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1. Project Title: Machine Learning with Neural Networks
2. Product: The final product will consist of two parts: the entire code being published as open source on GitHub, and a video presentation that describes what the code actually does. The code itself will do the following: upon receiving an input *i*, it will classify *i* into one of several classes *x* (for example, if I were to write a program that analysis pictures, an input of a picture of a dog will result in the input being classified as dog). The type of input that can be used can theoretically be anything, but in reality it will be largely limited based on what types of data I can get my hands on. This means that I will likely develop either a picture classifier or an audio classifier due to other kinds of data not being largely available. The reasoning for how my product will be presented is as follows:
3. GitHub is an open source sharing website. Publishing the code on GitHub is my way of sharing what I learned with the community.
4. The presentation will be in video form because it would be difficult to show and explain what I learned in real-time, so if I do it in video form I will be able to make sure to include better, more detailed explanations as well as make sure that I do not leave out information.
5. Focus: Can I learn to write a neural network that is able to achieve human-like accuracy when predicting results? This will drive my learning by being a goal that will be very difficult to actually achieve, so I will have to work for it. I will have to be able to answer “How do neural networks work?”, “How do I program using TensorFlow?”, and “How do I achieve greater accuracy when teaching a neural network?”
6. Timeline: I will have to learn how to program using TensorFlow. It is difficult to judge how fast I will learn something that is complicated, so the timeline will be rough. Depending on how smoothly learning TensorFlow goes, I may begin writing the network by December, but I may also only be able to begin writing the network in January, which would be the worst case scenario. Either way, I will need to begin training the network, even in the worst case scenario, in February, both because networks take a long time to train and because I will probably find problems in the code, which will make it necessary for me to rewrite specifics. Even if everything goes wrong, I will have at the very least a neural network that is able to achieve a reasonably high accuracy by presentation time.
7. Intent: I want to learn more about machine learning because I find coding something that can “learn” very interestings as a concept. I already have some experience in coding in languages such as Java and Python, as well as knowledge of how neural networks work, but will need to learn how to program in TensorFlow, which is a library designed for machine learning. I will be posting everything that I learned on GitHub as open source, allowing for anyone who wishes to to use the code that I wrote. This topic stretches my comfort limits simply by being as complex as it is. Machine learning with neural networks is generally taught to postgraduates after they earn a degree in computer science or a similar field.