

Winter 2020 CSE291C: Topics in Search and Optimization

Instructor: Sicun Gao

RBC Auditorium, Tue/Thu 5pm to 6:20pm

Schedule

- Week 1: Overview and Classical Search
(optimality of A*, arc-consistency, minimax)
- Week 2: Bandits
(concentration bounds, optimality of UCB, MCTS)
- Week 3: MDP and RL (I)
(convergence of iterations, MC, TD, SARSA, Q-learning, Dyna)
- Week 4: MDP and RL (II)
(deep Q, policy gradient, TRPO, SAC, model-based, some complexity, AlphaGo)
- Week 5: Local Optimization (I)
(unconstrained: from zero-order to second-order, line search, trust region, various acceleration)
- Week 6 (no class on Tuesday Feb-11): Local Optimization (II)
(constrained: KKT, Farkas Lemma, Lagrange methods, duality)
- Week 7: Combinatorial Search
(mixed-integer, SAT, CDCL, QBF, #SAT)
- Week 8: Global Optimization
(interval extensions, branch-and-prune, first-order theory, some complexity, applications)
- Week 9 and 10: Presentations

Grading

- Report 70%. Final 30%. Notes 10% extra.