**Convolutional Neural Network (CNN)**

**and Game Development**

1. **CNN – Improve accuracy (Done in Google Colab)**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

The accuracy of the model after training reach 88.25%

* Result of last five epochs.

A picture containing text

Description automatically generated

* Plot of accuracies

Graphical user interface, application

Description automatically generated

1. **CNN – Challenge Test**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

The trained model in the part 2 is save in the file “*hung\_CIFARmodel.h5*”. This file is used to predict the pictures from the internet.

* 1st picture and prediction:

<https://images.all-free-download.com/images/graphiclarge/classic_jaguar_210354.jpg>

Graphical user interface

Description automatically generated

* 2nd picture and prediction:

<https://ichef.bbci.co.uk/news/976/cpsprodpb/67CF/production/_108857562_mediaitem108857561.jpg>

A bird on a branch

Description automatically generated with medium confidence

* 3rd picture and prediction:

<https://upload.wikimedia.org/wikipedia/commons/5/53/Weaver_bird.jpg>

A bird on a branch

Description automatically generated with medium confidence

* 4th picture and prediction:

<https://static.toiimg.com/thumb/msid-67586673,width-1070,height-580,overlay-toi_sw,pt-32,y_pad-40,resizemode-75,imgsize-3918697/67586673.jpg>

A cat with green eyes

Description automatically generated with medium confidence

* 5th picture and prediction:

<https://wagznwhiskerz.com/wp-content/uploads/2017/10/home-cat.jpg>

A cat lying down

Description automatically generated with medium confidence

1. **Game Development: Balloon Flight**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

In this game, you will take control of your own hot-air balloon and try to avoid the obstacles that come your way as you fly.

When the game starts, a hot-air balloon appears in the middle of the screen. You need to use the mouse button to make the balloon rise or fall. The challenge is to keep the balloon in the air without hitting any birds, houses, or trees. For every obstacle you avoid, you’ll score one point. But as soon as you hit one, the game is over.

The balloon begins to drop as soon as the game starts. You can make it rise again by clicking the mouse. Also, the obstacles (birds, houses, and trees) keep appearing at random positions. You need to avoid all the obstacles to stay in the game.

A screenshot of a computer

Description automatically generated with low confidence

**References**

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<https://machinelearningmastery.com/how-to-develop-a-cnn-from-scratch-for-cifar-10-photo-classification/>

<https://colab.research.google.com/github/tensorflow/docs/blob/master/site/en/tutorials/images/cnn.ipynb#scrollTo=WRzW5xSDDbNF>

<https://colab.research.google.com/github/tensorflow/docs/blob/master/site/en/tutorials/images/classification.ipynb#scrollTo=dC40sRITBSsQ>

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