
Assignment 09 – project proposal

This is unlike the other assignments so far. This document is here to guide you through creating a project proposal. The project proposal will be graded on pass/fail basis. If you do not pass, you will be given feedback and you will have to resubmit until you pass. Proposals are due by the end of the day on Tuesday November 14th.

First, before you do anything else, go and create a thread on MyCourses announcing who your group members. You can have groups of 2-4 people. If your group is on the smaller side, you may be asked to join with another group or be assigned a new member. As part of this, you should already be meeting and discussing ideas. No need to keep the discussion private - what your group comes up with might inspire others. You're encouraged to do your brainstorming publicly on the #project-brainstorming discord channel or on the MyCourses Project Groups discussion board.

Second, use this proposal process as a chance to collaborate with a LLM like ChatGPT, Bard, Claude, Bing, etc. As an example, I was able to generate a draft of a fake project proposal in about 10 minutes using ChatGPT. You can see that demo in action [here](#). Notice that

1. I started by saying who I am and what I want to get out of the conversation, and by providing some guidelines for how I wanted the conversation to go.
2. I provided it with a small bit of information about the project I wanted to do.
3. It went ahead and generated a proposal, but it didn't conform to the project guidelines on the syllabus (MyCourses), so I gave it the guidelines and asked it to re-generate the proposal
4. Importantly, **the output still has a variety of errors that, if I were doing this for real, I would then have to fix offline.**

To see what I mean, on the next page is a screenshot of the output from the second generation:



ChatGPT

Certainly, let's structure the project proposal in accordance with the course guidelines. Here's how you can address each of the required points:

Decent start! However, the pitch for an "affordable and accessible" solution sounds like it's pitching a company, not a course project. That language should be changed.

Project Proposal: Cricket Ball Detection and Speed Estimation

Problem Description:

Cricket enthusiasts, players, and coaches often want to measure the speed of a bowler's delivery accurately. Existing methods for speed measurement can be costly and may require specialized equipment. This project aims to develop a cost-effective and accessible computer vision solution to detect a cricket ball in a video clip and estimate its speed.

What Already Exists:

This needs to be independently verified! Is this really a fair characterization of what already exists, or did the model hallucinate? Requires some searching online.

Some existing methods for measuring cricket ball speed include radar-based systems and high-speed cameras. These methods are often expensive, limiting their accessibility to amateur players and enthusiasts. Computer vision-based solutions exist for object detection and tracking, but they are not commonly applied to cricket ball speed measurement.

Does It Require a Dataset? Where Will the Data Come From:


Yes, this project will require a dataset of cricket match video clips. These video clips will be used for training and testing the ball detection and tracking algorithms. You can collect these videos from publicly available cricket matches, or you may consider recording your own dataset using a high-speed camera or smartphone.

Out of scope!

Why is ChatGPT saying "you" here? The proposal ought to be written in first-person language like "we will do this". But ChatGPT is a bit confused because it is writing this proposal "to you", the student. You'll need to fix language mistakes like this.

Does the project really require "training"? ChatGPT is not an expert here – it's doing some word association and saying "sure, vision things often require training data". We should be skeptical of whether or not that is actually true. Maybe we could create a ball tracker using more "classic" methods, especially since training a new model may make the scope of this project too big.

What This Project Aims to Add or Do Differently:

This project aims to leverage computer vision techniques to develop an affordable and accessible method for measuring cricket ball speed. While existing methods require expensive equipment, our solution will use common video footage  image processing to achieve the same goal. Additionally, we plan to integrate machine learning techniques (if applicable) for more accurate

Message ChatGPT...



ChatGPT can make mistakes. Consider checking important information.

Note that ChatGPT is making some big and some subtle mistakes. But it is also doing a lot of the work for me. Some ways I could make this even better are:

- providing even more detailed and explicit instructions about the tone and scope of the project proposal early on
- continuing the conversation with instructions to correct the errors like "The goal of the project is more for us as a group to learn and practice concepts from the course, not to develop a marketable product. Rewrite the proposal to reflect this."
- Using GPT-4 (if you have access)

Detailed guidelines

The proposal must address the following points (give each its own section in the document - see `proposal-template.md`):

- **Overview:** Give a brief (under 200 word) summary. This should be a high-level overview of everything.
- **Learning objectives:** Remember, this is a course project not a capstone or research project. The point of doing a project is to learn something. It's a good idea to do your project on something you're interested in, but it's also a good idea to practice the skills or ideas that you found most challenging or unclear in the course. Use this section of the proposal to tell me about **what you want to learn** by doing this project. At the end of the project, you will be evaluated more on how well you learned what you set out to learn than on how well you solved a particular vision problem.
- **Discussion of ethics:** This is a required section. You must discuss the ethical implications of your project. This is a good place to discuss the potential for bias in your data, the potential for harm to people or animals, and the potential for misuse of your project. You should discuss how you will mitigate these risks. If you are unsure about what to write here, please ask me.
- **What exists and how we'll use it:** They say that "reinventing the wheel" is a waste of time. This is only partly true. If you're trying to learn how to build a wheel, then reinventing the wheel is a great way to learn. But if you're trying to build a car, then you should probably use existing wheels. In this section, you should reflect on your learning objectives and discuss what existing tools, libraries, and datasets you will use to accomplish your goals. If you want to get practice building and training neural networks from scratch, then you will be "reinventing" some existing tools (and that will be a good experience in this case!). But if you just want practice deploying existing tools to solve some other problem, then you should plan on downloading and using existing models.
- **Reach goal:** If everything goes according to plan, what will "success" of your project look like?
- **Minimum goal:** If and when things don't go perfectly, what is the minimum you will accomplish?
- **Milestones and internal deadlines:** You have 3 weeks. Break this down into as many or as few milestones as you like. I suggest at least 3 milestones, one per week. I also suggest you set an internal deadline for when you'll stop coding and start writing up your results. This should be at least 2 days before the final due date (December 11th).
- **Organization of the team:** Who will do what and how will you communicate with each other?

Submitting

Please have one group member submit the proposal to MyCourses. You should submit a `proposal.md` file following the `proposal-template.md` file that has been provided. If you submit early, you may get earlier feedback and have a chance to get started on the project early!

Disregard the statement on the original syllabus requiring two proposals per group. You only need to submit one proposal, but you may want to wait for feedback before you start working on the project.