Sagar Malhotra

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url: countinglogic.github.io

Born: May 6, 1994
Nationality: Indian

Current position

11.2019-01.2023 PhD Candidate
Advisor: Luciano Serafini
Project: Analytical Approaches to Lifted Inference[1]
University of Trento, Italy
Fondazione Bruno Kessler, Italy

Research Experience and Education

2018-2019 Junior Research Fellow
Advisors: Luciano Serafini, Radim Nedbal
Project: Variational Inference in Hybrid Domains
Data and Knowledge Management Unit
Fondazione Bruno Kessler, Italy

2018 MSc in Physics
Advisors: Roberto Iuppa (Unitn), Marco Cristoforetti (FBK)
Thesis: Deep Learning For Track Reconstruction in Next Generation HEP Experiments
Fondazione Bruno Kessler, Italy
University of Trento, Italy

2015 BSc in Physics with Honors
University of Delhi, India

Publications

2022 **Sagar Malhotra** and Luciano Serafini. On Projectivity in Markov Logic Networks
Proceedings of Machine Learning and Knowledge Discovery in Databases. Research Track - European Conference, ECML PKDD 2022.
arXiv:2204.04009

[1] Tentative title

2022 **Sagar Malhotra** and Luciano Serafini. Weighted Model Counting in FO^2 with Cardinality Constraints and Counting Quantifiers: A Closed Form Formula
(Oral presentation) Proceedings of the 36^{th} AAAI Conference on Artificial Intelligence.
arXiv:2110.05992

2021 **Sagar Malhotra** and Luciano Serafini. A Combinatorial Approach to Weighted Model Counting in the Two Variable Fragment with Cardinality Constraints
Proceedings of the 20^{th} International Conference of the Italian Association for Artificial Intelligence, 2021

Workshop Publications

2021 **Sagar Malhotra** and Luciano Serafini. Weighted Model Counting in FO^2 with Cardinality Constraints and Counting Quantifiers: A Closed Form Formula
10^{th} International Workshop on Statistical Relational AI, 2021

Talks and Tutorials

2022 A Tutorial on Probabilistic Inference in Logical Domains, University of Padova, Italy
2022 Weighted First-Order Model Counting, DocInProgress, University of Trento, Italy
2022 On Projectivity in Markov Logic Networks, DKM Group Seminar
2022 Weighted First-Order Model Counting, AAAI 2022@FBK Workshop

Programming Languages

Fluent: Python, Pandas, LaTeX
Familiar: Mathematica, R, Pytorch, HTML

Research Interests

My current research interests revolve around knowledge representation and reasoning under uncertainity. I am especially interested in:

· Exact and Approximate Probabilistic Inference
· Consistency of Probabilistic Inference
· Weighted Model Counting
· Structure Learning
· Exponential Random Graphs and their extension to logical domains
· Assymptotic Inference

Awards and Achievements

2018 Bronze medal in TrackML particle tracking challenge on Kaggle.
2017 Part of the winning team in Industrial Problem Solving using Physics
2017 Awarded fully funded trip to Innovation Days-Innsbruck in StartUp Lab, Trento
2016 Awarded full-Scholarship for the Joint Masters in Theoretical Physics at University of Trento and SISSA- Trieste (Declined)
2016 Awarded Opera Universitaria Scholarship for Masters in Physics at University of Trento
2016 Amongst top 5% candidates in the Joint Entrance Screening Test- Physics 2016 among $\sim$ 5000 candidates
2016 Amongst top 5 % candidates in IIT Joint Admission Test for Masters in Physics 2016 among $\sim$ 10000 candidates