BS6213
Reflective scientist

Assessment arrangements for the part led by Professor Wong Limsoon

Course objective

Sharing with students how scientists do their thinking

The research / papers chosen by an instructor mainly serve as scaffolds to facilitate this sharing

Research papers typically outline the problem being addressed, the solution, and the results. They rarely delve into the thought processes behind the work. Our aim is to bridge this gap

Course plan

Session #1, 6 Jan 2025 and Session #2, 13 Jan 2025

Protein function prediction and some lessons for classifier performance evaluation

Session #3, 20 Jan 2025 and Session #4, 27 Jan 2025

Gene expression analysis and some lessons for statistical hypothesis testing

Details available on https://www.comp.nus.edu.sg/~wongls/courses/bs6213/2025/readme.htm

Assessment plan

2 homeworks for sessions 1 & 3

2 x 35% marks for the reports

Class interactions

2 x 5% marks for interactions in sessions 1 & 3

2 x 10% marks for presentations & interactions in sessions 2 & 4

Please submit a reflection report (max 1 page) within 72 hours after each session to get interaction marks

Reflection report

1-page report submitted within 72 hours after a session

Provide your reflection on what you have learned from these interactions and from the session

Provide a record of the questions you have asked or responded to in a session

A **reflection report** on a scientific talk is a document that captures your personal thoughts, insights, and critical analysis of the talk. It typically includes:

1. **Summary**: A concise overview of the key points discussed in the talk, such as the research problem, methodology, findings, and conclusions.
2. **Personal Response**: Your interpretation and evaluation of the talk, including what you found interesting, impactful, or challenging.
3. **Critical Analysis**: A discussion of the strengths and weaknesses of the presentation, the validity of the research, and areas that could be improved or explored further.
4. **Connection to Prior Knowledge**: How the content relates to your existing knowledge, studies, or field of interest.
5. **Implications and Applications**: Thoughts on how the talk's insights could be applied in practice or influence future work.
6. **Lessons Learned**: Key takeaways and how they might shape your understanding or approach to similar topics.

Such reports encourage deeper engagement with the material, helping you think critically and synthesize new ideas from the presentation.

Homework #1, due 10/1/2025

Read [Yu et al., "Accurate prediction and key protein sequence feature identification of cyclins", Briefings in Functional Genomics, 22:411-419, 2023]

Write a 1-page review & reflection report focusing on the way it evaluated the performance of the proposed cyclin classifier

Submit the report by email to wongls@comp.nus.edu.sg

Make 5-10 minutes presentation to the class on 13/1/2025

Homework #2, due 24/1/2025

Read [Srihari et al., "Inferring synthetic lethal interactions from mutual exclusivity of genetic events in cancer", Biology Direct, 10:57, 2015]

Write a 1-page review & reflection report focusing on the way it tests for synthetic-lethal gene pairs. Discuss whether their test is a good one

Submit the report by email to wongls@comp.nus.edu.sg

Make 5-10 minutes presentation to the class on 27/1/2025