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CS109

Contest
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Probability for Computer Scientists Contest

It is our happy job to announce that this quarter we are going to host the fourth Stanford CS109 Probability for Computer Scientists Contest. This contest is going to be completely optional (and in the genuine sense of the word optional—not in some mischievous “this is extra credit but if you don’t do it, your grade will suffer” sort of way). My intention is to give you space to have fun with the material, to be inspired and to be inspiring.

For the contest, create a probability driven project of your choosing that highlights concepts from the class and does something interesting. Each of you is eligible to submit one entry for the contest, where an entry consists of a screen capture and a short write-up of the probability theory behind your work. The contest entries will be due **Monday, December 2nd at 11:59 PM** Pacific Time. We will release the results as soon as possible—and no later than Monday, December 9th.

Genuinely Optional

As mentioned this contest is genuinely optional. I appreciate that many of you are busy—and my intention is not to create any more obligatory work. When I say optional I really mean it. I will only apply bonuses for the contest *after* I have calculated final grades for the class. Thus, if you don’t participate you are going to get the exact same final grade in CS109 as you would have received had there been no contest. We don’t recommend that you work on your contest entry if it means you won’t have time to study for the final.

Evaluation Criteria

The entries will be evaluated by the CS 109 staff (see official rules below), on the following dimensions:

- **Creativity.** We are looking for original ideas that showcase unique thought. This dimension will be reflected in how novel your work is. Similarly, we encourage work that is aesthetically interesting.
- **Impact.** We will give special consideration to work that seems to have the potential for positive social benefit.
- **Academic Sophistication.** This dimension is based on the difficulty of the underlying probability, how well the ideas relate to the concepts presented in CS109 and how well you are able to articulate your ideas.

An entry does not have to be strong in all dimensions of evaluation. For example, a submission that is an expression of a truly creative idea would be well received, even if it does not use the hardest concepts from CS109 and doesn’t have much social benefit.

Prizes

There will be one grand prize. If you win a grand prize we will replace your final exam—with a 100% (thus you would not need to sit the final exam). We will reward serious contest entries with runner up prizes, based on the amount of effort that was included, and the extent to which the work demonstrates understanding of the CS109 material.

Submission Format

Your submission will have two parts: (1) a demonstration video and (2) a short write-up. This is the minimum needed to explain what is cool and probabilistic about your submission.

The demonstration video should just be a screen capture that shows your program running. The idea behind this submission format is to allow you to use any programming language without having to worry about your program running on our machines. The write-up does not have to be formatted in any way. It is another medium for you to explain to us why your submission is interesting. You should include a probabilistic explanation of your program.

Use the two submission parts in anyway you like. If your idea is best expressed via a write-up, submit a short and sweet video. If your entry is best expressed via a video, keep your write-up minimal.

Official Rules

1. Entries to this contest are beholden to the Stanford Honor Code.
2. Only students registered in CS 109 are eligible to submit entries in the contest. Only one entry per person will be accepted.
3. No groups are allowed. Individual work only.
4. You can code your submission in any programming language.
5. All entries must be submitted electronically by sending an email to `cs109@cs.stanford.edu` with the subject “Contest entry — your name.” In the email include both a link to your demonstration video and a PDF of your write up.
6. Your submission must be sent by 11:59 PM on Monday, December 2nd . Late entries will not be accepted, and you cannot use late days for the contest.
7. You may ask Lisa or the TAs for help during office hours; however, they will give priority to students working on problem sets.
8. You are free to use any of the probability ideas we have gone over in class.
9. If you use a concept we didn’t cover, the concept should be close enough to the material that you could explain it in terms of concepts we have learned in CS109.
10. This should not be a project you have made for a grade in another class.
11. To keep things fair, we are not going to allow students to use deep learning libraries (e.g. tensorflow).

Ideas

This is a short list of ideas. We want to neither limit nor constrain your thinking. Our prior belief is that people could make some sort of artistic program (think the *Monument to Change as it Changes* art installation in front of CEMEX). Students could recreate a probabilistic program such as Shazam, perhaps with their own twist. Students could work through a hard proof. Students could implement a randomized algorithm, like Monte Carlo Tree Search. An entry could posit a probabilistic model for something in the real world, simulate it and analyze the resulting distributions. You could even make a program that visualizes a probability phenomena. Hopefully these ideas pale in comparison to what you have in mind.

You can submit a machine learning project, but an entry that simply uses a black box algorithm won’t be considered particularly creative.

Dont be intimidated. Everyone is welcome. Go learn and create!