Types & Effects: Course Structure

Notes based on lectures for CSC 2126H
(Topics in PL: Types and Effects)
at the University of Toronto by Professor Ningning Xie, Fall 2024

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Contents

1. Per-Week Schedule

- 3 student presentations (20 mins) followed by discussions (5 mins)
- 1 mini-lecture on next week's topic (30 mins)

2. Tasks

1. Attend the intro lecture (previous week)
2. Background reading (skim all papers)
3. Read papers (if selected for presentation)
4. Submit a review document (if not selected for presentation)
   - 1 page, need to use templates
   - Answer to questions (e.g. what do you think of effects? not typical textbook questions)
   - Ask 2-3 questions for discussion

2.1. Paper Presentation

Everyone needs to:
- Present: 1 paper
- Judge: 2 presentations

All presentations will be judged by Ningning and 2 students.

A judge is required to:
- Eval: good? bad? What part is particularly good/bad?
- Lead discussion

- Feedback: Google form

2.2. Course Project

Dig into a listed topic.

Individual / 2 people

> **Attention 2.2.1**
>
> Proposals can **not** be changed after submission.

2.2.1. Potential Topics

From simple to challenging:

1. Implement a prototype of a paper (could be an unlisted one but needs justification)
2. Mechanize the proofs in a classic paper (like subst lemma, etc.)
3. Extend a paper with a new feature
4. Relevant explorations (open-ended, but need to justify)

> **Note 2.2.1.1**
>
> Need to arrange one meeting with the instructor/TA to discuss the project before the proposal.
> - What you want to do and why you want to do it.
> - Convince that it's a good project.
> - Will get feedback: good? not going to work?

3. Timeline

Proposal Oct 14
Progress Presentation Week 7
Final Presentation Last 2 weeks
Report Dec 23

4. Grade

Review $5\% \times 4 = 20\%$, top 4 reviews out of 5.

Presentation 15%

Judge $5\% \times 2 = 10\%$

Project 55%
1. Proposal: 15%
2. Presentations: 20%
3. Report: 20%

5. High-Mark Suggestions

5.1. Review

1. Be critical: Question their assumptions and results. Can things be done differently?
2. Summarize the paper
3. Analyse its strength/weakness, judging its:
   - writing, structure, flow
   - explanation of key techniques

- key lemmas
- sense-making?
- practicalness
- limitations
- assumptions
- evaluations
- comparisons
- generalisability
- any significant lack of details/discussions?

> **Note 5.1.1**
>
> **Ref**:
> 1. How to Read a Paper (S. Keshav)
> 2. How to read a research paper (Michael)

Grade standard:
- Understanding
- Insights
- Writing quality (repetition, grammar, gibberish, etc.)

DO NOT:
1. Too critical: no positive feedback
2. Too much quote: not your own words! please summarize
3. No evidence: no proof of your claims
4. Vague: "maybe good maybe not idk"

> **Note 5.1.2**
>
> *ChatGPT*: can be used to polish writing, but do not use it to generate irrelavant nonsense.

5.2. Presentation

1. Engage: eye contact, interaction
2. Emphasize key points
3. Bring people along
4. Explain the prolem
5. Bring out the key idea
6. One key example: one problem followed by one fix, explaining why the idea works!

> **Note 5.2.1**
>
> **Ref** How to give a great research talk (Simon L. Peyton Jones)
>
> **Recommendation** Watch others' presentations and notice their structure, strength, and weakness.

DO NOT:
1. Read slides
2. No engagement with audience: did they follow?
3. Wall of text
4. **OVERRUN**: *strictly enforced*, 20 mins, will get reminded at 15 mins.

5.3. Judge

1. Evaluate: fair (irrelevant to the topic/presenter)
2. Articulate: clarity (good/bad parts, and why?)
3. Appraise
4. Criticize: being constructive (reason + feedback, e.g. lack of context? too technical?)

Grade standard:
- Analysis of pros/cons
- Constructive feedback

DO NOT:
1. grumpy/rude/arrogant/nitpicking
2. unhelpful

5.4. Project Proposal

1. Topic: choose something you're interested in, and make sure it's:
   - Feasible
   - Practical
   - Interesting
2. Personal Strength: whether you excel in
   - design/implementation? (implemented in another language? performance improvements?), or
   - analysis? (limitation of current approach? fix?), or
   - evaluation/proofs? (add/mechanize/prove new features)
3. Originality: has been done vs. *can be done*

Grade standard:
- Understanding
- Depth in insight & analysis
- Originality
- Clarity of plan

DO NOT:
1. Irrelevant: *NO MACHINE LEARNING!!!* (unless it's really useful, then one needs to arrange a meeting to justify it)
2. Analyse shallowly: vaguely describe the pros/cons
3. Too ambitious: not feasible. Remember to discuss with the instructor/TA in advance.
4. Too trivial: one-day project