**Research Project Report**

**Predicting player survivability in the video game XXX**

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**1 Introduction**

**1.1 Research Question**

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

(Actually, in this game, players try to build cities rather than survive natural challenges)

OR

How neural networks help locating required resources on a map in the video game Surviving Mars.

(We separate the dataset uniformly by locations into training and test set, so the training set does not include what information a location in the test set has. It is a good example to train the network in CNN or GAN by taking resources maps as inputs and a new prediction map as an output)

**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