CREATING A PLAYER AID FOR GEOMETRY DASH APS360 PROGRESS REPORT

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ABSTRACT

Our team intends to create a program that can create semantic segmentation maps of a Geometry Dash Level using machine learning. This program can be used to assist players in recognizing obstacles without the usage of mods. We are using transfer learning to achieve this task. —-Total Pages: 2

1 BRIEF PROJECT DESCRIPTION

The format for the submissions is a variant of the ICLR 2022 format. Please read carefully the instructions below, and follow them faithfully. There is a **9 page** limit for the main text. References do not have any limitation. This is also ICLR's standard length for a paper submission. If your main text goes to page 10, a -20% penalty would be applied. If your main text goes to page 11, you will not receive any grade for your submission.

2 INDIVIDUAL CONTRIBUTIONS AND RESPONSIBILITIES

Our team is working well together. We are using github to share code and the latex document, and google docs to share documents for rough work, brainstorming, rough drafts, and data collection. Please see Table 1 for the tasks we have completed so far. The remaining work we have includes: collecting more data, creating a test set, trying out different architectures, and hyperparameter tuning. Please see Table **??** for how we have decided to divide up these tasks and their deadlines. Since hyperparameter tuning, trying out different architectures, and creating a testset.

3 DATA PROCESSING

4 BASELINE MODEL

In an attempt to encourage standardized notation, we have included the notation file from the textbook, *Deep Learning* Goodfellow et al. (2016) available at `https://github.com/goodfeli/dlbook_notation/`. Use of this style is not required and can be disabled by commenting out `math_commands.tex`.

Table 1: Individual Contributions and Tasks

NAME	CONTRIBUTIONS	TASKS
Jaden Dai	Did most of the data collection, including creating macros for Geometry Dash levels, creating texture packs, and creating macros for taking screenshots.	Testset creation. Hyperparameter tuning.
Joel Vadakken	Helped with the data collection. Wrote the code to preprocess the data before training the model.	More Data collection. Experiment with different models.
Skylar Han	Created the Baseline model for comparison. Wrote the training code for the model.	Improve baseline model. Experiment with different model architectures
Ian Lu	Created the architecture for the model, and did some hyperparameter tuning.	Hyperparameter tuning. Testset creation.

Table 2: Task Deadlines

TASK	DEADLINE	JUSTIFICATION
Collecting more data	July 13, 2024	We need most of our data ready to train our models, so it important we have all of our data ready by then.
Creating a test set	July 20, 2024	We won't need to evaluate our model until closer to the submission deadline, so this is not as high priority a task
Trying out different architectures	July 20, 2024	We should be done most of our model training so that we can work on our final submission
Hyperparameter tuning	July 20, 2024	Hyperparameter tuning and trying out different architectures should occur simultaneously, as they are linked together.

5 PRIMARY MODEL

Do not change any aspects of the formatting parameters in the style files. In particular, do not modify the width or length of the rectangle the text should fit into, and do not change font sizes (except perhaps in the REFERENCES section; see below). Please note that pages should be numbered.

REFERENCES

Ian Goodfellow, Yoshua Bengio, Aaron Courville, and Yoshua Bengio. *Deep learning*, volume 1. MIT Press, 2016.