Project 1

Technical Review

Lin Guosheng

Email: gslin@ntu.edu.sg

Nanyang Technological University

Project 1: Technical Review

- Group based project
  - Each group has up to 4 members
  - The assessment criteria will be the same for any group size.

- What you need to submit:

  A zip file containing the following files:
  - 1. Review report PDF
  - 2. Source code
  - 3. Contribution summary PDF
    - Describe the contribution for each member

- Where to submit
  - Please submit your zip file in NTULearn:
    the course site -> Assignments -> submission link for project 1

- Submission
  - Please name your zip package by "GroupidXX.zip", where XX is replaced with your group id.
  - One group only makes one submission.
  - If your file is too large, you can provide external links to download your file.
  - You can submit multiple times (no limit).
  - You don’t need to submit your datasets.
  - You don’t need to explain your code or provide inline comments.
  - There is no video component.

- Submission due date: 19 Oct 2025 (end of Week 9)

- Grouping:
  - please edit the online form below to create your group.
    - Please type your full name as shown on your student card
    - https://docs.google.com/spreadsheets/d/1yrQu2mczs6gVfWWrdk3bmxvsM9HTyexwdlM_ygzV1EU/edit?usp=sharing
  - Each group has up to 4 members
  - You can form a group with fewer than 4 members.
  - The first person for each group is the coordinator.
- Please complete the grouping by Mon Week 3
  - I will release the grouping in Week 3.
    You need to verify your grouping.
  - I will create random groups for the students who are not in any groups.

Requirements for the technical review report

1. Select a topic/task from the list below:

- Clustering
- Link Analysis
- Similarity Search
- Graph neural networks or deep networks on graphs
- Graph clustering or graph community detection
- Recommender System (covered in the 2nd half)

- Any sub-topics that belong to the above topics
- Any topics/applications that use the above techniques

- 2. Select methods for review and comparison
  - Select at least 2 methods (algorithms)
    - You can choose any methods
      - They can be any methods published online, including but not limited to what you learn in the course

      E.g., K-means and K-means++, or K-mean and DBSCAN
    - You can use any public code
    - You can propose your own methods
      - e.g., extensions of existing methods
    - reviewing more than 2 methods is encouraged

Notes:

1. If you would like to work on the topics that are not covered in the first half, you need to learn the topics by yourself
    - E.g., recommender system

2. If you want to explore more advanced methods, you need to search online and learn them by yourself.
    1. e.g., Stanford course CS224w : http://snap.stanford.edu/class/cs224w-2020/

3. Use at least 2 datasets

- Any datasets, including public datasets or the dataset you create.
- No requirement on the size/scale of the dataset
- You can use more than 2 datasets

4. Experimental analysis and comparisons

- Should not copy results from others (including published papers)
  - You need to produce the results by yourself.
- Analyze and discuss the strengths and weaknesses of the methods
- Analyze and discuss the parameter settings
  - E.g., the number of K in K-means
- Ablation study of the key components in a method (if applicable)
  - Only applicable to the methods that have multiple components

4. Experimental analysis and comparisons

(continued)

- Discuss the key factors that affect the performance
  - E.g., K-means are sensitive to centroid initialization
- Compare the performance of the methods and provide discussions
- Illustrate and discuss the successful cases and failure cases (if applicable)
- Other possible analysis ….

5. Format

- At least 4 pages, no upper limit. (font-size: 11pt or 12pt)
- Include the following sections:

  Abstract/Introduction/Methods/Experiments/Conclusion

6. Rubrics

A good report should meet the following:

- Meet the requirements well.
- Well organized and structured in a sensible way.
- Clear explanation of the tasks and the methods.
- Comprehensive and in-depth analysis.
- Present clear and insightful comparisons
- Insightful and inspiring discussion.
- Good visualizations for analysis.
- Target challenging datasets/applications/methods.
- Or target practical applications
- Discuss or implement possible solutions to improve the methods

About teamwork

Responsibilities for every team member:

1. Ensure all members work together and everyone is involved and contributes to the project.

2. Sufficient coordination and communication in the team.
   - If a team member fails to contribute due to insufficient communication and coordination, the entire team will face penalties.

3. Report an issue
   - If a team member refuses to contribute, please email the instructor at least 4 weeks before the submission deadline.

   - If you cannot report the issue 4 weeks before the deadline, it indicates that the entire team lacks communication and coordination. We will not handle any issues if they are not reported in time.

Contact:

Lin Guosheng <gslin@ntu.edu.sg>

Or send me message in MS Teams