LearnyMcLearnface - Proposal (Draft)

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This is the proposal for the project of the group **LearnyMcLearnface** for the Reinforcement Learning course in the fall semester 2020.

Problem

We are going to tackle the 'CarRacing-v0'[[1]](#footnote-1) problem of OpenAI by Oleg Klimov. It is a simple continuous control problem. The environment is already provided[[2]](#footnote-2):

* States consisting of 96x96 pixels with RGB dimensions (discrete 0 to 255)
* Actions consisting of “steer”, “accelerate”, “break” (continuous -1 to 1 respectively 0 to 1)
* Rewards -0.1 every frame and +1000/N for every tile visited with N being total number of tiles in track
* Game is solved when the agent gets 900+ points consistently
* Episode finishes when agent visited all tiles or leaves boundaries

The car racing problem can be discretized.

# Proposed Solutions

## Deep Q Learning

We are going to use a neural network to approximate the Q table.

## other???

1. https://gym.openai.com/envs/CarRacing-v0/ [↑](#footnote-ref-1)
2. https://github.com/openai/gym/blob/master/gym/envs/box2d/car\_racing.py [↑](#footnote-ref-2)