Chaoliang Zhang, Jun Xu, Zhi Geng, Yangbo He

[Solving Multi-Model MDPs by Policy Gradient and Dynamic Programming](#)

Xihong Su, Marek Petrik

[Neural Probabilistic Logic Programming in Discrete-Continuous Domains](#)

[oral]

Lennert De Smet, Pedro Zuidberg Dos Martires, Robin Manhaeve, Giuseppe Marra, Angelika Kimmig, Luc De Raedt

[Causal Effect Estimation from Observational and Interventional Data Through Matrix Weighted Linear Estimators](#)

Klaus-Rudolf William Kladny, Julius von Kügelgen, Bernhard Schölkopf, Michael Muehlebach

[\[link to video\]](#)

[Causal Discovery for time series from multiple datasets with latent contexts](#)

Wiebke Günther, Urmi Ninad, Jakob Runge

[Causal Discovery with Hidden Confounders](#)

David Kaltenpoth, Jilles Vreeken

[Learning Good Interventions in Causal Graphs via Covering](#)

Ayush Sawarni, Rahul Madhavan, Gaurav Sinha, Siddharth Barman

[Functional Causal Bayesian Optimization](#)

[oral]

Limor Gultchin, Virginia Aglietti, Alexis Bellot, Silvia Chiappa

[Establishing Markov Equivalence in Cyclic Directed Graphs](#)

[oral]

Tom Claassen, Joris Mooij

[Causal Information Splitting: Engineering Proxy Features for Robustness to Distribution Shifts](#)

Bijan Mazaheri, Atalanti A. Mastakouri, Dominik Janzing, Michaela Hardt

[Identifiability and Estimation under Missing Not at Random](#)

Anna Guo, Jiwei Zhao, Razieh Nabi

[Papers from UAI 2022](#)

[\[UAI\] Select research papers from UAI 2022.](#)

[Ordinal Causal Discovery](#)

\Yang Ni (Texas A&M); Bani Mallick (Texas A&M)

[Causal Discovery under a Confounder Blanket](#)

David Watson (University College London); Ricardo Silva (University College London)

[A Causal Bandit Approach to Learning Good Atomic Interventions in Presence of Unobserved Confounders](#) [ok]

Aurghya Maiti (Adobe Systems); Vineet Nair (Google Research India); Gaurav Sinha (California Institute of Technology)

[Causal Discovery of Extended Summary Graphs in Time Series](#)

Charles K. Assaad (EasyVista); Emilie Devijver (CNRS); Eric Gaussier (University Grenoble Alpes)

[On the Definition and Computation of Causal Treewidth](#)

Yizuo Chen (University of California, Los Angeles); Adnan Darwiche (University of California, Los Angeles)

[Causal Inference with Treatment Measurement Error: A Nonparametric Instrumental Variable Approach](#)

Yuchen Zhu (University College London); Limor Gultchin (University of Oxford); Arthur Gretton (University College London); Matt Kusner (University College London); Ricardo Silva (University College London)

[Robust Identifiability in Linear Structural Equation Models of Causal Inference](#)

Karthik Abinav Sankararaman (Facebook); Anand Louis (Indian Institute of Science); Navin Goyal (Microsoft)

[Identifiability of Sparse Causal Effects using Instrumental Variables](#)

Papers from UAI 2021

Please check accepted paper to [UAI 2021](#)

Here is a subset of papers that are recommended. You can explore additional ones from UAI 2021.

- [480: Extendability of Causal Graphical Models: Algorithms and Computational Complexity](#) - Marcel Wienöbst ; Max Bannach ; Maciej Liskiewicz
- [668: Markov Equivalence of Max-Linear Bayesian Networks](#) - Carlos Amendola ; Benjamin Hollering ; Seth Sullivant ; Ngoc Tran
- [679: Partial Identifiability in Discrete Data With Measurement Error](#) - Noam Finkelstein ; Roy Adams ; Suchi Saria ; Ilya Shpitser
- [138: Lifted Reasoning Meets Weighted Model Integration](#) - Leon Jonathan Feldstein ; Vaishak Belle
- [167: Weighted Model Counting with Conditional Weights for Bayesian Networks](#) - Paulius Dilkas ; Vaishak Belle
- [231: Global Explanations with Decision Rules: a Co-learning Approach](#) - Géraldin Nanfack ; Paul Temple ; Benoît Frénay
- [233: A Unifying Framework for Observer-Aware Planning and its Complexity](#) - Shuwa Miura ; Shlomo Zilberstein
- [234: A Heuristic for Statistical Seriation](#) - Komal Dhull ; Jingyan Wang ; Nihar Shah ; Yuanzhi Li ; R Ravi
- [279: Decentralized Multi-Agent Active Search for Sparse Signals](#) - Ramina Ghods ; Arundhati Banerjee ; Jeff Schneider
- [313: Dependency in DAG models with Hidden Variables](#) - Robin Evans
- [351: Neural Markov Logic Networks](#) - Giuseppe Marra ; Ondrej Kuzelka
- [354: On the Effects of Quantisation on Model Uncertainty in Bayesian Neural Networks](#) - Martin Ferienc ; Partha Maji ; Matthew Mattina ; Miguel Rodrigues