HW: Propose Capstone Topics

1) Provide **three possible capstone project topics**. The topics may be of <u>any</u> category (software or research). Topics should vary, not be variations of the same topic.
2) You should think about topics carefully, as you will spend **significant time and effort next semester**. You are welcome to look for inspiration from the work of previous senior projects (here) and, of course, talk with any faculty in the department you may have found an interest in their work. If another faculty has a project topic and it happens to be the one you work on, you will be co-advised by the faculty and the CS 475 instructor who serves as the capstone director for all projects.
3) Please consider proposing topics with suitable scope, as the capstone project requires a team (minimum of two students, maximum five), and you will have 14 weeks to complete it. Historically, the most effective teams have been those with **two or three** students. Also, remember that for both software and research projects, the capstone approach borrows from expected productivity output estimation techniques borrowed by software engineering. **As teams get larger, the project scope and expectations will also grow proportionally larger in size and complexity.**

How do I formulate each one of my project topics?

Below are (minimal) examples of what you need to submit that can help you formulate your topics. The more details you provide, the better. You should have your entire submission written out in a text file before you copy and paste your answers into the **submission form**. Submitting answers without using the submission form result in an automatic 0% on the assignment.

Software Project Answer Template

I want to build an X product or system to address or solve problem Y. I expect the project to have the following (at least three) major features:

1.
2.
3.

For this project, I would like to use the following tech stack:

For this project, I would need the following non-free extra resources (hardware, software, services, etc.):

Software Project Example

I want to build a web-based, multiplayer Jeopardy-style game to help with the training of computer science students. I expect the project to have the following (at least three) major features:

1. A full front-end for system users to create and join into games
2. A full back-end for a system administrator to be able to manage games, categories, and questions.
3. A reporting system that provides detailed player performance information
4. Authentication capability using a free SSO mechanism

For this project, I would like to use the following tech stack: MERN

For this project, I would need the following non-free extra resources (hardware, software, services, etc.): None.

Research Project Answer Template

I am interested in working in area X of computer science. Specifically, I want to analyze, simulate, address and issue or solve a problem Y. At the end of the project, I hope to have answered the question(s) (or solved problem(s)): Z.

For this project, I will need the following data and/or tech stack:

For this project, I would need the following non-free extra resources (hardware, software, services, etc.):

Research Project Example[1]

I am interested in working in the area of Machine Learning of computer science. Specifically, I want to develop data-driven models and experiments to evaluate the prediction accuracy of regression and TensorFlow models on the survivability of diabetes patients.

At the end of the project, I hope to have answered the questions:

1) What is the highest morbidity factor in patients with diabetes?
2) What is the most effective model between regression and TensorFlow, and why?
3) What is the minimum threshold of required data to support the reported efficacy of each model?

For this project, I will need the following data and/or tech stack: I will use the SARS diabetes dataset and Python for implementation.

For this project, I would need the following non-free extra resources (hardware, software, services, etc.): None.

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[1] Please note if you claim that you will need a dataset, you need to <u>specify the dataset and ensure that it is available to you to access</u> and work with it to receive credit for this assignment.