Automated Reasoning with ML: Course Structure

Notes based on lectures for CSC 2108H
(Automated Reasoning with Machine Learning)
at the University of Toronto by Professor Xujie Si, Fall 2024

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Course given: **September 09, 2024**
Last updated: **September 11, 2024**

Contents

1. Grading

Participation 10%

Assignment 15% (solver-aided theorem proving)

Paper + QA 15% (15 mins pre)

Project 60%

- Proposal: 15%
- Presentation: 20%
- Report: 25%

At most 3 students per project

Late submission: 15% off per day

2. Schedule

- Week 1-4
  - SAT & SMT
  - Program Reasoning
  - Theorem Proving
- Week 5-10
  - ML for SAT/SMT
  - Formal methods for ML
  - ML for code
  - Auto formalization
  - Reasoning with LLM
  - Neuro-symbolic systems

3. Presentation

$\simeq$ 8 presentations/week

3.1. Preparation

- Start 2 weeks in advance
- Post on Ed to inform on the paper
- Meet TA and talk about this 1 week in advance
- Prepare a video in advance

4. Timeline

Assignment Oct 1st - Oct 28th
Project Nov 5th

5. Tasks

- 60+ papers, need to read 1 carefully (presentation)
- get hands dirty: playing with solvers, DS+SYS experience, debugging required