CS230 Hands-on session 1: “Grading criteria / examples of great projects”

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The goal of this session is to (i) let you chat with other students about projects and (ii) give you an idea of what makes a successful CS230 project.

Part I: Mixer

Let’s go around the room and introduce ourselves. Let’s share things like - name, major (or company if SCPD), previous experience with machine/deep learning, project interest etc.

Part II: Examples of projects

Historically, students who have succeeded in their CS230 projects have done one of the following:

- **Used popular network architectures to perform a novel task.** For example, some students have used the YOLO algorithm to detect humans on images taken from their drones. They then cropped the humans out of the pictures and filled-in the humans position with the correct background using a Generative Adversarial Network. Another example: students have fine-tuned existing networks to perform state of the art accuracy in Tree Species Identification.
- **Came up with a custom architecture to perform an existing (or novel task)**. For example, students made changes to the popular U-net algorithm to improve performance on a chosen task such as brain tumor segmentation. Another example: students have improved accuracy on a task by adding and training an attention mechanism on top of the existing RNN architecture.
- **Re-implemented a famous research paper**. For example, students have tried to re-implement the popular WaveNet algorithm with their own code.
- **Did a research project.** For example, students have designed a neural network algorithm to debias word vectors using a novel technique. They then submitted their paper to a conference.

Note that the common denominator of these projects is that students have contributed something *novel*. Of course, the above categories are not the only ones. We encourage students to talk with their mentors to figure out if their project idea is aligned with CS230’s expectations.

Part III: Final report criteria

Let’s now study a few successful projects. Here are 2 examples:

- Final report 1: http://cs230.stanford.edu/files_winter_2018/projects/6931206.pdf
- Final report 2: http://cs230.stanford.edu/files_winter_2018/projects/6939125.pdf

Here are the grading criteria we use to grade the final report:

Problem description

Description of the dataset

Hyperparameters tuning & Architecture search

Paper writing

Explanations of choices and decisions (architecture, loss, metrics, data)

Data cleaning and preprocessing (optional)

How much code you wrote on your own

Insights and discussions (including next steps, and interpretation of results)

Results: Accuracy (or other metric) satisfaction

References

Penalty for more than 5 pages (except References/contribution/theory-proofs)

Part IV: Q&A

Time for questions.