CNN

This program is run on google collab for faster readings as this code takes a long time to run. It is advised that you run this program on google collab. This program is Convolutional Neural Network(cnn), designed to take a collection of images, and train to recognize and classify that image with high accuracy. This code was able to achieve an accuracy of above 82% with a long run time.

In order to run this code it is important make sure to pip install these libraries:

!pip install tensorflow
!pip install keras
!pip install h5py
!pip install Matplotlib
!pip install numpy

Also it is important to download the file containing all the images from this link:
https://www.cs.toronto.edu/~kriz/cifar.html
Make sure to download the CIFAR-10 that includes the 60,000 32x32 color images. This file has 10 different classifications for each image ranging from dogs, birds, airplanes, cats and ect.

First thing is to open a google collab account and then open the 'cnn(improved)' file. Run the file step by step only running the next line of code once the previous code has finished indicated by a green check. Line 3 with the 'plt.figure' is to check to make sure the pictures from the file that was downloaded are being read through this program. If no images show, make sure that the right file was downloaded. When running the 'model.compile' line of the code, the process will take a long time but make sure not to click the next line of code until it is finished. Once it is finished, run the last couple of lines of code to see the plot of the accuracies, and the losses from the CNN to get an indication of where some improvements could be made. The last line will show the accuracy of the CNN which is usually correlated to the final epoch reading. Sometimes the accuracy will improve if the 'model.compile' is run again as it will continue where it left off.

Video Demonstration of greater than 82% accuracy:https://youtu.be/OvluGmbOd_E

Balloon Pilot

Before running Balloon pilot, make sure to include these libraries.

import pgzrun
import pygame
import pgzero
import random
from pgzero.builtins import Actor
from random import randint

Also make sure to include”pgzrun.go” at the very end of the code or else the game will not display when the program is run.

In order to run ‘balloon.py’ just simply run the program. Left click to raise the balloon up to avoid obstacles. You have 3 lives and you will lose a life when you run into an obstacle. If the balloon rises to the top of the window or touches the bottom of the ground, It will be an instant game over so be carefull. The obstacles start off a bit fast and will get faster as the level increases. The level will increase every time you pass 10 obstacles. When the level increases, the speed of the obstacles will increase thus increasing the difficulty. When you run out of lives it is game over and the program ends.

Video demonstration:https://youtu.be/wXHCnGQDvko