Final Project Proposal

Please make this document anonymous. Your team name should be anonymous.

Team name: ***CVMath (Computer Vision Math)***

Note: when submitting this document to Gradescope, make sure to add all other team members to the submission. This can be done on the submission page after uploading (top right).

If you need to find team members, please use the thread under 'Final Project - Find Teammates' on Ed—pitch an idea!

Proposal Instructions

For your project proposal, please submit a one-to-two page document answering the questions below.

- I am planning to implement a popular app from scratch. This app that allows users to take photos of mathematical equations and automatically solve or simplify them. In the app, users take a picture of an equation or expression that they want to solve. Mathematics is an important tool for engineers, yet traditional calculators often fall short when it comes to solving complex problems, especially those encountered in engineering contexts. While there are existing apps for this problem, my goal is to implement a pipeline from scratch.
- Although there are many libraries available for this project, my initial goal is to avoid using them, or to use as few as possible. I plan to train a CNN and an optical character recognition (OCR) system from scratch and construct a minimal pipeline that can process an image input and return a solution.
- This project could be beneficial for students, professors, engineers. It could serve as an educational assistant. Students could use it to support their mathematics homework. Professors could incorporate it into their teaching tools or research workflows. Engineers could use it to solve expressions encountered during technical work. These groups represent the key stakeholders for the project.
- In terms of data, there is a substantial amount of open-source material available online for implementing this model. Additionally, generating data manually is relatively easy. My initial plan is to build the pipeline using a small dataset of simple equations, and then include more complex expressions. If time allows, I would also like to add support for graph recognition and interpretation which is something not typically found in the original applications of this kind.

Question assigned to the following page: 1

Feel free to use these as paragraph headings, and also please include any media, references, etc.

After Proposal Submission

TA Assignment

After handing in your project proposal, your team will be assigned a TA to assist you. You should aim to meet with your TA once a week; this replaces TA office hours.

If you haven't heard from your TA a few days after the project proposal handin, please make a private Ed post and let us know which team you're on.

In your first meeting with your TA, your goal is to have your idea sanity-checked:

- Do you actually have the data?
- Do you actually have the compute?
- Is there code you need but don't have access to?
- Is there an area where you need help?

Some of these things will be outlined in your proposals, but talking through it with your TA as soon as possible will help you find potential road blocks and get the ball rolling.