CS243 Project

Spring23, ShanghaiTech University

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1 TEAM FORMULATION AND PROJECT PROPOSAL

Deadline: Week 6, March 19 (2 Scores)

Find your teammates in the class (you can post information on Piazza). Your team needs to choose one research topic. Note that the same topics are allowed in different teams and **3-5 students are suggested** in one team.

There are two choices for what your project can be about:

(1) Pick a topic in algorithmic game theory to synthesize and explain. Here are some tips for how you could find a topic:
  - Pick a chapter from the book *Algorithmic Game Theory* and explore the detailed content that interests you.
  - Explore papers in recent related conferences like AAAI, IJCAI, AAMAS, WINE, EC, or journals like AIJ.
  - Explore related research that we are currently doing at ShanghaiTech here.

  Formulate additional research questions related to what you have read. These could be theoretical questions (e.g., an extension of the papers you read) or experimental questions (e.g., a new application of the results from these papers). Explore and solve some of these questions. At least cite 5 related papers in your final report.

  For your better understanding, here is an example: after material exploration and group discussion, team#*A* decided to choose 'cake cutting' as their project topic. Then they read related papers and identified a research question following these papers. Finally, they solved the question theoretically.

(2) Study a mechanism that has been put into place by governments or companies. Formulate the game and the mechanism design problem involved. Explore the successes and failures of this mechanism application and any interesting related game-theoretic behavior. At least cite 5 related papers in your final report.

  For your better understanding, here is an example: team#*B* chose 'Shanghai car license auction', which is a real-world application, as their project topic. The teammates read related papers and then constructed a model for this setting. They also analyzed this mechanism, like the properties, equilibria, etc.

If you choose (1), it is important to extend the research problem or make some improvements based on cited papers. If you choose (2), the detailed application background and the model formulation process are important. You need to focus on these requirements when selecting project topics.

The selected topic should be based on and go beyond the contents covered in class. In addition to the above project suggestions, you are welcome to propose other interesting project ideas. In this case, please first contact TAs for confirmation.

Please fill in your team information here and send an email to agtoffice2023@163.com with your team's project proposal (email title: [your team number] Project Proposal, e.g., [Team#1] Project Proposal) before the deadline. The proposal template is on Piazza 'Resources'.

2   PAPER REVIEW

Deadline: Week 9, April 9 (2 Scores)

You must read and collect some papers related to your selected topic while working on the project proposal. In this part, **each team member** is required to select one related paper and write a review/summary of what she/he has learned from the paper. This will help you and your team understand your project better. The paper review template is also on Piazza 'Resources'. You should upload paper review in BB before the deadline.

3   PROJECT MILESTONE REPORT

Deadline: Week 13, May 7 (1 Scores)

Your project milestone report is suggested to be **2-3 pages** using the provided template. The following is a suggested structure for your report:

(1) Title, Author(s), Student ID(s).
(2) Brief Introduction: This section introduces your problem and the overall plan for approaching your problem.
(3) Clear Model: Describe your problem precisely specifying the setting and assumptions.
(4) Technical Approach: Describe the methods you intend to apply to solve the given problem Intermediate/Preliminary.
(5) Results: State and evaluate your results up to the milestone.
(6) References.

Please send an email to agtoffice2023@163.com with your team's project Milestone Report (email title: [your team number] Project Milestone Report, e.g., [Team#1] Project Milestone Report). **The Milestone Report template is the same as the proposal.**

4   PROJECT PRESENTATION

In Week 16 (10 Scores)

The details are to be determined later.

5   FINAL REPORT SUBMISSION

Deadline: Week 18, June 11 (10 Scores)

Your final project report is suggested to be **5-7 pages** using the provided template. The following is a suggested structure for your report:

(1) Title, Author(s), Student ID(s).
(2) Abstract.
(3) Introduction: Describe the problem you are working on, why it's important, and an overview of your results.
(4) Related work: Discuss published work that relates to your project. How is your approach similar or different from others?
(5) Model: Describe your problem precisely specifying the setting and assumptions.
(6) Technical Approach: Discuss your approach in detail for solving the problems that you set up in the introduction.
(7) Results and analysis: State, evaluate, and analyze your results.
(8) Conclusion: Summarize your key results.

Please send an email to agtoffice2023@163.com with your team's final report (email title: [your team number] Project Final Report, e.g., [Team#1] Project Final Report). **The Final Report template is the same as the proposal.**