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CPSC 481

Assignment 1

For this project, we are planning on using AI to generate images of apples. The application portion of the project will prompt the user to determine whether or not a displayed image of an apple is real or generated by the AI. To generate the image of an apple, we will be using machine learning. The type of algorithm we are planning to use is generative adversarial networks. One network acts as a classifier and determines whether or not the image fed into the network is real or generated. The second network takes in noise as input for randomness and generates an image for the first network. The results of the first network are used to train the model of the second network.

We think that this idea is interesting because somehow one model will learn what something looks like, and the other model will figure out how to create and imitate images that have never existed before. It is also cool that we are pitting two AIs against each other in a competition to fool and outsmart the other.

The GUI will be fairly simple. It will display an image and have two buttons that say real or fake. The user will have to click on one or the other and the window will tell the user whether or not they select the correct answer.

The program will be implemented in Python on the Windows platform, and we will utilize Tensorflow for machine learning tools.

Overall the project should be feasible within the timeframe that we have. Although we may not be well versed in Python, Tensorflow, or machine learning in general, we are optimistic that we will be able to learn the necessary components to complete the project.

Some potential issues that we have discussed are time and processing power for training the AI models, our lack of experience in Python and Tensorflow, and the “uncanny valley” effect, which may make generated images easily identifiable due to being a close resemblance but not convincingly realistic.

Our initial timeline is as follows:

* 9/21: set up the programming environment and TensorFlow
* 9/28: set up a model to identify apples and begin training
* 10/12: set up a model to generate apples and begin training
* 11/2: have fully trained models
* 11/9: complete GUI
* 11/16: review and prepare for the presentation

The team members, roles, and programming skills are as follows:

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| Names | Roles | Programming Skills |
| Ryan Chen | Algorithm design  Algorithm implementation  Dataset training | Python  JavaScript  C, C++, Java |
| Frank Ngo | Team leader  Algorithm implementation  Application programming  GUI  Report writing | Python  C++  Java |