

CS-464 Proposal Presentation Instructions

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The purpose of the project is to increase your knowledge about machine learning and get hands on practical experience. Any project in the machine learning field that can be completed in the given time frame can be proposed. You will work in teams of 5 students. The project can involve applying known methods to solve an interesting question, or it can involve coming up with a new methodology to solve an existing problem on an existing data set. For example:

- You can propose a problem that requires significant work for feature extraction. In this case, you can use off-the-shelf implementations of machine learning algorithms to perform training and classification since the core of the work you will propose will be feature extraction.
- You can propose comparing the performances of different machine learning algorithms on a new problem. In this case, you can use off-the-shelf implementations of multiple (say three or four) machine learning algorithms and comprehensively evaluate the performance of these algorithms on your data, by systematically taking into account all possible factors (different values of the parameters of learning algorithms, data size and dimensions etc.) and multiple performance criteria.
- You can propose improving the performance of a given machine learning algorithm by making an extension that you think will fit well in the context of a specific application. In this case, your work will focus on algorithm development/implementation and evaluation (you need to systematically compare the performance of your implementation to what is already available, using a fair assessment scheme).

Proposal Presentation (on Tuesday, 10/10 and Friday 10/13)

During your proposal presentation, you are expected to provide concrete answers to the following questions:

- What is the problem you will solve?
- What is the approach you will take? Here, “approach” refers to methods for feature extraction (if needed), model building (including feature selection if necessary), learning algorithm. You can propose multiple methods and compare them.
- What data is available for you to use in this project? What are the main characteristics (number of samples, number of features etc.) of the data? If you will collect data, what are your goals?
- How will you evaluate your approach? How will you use your data to evaluate your approach?
- What is the amount of work you will devote to each component of the project. It is expected that each student will devote a total of 10 hours to the project (excluding the preparation of presentations and reports). How will the work be divided among team members?

During the presentation, you will have 10 minutes, including questions and answers. Thus you may want to limit your presentation to 6 slides (1 slide for problem description, 2 slides for approach, 1 slide for data description, 1 slide for evaluation, and 1 slide for work statement).

Proposal Document (due Tuesday, 10/17)

The proposal document will also contain answers to these questions, and it will be limited to one page. The document should also address any questions and concerns that were raised during your presentation. You may want to do this explicitly (by stating the concern that was expressed and providing a response) or implicitly (by providing a description that addresses the concern).