

Project of EIE3280: Networks: Technology, Economics, and Society

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Project! Exciting Project! A platform to show your imagination, creativity, and team work!

In this document, we explain how you may select your project topics. We also provide a list of suggested topics for the course project at the end of this document. The topic descriptions are meant to be **open-ended**. So please use your imagination and enrich the description based on your own interests. Some of the topics are related to later chapters in the book, which I encourage you to read in advance. **You are strongly encouraged to suggest your own topics** (subject to our approval, with details below).

The deadline for submitting your group's preference is **March 12 (Sunday) 9pm, on Blackboard**. **You need to form a group of four students**. For submission guidelines, see the section of "What to do next?" later in the document.

How to choose the project topic?

Each group has two choices:

1. **Bid up to three projects from the list of suggested projects:**
 - Each group has a total budget of 10 tokens, and the bid for each project needs to be a **positive integer**. The total bids from a group for all projects should be no more than 10. For example, the bid can be in the following form: **(Project 1: 4 tokens; Project 4: 3 tokens; Project 10: 3 tokens)**. You may also bid **(Project 1: 7 tokens; Project 10: 2 tokens; no third project)**. In the second case, you only bid for 2 projects without fully utilizing all 10 tokens (and it is ok).
 - The projects will be allocated based on the *Generalized Second Price Auction* that we learnt in Chapter 2. A project will be allocated to the group with the highest bid for this project (**with ties broken randomly, so there is no need to submit your bid earlier than the deadline**), and the winner will pay the second highest bid for that project (with a minimum of 0 token if no one else bids for that project). If your group does not win any of the three projects you bid, then you will be randomly matched to one of the remaining projects with a payment of 0 token.
2. **Propose your own project topic:**
 - Your proposed topic needs to be **significantly different from all suggested topics**, and it needs to be related to at least one chapter of the textbook.
 - If we approve your topic, then you will receive a bonus between 0-10 tokens, depending on the level of innovation and difficulty of your topic. If your proposal does not reach the quality standard in our mind, you will be randomly assigned one of the suggested topics with 0 payment.

How do we grade the project?

There will be four components related to project:

1. Project Proposal (already mentioned above, 0 mark, but will determine your payment), **due March 12 (Sunday) 9pm.**
2. Project interim report (**maximum 4 pages, 11pt, single space, IEEEtran latex format**, template available at <https://www.ctan.org/pkg/ieeetran>), maximum mark 10. Each group member needs clearly document his/her own contribution (both contents and percentage in the report). **Due April 23 (Sunday) 9pm.**
3. Project presentation (10-min per group, in-class), maximum mark 15, during the last two teaching weeks. Each group member needs clearly document his/her own contribution (both contents and percentage in the presentation).
4. Project final report (**maximum 6 pages, IEEEtran latex format, 11pt, single space**), maximum mark 10. Each group member needs clearly document his/her own contribution (both contents and percentage in the report). **Due May 14 (Sunday) 9pm.**

The final grading includes two parts.

1. **Overall Project Grade:** Your project's overall grade will be **Raw Grading x Bidding Coefficient**. The **Raw Grading** will be purely based on the quality of the project result (including in-class presentation and project report). For the **Bidding Coefficient**, it will be calculated based on the auction result. For example, if you win a project and pay 5 tokens, then **Bidding Coefficient = $(100 - \text{PaymentToken})\% = (100 - 5)\% = 95\%$** . If you receive some token due to an excellent self-proposed topic, then it will be counted as negative payment in the above calculation, hence will lead to a Bidding Coefficient larger than 1.
2. **Intra-Group Peer Evaluation:** The final project grade of an individual group member will also depend on the intra-group peer evaluation. Each group member will be asked to provide a peer evaluation to the other group members in terms of percentage of contributions (excluding his/her own contribution), with the total percentage equal to 100%. For example, an intra-group evaluation of a Student B in a three-person group can be (Student A: 40%; Student B: SELF; Student C: 40%; Student D: 20%). **For any score that is larger than 40% or smaller than 20%, the student needs to provide strong objective evidences, and testify in writing that all provided information is correct and can be made public if required by the instructor.** After the evaluation, each group member will receive three peer evaluations (from his/her two group mates), and his/her final project grade will be **Overall Project Grade x Summation of Peer Evaluations**.

What to do next?

Please form a group of four students. We have a total of 73 registered students, so only one group can have 5 students (with a slight higher expectation, first-submission-first-confirmation). Each group selects a group leader, and that group leader submits the group's project choice on Blackboard by **March 12 (Sunday) 9pm**. Please include the information of all group members (student IDs and Full Names).

If you try to bid one or more suggested topics, please format your bid according to the **recommended format on the first page**. If you self-propose a topic, please provide a project title and abstract (no more than 400 words). **If we do not receive your group's submission by the deadline, we will randomly assign your group a topic, and your group's payment will be 10 tokens (as a penalty).**

No.	Suggested Project Ideas
1	Search Engine Optimization Develop methods to increase your homepage's importance score, based on your knowledge of Google's page ranking algorithm. Compare several methods and find out which ones are most effective. Demonstrate the result through actual system implementation.
2	Ranking of Multimedia Search Searching through images, audios, and video clips requires very different ways of indexing, storing, and ranking. How does Google rank multimedia contents? Any suggestions to further improve the current ranking practice?
3	Algorithms Winning the Netflix Prize Check the Netflix Prize website http://www.netflixprize.com and find the winning teams' algorithms. Simulate one of these algorithms, compare it with the Neighborhood method, and explain where the key improvement comes from.
4	Hotel Ranking on Ctrip How does Ctrip suggest and rank hotels when users search a destination or search a particular hotel? Is Ctrip's rating practice trustworthy? You may consider various factors including price, destination, hotel star rating, distance from scenic spots, commonality between hotels, popularity, user rating, comments, hotel facilities and property age.
5	How Do Social Networks Recommend Friends? In many social networks, such as Facebook and LinkedIn, the platform regularly recommends friends for the users. What are the main reasons behind these recommendations, and are they very effective? Can you design a recommendation algorithm to capture the key factors?
6	Create a viral video Create a video of your own and make it viral on a social platform.
7	Interdisciplinary applications of social networking Social network is not only the connection of people, but also a powerful research tool which has been applied in many fields, e.g. engineering, economics, finance, politics, arts, and history. Find one such example and provide your own analysis.
8	Combat rumors on social networks Design a mechanism to reduce the chance for rumors spreading on social networks.
9	Music ranking How does a music app (such as Spotify) rank songs?