**Research Project Report**

**Predicting player survivability in the video game Surviving Mars**

Devon Hope – 101038344

Yichen Dou – 101003897

Prof. Alan Tsang

COMP 4107 B, Winter 2021

Apr 23, 2021

**1 Introduction**

**1.1 Research Question**

How neural networks help predicting human survivability in the video game Surviving Mars.

**1.2 Background**

**1.3 Datasets**

Surviving Mars Maps from <https://www.kaggle.com/peijenlin/surviving-mars-maps>

It is a dataset collected from a video game called Surviving Mars where players face challenges when colonizing Mars. This dataset contains a rich number of attributes, mostly resources, such as metal and water at a specific location and altitude.

**1.4 Libraries Used In The Research**

@TODO Description for each machine learning library

Tensorflow, Keras, Scikit-learn

**2 Methodology**

**2.1 Data Analysis**

@TODO Find and describe problems in the datasets. Should we normalize data? Should we generate new attributes? How graphs look like?

**2.2 Data Preprocessing**

@TODO Flatten, Normalize data etc. based on 2.1

**2.3 Neural Network Model**

@TODO NN architecture

**2.4 Training, Testing and Validation**

@TODO Plot some graphs, including testing and evaluation (in TensorBoard)

**2.4 Hyperparameters Tunning**

@TODO Testing different set-up for the net, including number of neurons, number of layers, learning rate, activation function and etc.

**3 Results**

@TODO Figures

**4 Discussion**

@TODO Read from 3

**5 Conclusion**

@TODO Conclusion

**References**

APA Format