Research Project

CS 597 — Recommender Systems

Overview

For this project, you will conduct a research project on recommender systems.

There are two options you can take:

- Survey and research proposal
- Replication project

Undergraduate students, or groups composed entirely of undergraduates, may also choose a Research Presentation option.

I encourage you to work with a partner on this project.

Survey and Research Proposal

If you elect the Survey and Research Proposal option, you must submit a 10–12 page (single-spaced) report, which will do the following:

- Lay out some theme that you are studying.
- Survey at least 6 papers on that theme
- Propose an experiment or study to expand on those papers
- Conclude

Survey Details

Survey at least 6 papers on your chosen theme; your survey should describe their findings, compare and contrast their results, and explain what we can learn about recommender systems from the papers together. This needs to describe the findings of the individual papers, but it must also talk about how the papers relate to each other and lessons we can learn from comparing the results.

If there are weaknesses that you see in the paper(s), it is good to mention those, and they are prime candidates for the proposal.

You are strongly encouraged to read and cite additional papers as providing relevant background or follow-up work, but only need to survey 6 in detail.

No more than 3 of the surveyed papers may be from the assigned course readings. At least 4 need to be full conference or journal papers (roughly, at least 8 pages, although some conferences have 6-page full papers).

Proposal Details

Propose an experiment or study to advance our knowledge of recommenders beyond what we can learn from the surveyed papers. This can be some follow-up question that the papers prompt, or addressing a weakness or conflict in them. For example, if two papers have seemingly contradictory results, or suggest different explanations for some phenomenon, then your proposed research might shed light on which is right.

The research proposal should address:

1. The question(s) to be answered.
2. The proposed experiment, and how it will serve to shed light on the question(s).
3. The expected implications of the experiment's results, both positive and negative (that is, what the experiment means in either direction).

The experiment can be a user study, a field trial, a data analysis project, or some other experiment.

Conclusion
Conclude your paper with a brief recap of what you have learned from the papers and what you would learn from your experiment.

RESEARCH REPLICATION

If you elect the Research Replication option, you will select a recent (last 5 years) paper on recommender systems and attempt to reproduce its results. Ideally you will try to do this in LensKit, but if LensKit is not suitable then other tools may be appropriate.

The outcome of this project option will be a report on your (attempted) replication, describing:

1. The purpose and main results of the replicated paper.
2. The results of your re-run of the experiment (including any charts, graphs, models, etc.; you should generally try to reproduce any chart in the original paper).
3. A description of the difficulties you encountered in the reproduction.
4. If you could you not reproduce parts of the original work, a discussion of what those parts are, and why replication failed (insufficient description, anomalous result, error in original research, etc.).
5. A summary of your findings (positive or negative) and reflection on the experience.

DELIVERABLES

- By **Wednesday, March 15**, submit a brief proposal, outlining the following:
    - your proposed project (survey theme or paper to replicate)
    - for a survey, at least 4 of the papers you plan to survey.
    - your partner, if you are working with one
- By **Wednesday, April 19**, submit a draft version of your final report.
- The week of **April 24**, give a presentation of your research project to the class.
- Submit your final report by **Monday, May 1.**