CS 175 (W25): Project in Artificial Intelligence
Project Proposal

Due date: Friday, January 24, 2024 (Pacific Time)

Roy Fox
https://royf.org/crs/CS175/W25

For the proposal, you have to finalize your group members, propose an idea for your course project, describe the evaluation plan, and set up project website with a page for this submission.

Part 1   Setting a Repository and a Website (10 points)

For the project that you will be working on this quarter, we expect you to maintain a public Github repository for the code, and an associated website. You can find a detailed step-by-step guide below, and feel free to reach out with any questions.

Part 1.1   Setting up the Repository

Here are steps to create a new repository on Github:

1. Pick a short, catchy name for your team/project. This should be the name of the group on Canvas, the name of the repository on Github, and we will refer to it below by `PROJECT`. You can change it later, if needed.

2. If you don't have a Github account, sign up for one for free, and ask all of your group members to sign up for one as well. Read some tutorials on how git works[1], and get comfortable in it; you will be using it to maintain the website and the code for the project.

3. To create a repository that will store your project code and website, pick one of the group members under whose account the repo will reside. We will refer to this user below by the Github username `USER`. (Advanced users are welcome to create the repo under an organization if you like.)

4. That person should log in, go to the + on the top right, and click *New repository*. Name your repository by the group/project name (the `PROJECT` above). Make sure the owner is `USER`, make it public, click *Add a README file*, and then click *Create repository*. Congrats, your repository should now be created with a URL like `https://github.com/USER/PROJECT`!

5. To add your group members to the repository, go to *Settings* tab, *Collaborators* page (under *Access*), click *Add people* under *Manage access*, enter their Github IDs, and *Add (them) to this repository*. They should be able to commit/edit files in the repo once they accept the invitation (test it out).

---

[0]Proposal instructions adapted from Sameer Singh.

[1]Here are two: https://try.github.io and https://guides.github.com/activities/hello-world.

Part 1.2   Setting up the Website

Note: advanced users can ignore the following instructions and create their own *Github Pages* page. The only constraints are: (1) your webpage should present the `docs/` folder in the `master` branch of your repo, (2) it should have one dedicated page or tab for the team and another for the proposal (and later, for the progress and project reports), and (3) the links to these pages should be obvious on the project's homepage.

1. Download the zip file at https://royf.org/crs/CS175/W25/gh-skeleton.zip.

2. Unzip the file. Inside the `docs/` folder, you will find 2 folders and a total of 5 files.

3. Create a `docs/` folder in your project repo, and commit the files from the above `docs/` folder into it. It is easiest to do it on your machine after checking out your project locally, or you can do it through Github's web interface.

4. On Github, in *Settings* again, go to the *Pages* page (under *Code and automation*), and select the `master` branch and the `/docs` folder. Click *Save*.

5. Now open a new tab, and go to https://USER.github.io/PROJECT. There should be a website there.

Now that your website is up, personalize it. Through any teammate's account, do the following:

1. Edit `_config.yml` and change the title from `PROJECT` to the name of the repository (do not make other changes to this file unless you know what you're doing). Again, you can make these edits on the Github website, or preferably after checking out the repo locally. A few minutes after the commit (and the push, if committed locally), your website should change to reflect the new name on the front page and navigation bar.

2. (Optional) Edit `index.md` to list more information. Do not remove or edit the first four lines (the stuff in between and including the `---`, often called *front matter* or *preamble*) unless you know what you are doing. You should remove the default text on this page that has some basic information about Markdown, and a link to a complete guide on how to format using Markdown.

3. Edit `team.md` and replace the placeholders with your teammates and their UCINetIDs. You can optionally make more edits to add information (photos, homepage/Github links, whatever you'd like) or make it look prettier.

Again, if you encounter a problem you are unable to solve, please reach out on the course forum, making sure you detail what you tried and what the error seems to be.

Part 2   Contents of the Proposal

Part 2.1   Creating a Proposal Page (10 points)

You will notice that there is a greyed out link to the proposal in the navigation bar, that gives an error if you click on it. This will change once you create a `docs/proposal.md` file with the following front matter as the first four lines:

```
1  ---
2  layout: default
3  title: Proposal
4  ---
```

The rest of the file should contain the rest of the proposal, using the Markdown format (headings start with ##, one heading for each section below, and regular text without any formatting). Commit and push your new file, and the link should become active once Github updates your website in a few minutes.

Part 2.2   Summary of the Project (30 points)

In a paragraph or so, describe the main idea behind your project. Focus on the problem setup, not the solution, i.e. what is your goal? At the very least, you should have a sentence that clearly explains the input/output semantics of your project, i.e. what information will it take as input, and what will it produce. Mention any applications, if any, for your project.

Part 2.3   AI/ML Algorithms (10 points)

In a single sentence, name the AI/ML algorithm(s) and method(s) you anticipate using for your project. It does not have to be a detailed description of any algorithm, even just the name of a class of methods is sufficient. Examples of this include "planning with dynamic programming", "reinforcement learning with neural function approximator", "learning from demonstrations", "min-max tree search with pruning", and so on. You can take a guess at properties of the method that you'll prefer using, such as model-free vs. model-based, on-policy vs. off-policy, etc. You won't lose points for suggesting an incorrect algorithm or method, and you'll be able to switch to different ones at any point that it makes sense later in the project.

Part 2.4   Evaluation Plan (30 points)

As described in class, mention how you will evaluate the success of your project. In a paragraph, focus on the quantitative evaluation: what are the metrics, what are the baselines, how much you expect your approach to improve the metric by (just a ballpark is enough), what data will you evaluate on, etc. In another paragraph, describe what qualitative analysis you will show to verify the project works, such as what are the toy examples and sanity cases for the approach, how will you visualize the internals of the algorithm to verify it works, what's your moonshot case, i.e. it'll be awesome and impressive if you get there. Note that these are not promises, we're not going to hold you to what you say here, but we want you to think about the evaluation of your project in a critical manner, as you design your project and set about performing it.

Part 2.5   Meet the Instructor (10 points)

There's no need to meet the instructor before the proposal deadline, but you're welcome to do so if you have questions or uncertainty. However, you do need to meet the instructor at least once by (or on) week 5. Use the following links to set a meeting in-person or on zoom. Mention the (earliest) meeting date on the proposal page. Make sure that all teammates can participate in these meetings.

Part 2.6 AI Tool Usage

Some available AI tools are currently good enough that it takes some effort to tell them apart from students, but not yet good enough that there's no longer any need for students. Our policy in this course is to allow any use of such tools for your projects. The only requirement is that you record and report all aspects of the project in which you used AI tools. Please indicate this clearly in a separate section of your proposal, or otherwise indicate that no AI tools were used. You will not lose points in any part of this course for using AI tools smartly, but you may lose points if you rely on subpar output of such tools — and be warned, they often fail in ways ranging from obvious to subtle.