PRS - Probabilistic Reasoning via Satisfiability

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Job description: Important problems in probabilistic reasoning and machine learning can be effectively solved by reducing them to different variants of the propositional satisfiability problem SAT, including the model-counting problem #SAT and various optimization variants of the SAT problem, and then running general-purpose solvers for these problems. In this project, your goal is to investigate the use of optimizing SAT modulo Theories (SMT) solvers for the structure learning problem for Bayesian networks, and model-counting #SAT solvers for the Most Probable Explanation (MPE) problem. The work includes both an experimental and a theoretical part.