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CS109

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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 first Stanford CS109 Probability for Computer Scientist 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 program 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 of your program running and a short write-up of the probability theory behind your work. The contest entries will be due **June 7th at 11:59pm** Pacific Daylight Time. We will release the results as soon as possible – and no later than Sunday June 11th.

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 on all evaluation dimensions. 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

Since this contest is a brand new experience I am going to give a variable number of grand prizes depending on the quality of the submissions (My number of grand prizes has a strong prior probability of being 1, with a reasonable probability of being 2). If you win a grand prize we will replace whatever individual score most negatively affects your grade—which may be an pset, the midterm, or the final exam—with a 100% in the computation of the final grade. (Note: that means that as a contest winner that you could choose not take the final exam and you would get a 100% on it, since by not taking the exam, it would be the score that would most negatively effect your grade). In addition, we will reward serious contest entries with runner up prizes.

Submission Format

Your submission will have two parts, a demonstration video and a short writeup (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 writeup 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 writeup, you can submit a short and sweet video. If your entry is best expressed via a video, you can keep your writeup 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 11:59P.M. on Wednesday, June 7th. Late entries will not be accepted, and you cannot use late days for the contest.
7. You may ask Chris 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 things 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

Since this is the first time the Probability for Computer Scientist Contest has been offered we don't have a baseline for what to expect. 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 "Monuments to change as it changes" art installation in front of Cemex). Students could recreate a probabilistic program such as Shazam with thier own twist. 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 nor of high academic merit.

Don't be intimidated. Everyone is welcome. Go learn and create!