CSC 59867 Senior Design II

DESCRIPTION

This is the second part of a two-semester capstone course. The student is required to complete a significant project in Computer science or engineering under the mentorship of a faculty member. In addition to technical material required for successful completion of a specific project, topics include identification of a problem, background research, social, ethical and economic considerations, intellectual property and patents and proposal writing, including methods of analysis and theoretical modeling. A detailed project proposal is formulated in the first semester, and the project is completed in the second semester. The second semester focuses on the implementation, testing, documentation, and presentation of the project. Students are required to submit a comprehensive written report and deliver an oral presentation to faculty members. Senior year students only, or permission of the department.

- Required course CSc 59866

LEARNING OBJECTIVES

	1	2	3	4	5	6
a. the student acquires ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline		P				
b. the student acquires ability to communicate effectively in a variety of professional contexts			P			
c. the student acquires ability to recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles				P		
d. the student acquires ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline					P	
e. the student acquires ability to apply computer science theory and software development fundamentals to produce computing-based solutions						P

I - introductory-level; R - reinforced-level; P - program-level

REQUIRED MATERIALS

[Recommended Textbooks or Online Resources]

Access to software development tools and platforms specific to the project.

Assignments, Grading, and Policies

- **Class Participation and Peer Reviews**: 20%
- **Mid-Term Project Review and Presentation**: 20%
- **Final Oral Presentation**: 15%
- **Github (Code and its organization)**: 25%
- **Final Written Report**: 20%

GRADING POLICIES

- Usually each team needs to do progress resort for every one or two weeks
- Midterm project progress: Most functions, presentation and demo
- Final report is a 12 page research paper.
- **Warning**: the programming assignment must be done by and within the team members. Each team must work independently and collaboratively within the team. Sharing materials beyond the team, especially programming work including logic, and/or modifying the materials to fabricate and reproduce other versions is very seriously treated based on the CUNY Academic Integrity Policy. **Do not underestimate my reaction resulted from breaking this rule.** Trying an assignment and failing is OK! Sometimes the problems are difficult, and I do not expect everyone to get everything right. What is not OK, is to submit work that is not your own. Upon a single offense, you will at a minimum be removed from the class with a failing grade.
- This course will not award INC (incomplete) grade to rescue you from failing grade or repeating the course. Any disagreement resulted from grading must be reported *in writing* for the resolution.

COMMUNICATIONS

Your time is valuable; I want you to get as much as possible out of your time in the classroom with me. Please don't hesitate to let me know how you feel about the pace, or just about how things are going in general.

Instructor: Yunhua Zhao
Email: yzhao5@ccny.cuny.edu
Office hour: **Mon, Wed 4:40pm-5:10pm or By Appointment**

Join Zoom Meeting
https://ccny.zoom.us/j/4482877188?pwd=bUtsOEN2T3hjZkhUL3VwcDh5dkVZdz09
Meeting ID: 448 287 7188
Passcode: 554470

Schedule

Sequence	Date	Topics	References	Activities/Assignments	Demo & Presentations
1	Aug 28	Course Introduction	Week1 Folder		
2	Sep 4	Technical Progress Review	Week2 Folder	Review of Semester 1 proposals; refine project plans.	
3	Sep 9, Sep 11	Advanced Topics in Software/Hardware Development	Week3 Folder	Workshops on advanced topics relevant to projects.	
4	Sep 16, Sep 18		Week4 Folder		
5	Sep 23, Sep 25		Week5 Folder		
6	Sep 30		Week6 Folder		
7	Oct 7, Oct 9	Mid-Term Project Review	Week7 Folder	Presentation of progress; feedback from peers and faculty.	Presentation
8	Oct 15, Oct 16	Testing and Validation Strategies	Week8 Folder	Discuss testing frameworks, validation methods.	
9	Oct 21, Oct 23	Writing Effective Technical Reports	Week9 Folder	Workshop on technical writing; draft review sessions.	
10	Oct 28, Oct 30	Project Implementation and Debugging	Week10 Folder	Intensive project development; focused debugging sessions.	
11	Nov 4, Nov 6	Draft Submission of Final Report	Week11 Folder	Submit drafts for feedback from instructor	
12	Nov 11, Nov 13		Week12 Folder		
13	Nov 18, Nov 20		Week13 Folder		
14	Nov 25		Week14 Folder		
15	Dec 2, Dec 4	Final Presentations and Demonstrations	Week15 Folder	Oral presentations and demonstrations of projects.	Presentation and Demo
16	Dec 9, Dec 11	Final Report Submission and Reflection	Week16 Folder	Submit final report; course reflection and feedback.	

Project Mission Formation

PROJECT REQUIREMENTS

Project Scope and Objectives:

- The project should address a significant problem or topic in computer science or engineering.
- It must involve a substantial amount of work, including design, development, testing, and analysis.
- The project should demonstrate the application of skills and knowledge acquired during the course of the degree program.
- Clear and measurable objectives must be defined at the beginning of the project.

Research and Background:

- Conduct comprehensive research on the selected topic, including a literature review of related work.
- Identify gaps in existing research or technologies that the project aims to address.

Design and Development:

- Develop a detailed project design, including architectural diagrams, data flow diagrams, or any relevant visual aids.
- Implement the proposed solution using appropriate tools, technologies, and methodologies.
- Provide thorough documentation of the development process, including code documentation, user manuals, and installation guides.

Testing and Validation:

- Develop a testing plan that includes unit tests, integration tests, system tests, and user acceptance tests.
- Ensure the project meets all specified requirements and performs as expected under different conditions.
- Collect and analyze testing results to demonstrate the robustness and reliability of the solution.

Ethical, Social, and Economic Considerations:

- Discuss the ethical, social, and economic implications of the project.
- Consider issues such as data privacy, intellectual property rights, potential biases, and accessibility.

Project Deliverables:

- Source code or prototype of the developed solution.
- Complete documentation including code comments, user manuals, and installation guides.
- A comprehensive final report (12 pages, excluding appendices).
- Oral presentation and demonstration of the project to faculty members.

Presentation:

- Prepare a 15-20 minute presentation summarizing the project objectives, design, development, testing, and results.
- Include a live demonstration or a video demonstration of the developed solution.
- Be prepared to answer questions from the faculty and peers.

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EPILOGUE

The preparative course work for the Senior Design Projects offered in the first semester will briefly involve the introduction of algorithms most commonly used and most popular DL application scenes and systems. The course will involve assignments that address detailed DNN design, and Assignment 5, which combines all the knowledge together in a small team project as a step towards the Senior Design project. There may be several visiting lecturers during the course from academia and industries to present a certain aspect of DL within their areas of expertise.

Availability: Item is hidden from students. It was last available on May 20, 2024 7:00 PM.
Due is 6:00 pm Monday, May 20th 2024. Submit all your work to your project GitHub repository. There will be no delayed submission.