Sima Jamali

Curriculum Vitae

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Work Experience

2022–2024 **University of California San Diego**, *USA*.
Postdoctoral Researcher - Halıcıoğlu Data Science Institute

- Awarded a two-year Postdoctoral Fellowship to conduct research in machine learning and data science.
- Researched on recommendation system algorithms for large-scale datasets, with a focus on enhancing model accuracy and fairness.
- Mentored students in research on SAT solvers, helping them design and execute research projects, and contributed to grant writing efforts

Education

2015–2021 **Simon Fraser University**, *Vancouver, Canada*.
Ph.D. Computer Science

- Dissertation Topic: "CDCL SAT Solver Heuristics: Clause Management, Instance Structure, and Decisions"
- Course Work: Intelligent Systems, Machine Learning, Algorithmic Design
- Cumulative GPA: 4.00/4.33

2012-2015 **Sharif University of Technology**, *Tehran, Iran*.
M.Sc. Computer Science - Artificial Intelligence

- Dissertation Topic: "Improving the Efficiency of SAT-Based Planning by Enhancing the Representations"
- Course Work: Planning in AI, NLP, Complex Dynamical Networks
- Cumulative GPA: 17/20

2008–2012 **Azad University of Mashhad**, *Mashhad, Iran*.
B.Sc. Information Technology Engineering

- Dissertation Topic: "VoIP in Cisco and Implementing a few Scenarios"
- Selected Course Work: Data bases, Data Structures, Advanced Programming, Operating Systems, Software Engineering
- Cumulative GPA: 18/20

Technical Skills

Languages C++, Python, R.

Tools & Databases Matlab, Git, SQLite.

Projects

Location-Aware Restaurant Recommendations on Google Maps Data.
Enhanced recommendations by leveraging matrix factorization models to prioritize location relevance. (Python. TensorFlow, Jupyter Notebooks)

- Analyzed geographical data to assess the impact of location on the recommended restaurants, uncovering trends and patterns in user preferences.
- Developed and implemented a framework aimed at increasing locality in recommendations, improving the relevance of suggestions based on user proximity.
- Investigated popularity bias in recommender systems to enhance fairness.

Leveraging SAT Instance Structure to Enhance CDCL Solver Performance.
Developed and implemented a novel learnt clause deletion scheme for CDCL SAT solvers based on the properties of industrial SAT instances.(C++, Python, Gephi)

- Developed a novel clause quality measure leveraging the structural properties of SAT formulas.
- Utilized tools and libraries like Gephi and Graphviz to visualize and analyze graphs from SAT formulas and created a tool to extract advanced features.
- Integrated innovative heuristics into advanced SAT solvers, enhancing performance.

Innovative Clause Database Management Strategy for SAT Solvers.
Conducted in-depth analysis of learnt clauses in CDCL solvers and Developed advanced techniques in clause database management, leading to enhanced solver efficiency.(C++)

- Analyzed learnt clauses in CDCL SAT solvers using various criteria to assess their significance in conflict analysis.
- Developed and implemented a novel clause management strategy for solvers.

A Crowdsourcing Interface for Object Localization.
Leveraged crowd power for object localization tasks. (PYBOSSA, Python)

- Implemented a platform to use crowdsourcing techniques in object detection and created a new object database using the results for future tasks.

Publications

2021 Jamali, S. and Mitchell, D. **"An Experimental Study of Permanently Stored Learned Clauses"** Pragmatics of SAT.

2019 Jamali, S. and Mitchell, D. **"Simplifying CDCL Clause Database Reduction"** International Conference on Theory and Applications of Satisfiability Testing.

2018 Jamali, S. and Mitchell, D.**"Centrality-Based Improvements to CDCL Heuristics"** International Conference on Theory and Applications of Satisfiability Testing.

2017 Jamali, S. and Mitchell, D. **"Improving SAT Solver Performance with Structure-Based Preferential Bumping."** Global Conference on Artificial Intelligence.

2016 Jamali, S., McBride,R. and Mitchell. **"Experiments with CNF Structure and Hardness."** Graph Structure and Satisfiability Testing Workshop.

References

- Available upon request.