CMSC 828D Term Projects

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Requirements

- You will need to do a term project related to game theory
  - To be done by teams of 2 people
  - Come up with an idea to investigate
  - Figure out how to carry out the investigation
    - Either theoretically or experimentally or both
- Start thinking about whom you'd like to team with
  - Do you feel comfortable with them? Do their interests and abilities complement yours? Do you think you can depend on them? Do you think you can work well together?
- Project proposal near the middle of the semester
  - Written proposal and in-class presentation
  - Describe what you are going to do for your project
- Final report at the end of the semester
  - Written report and in-class presentation
  - Describe your results

Proposals

- Purpose is to make sure
  - you have a good idea
  - you know how to carry it out
- You won't get a separate grade for the proposal, but you'll need me to approve it
- Written proposal
  - Email it to me as a PDF file
  - A few pages long
  - Font size: 11 points
  - Margins at least one inch wide
  - The deadline is in the lecture schedule
    - If you can't get it to me by that time, there's also a deadline for submitting late proposals with a 5% penalty
    - If you can't get it to me by the deadline for late proposals, you're in trouble

Proposal Outline

- **Title and authors**
- **Overview**:
  - Summarize what you want to do, and why it's worth doing
- **Key Ideas**: What are you proposing to do?
  - Why is it interesting and significant?
  - What leads you to believe your approach will work?
  - If your work is successful, what will it accomplish?
- **Evaluation**
  - How will you measure progress and results?
    - E.g., what experiments will you perform to prove your hypothesis?
- **Project management**
  - What are the major tasks to accomplish?
  - Who will do which tasks?
  - Tentative schedule showing when you'll start and finish each task

In-Class Presentation

- 10 to 15 minutes for the presentation, followed by another 10 minutes of discussion
  - I've reserved dates in the class schedule
  - As we get closer to the presentation dates, I'll schedule specific dates and times for each of you

Final Reports

- Written report
  - Email it to me in PDF format
    - A few pages long
    - Font size: 11 points
    - Margins at least one inch wide
  - The deadline is in the lecture schedule
    - If you can't get it to me by that time, there's also a deadline for submitting late proposals with a 5% penalty
- You will need to do a 15-minute in-class presentation of your project
  - Dates are reserved in the class schedule
  - As we get closer to the presentation dates, I will schedule specific dates and times for each of you

Report Outline

- **Title and authors**
- **Introduction:** Main purpose is to get the reader interested in reading the rest of the report.
  - Summary of what the topic is, why it's interesting, what your results are
- **Related work (can either go here or just before the conclusions)**
  - What others have done
  - Strengths and weaknesses of their work
  - How it compares to your work
- **Approach**
  - What your idea is, and how it works
  - Make sure your explanation would be clear to someone who knows nothing about the topic
- **Theoretical Results (if you have any)**
  - Theorems, proofs, examples, etc.

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Report Outline (continued)

- **Implementation (if you have one)**
  - What it does, what language or system it's written in, etc.
  - Use figures or screendumps if appropriate
- **Experiments (if you have any)**
  - Purpose (e.g., experimental hypotheses you wanted to test)
  - Experimental design
  - Experimental results
    - Use tables or graphs (preferably graphs)
  - What the results mean
- **Conclusions**
  - Summarize what you accomplished
  - What significance or impact or meaning does it have?
  - Honest assessment of the limitations of your work
    - What one could do overcome those limitations
- **References**
  - All of the references that you cited in the paper

How to Get Started

- Think about what you're interested in!
- Some possible sources of ideas
  - Chapters in the book, published papers
  - The homework problems in the book
    - Too simple by themselves, but might be a starting point for something
- Get together with others and have a brainstorming session
  - Need a blackboard or whiteboard. Designate someone to write on it
  - Everyone should start throwing out ideas – brief phrases
    - Don't discuss or criticize any of them
    - The writer should put each of them on the blackboard
    - Don't censor yourself – propose ideas even if they seem crazy
  - Keep going until you run out of ideas
    - **Then** discuss them to see which ones make sense
- Come talk to me
  - I can give you feedback about your ideas, and maybe suggest some ideas

What Makes a Good Term Project

- If you succeed in carrying out your idea, will the result be interesting?
  - Interesting to you? Interesting to others?
- Think about what would be needed to carry out the idea
  - Is it too hard to accomplish in the amount of time that you have?
  - Is it too easy to count as a "real" project?
- Think about how to ensure success regardless of how the result turns out
  - How confident are you that you'll get the result that you want?
    - E.g., is there a chance that your experiments will produce a different result from what you had hoped?
    - If that happens, will the result *still* be interesting?

- I'll post some examples of term projects from previous years