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Journal #3

Over this past week, I have been working towards two main milestones, being able to predict the next frame in a sample car crash video and conducting research to prove the validity of my project. In regard to the frame extrapolation, the car crash video I am using was a gif I found online, it contains 20 relevant frames in which the car crash is actually occurring. Last week, I developed a Machine Learning (ML) model consisting of a Convolutional Neural Network (CNN), however, this model was rather unsuccessful in predicting the next frame of a video. As a result, this week I decided to experiment with a larger variety of network structures. For instance, I implemented a Convolutional Recurrent Neural Network (CRNN) and a 3D Convolutional Neural Network (3D CNN). My goal of utilizing CRNNs was to take advantage of the image processing power of a CNN and the sequential memory storage of the RNN. Unfortunately, this model is not very successful, and I believe this is partly due to a lack of data. Thus, next week I will try to find a longer car crash video to analyze.

My second milestone this week was conducting research on car crash reaction times and determining how much time is enough for a driver to stop or avoid a car crash. Based on a variety of sources, I found that the standard driver reaction time that is used to model car crashes is 0.7 - 1.5 seconds. This means that if I am able to predict a car crash 1 - 2 seconds before it occurs, my project would be justified. In all, this week was productive in helping me ensure the validity of my idea and explore it further.