# Configuration Manual

MSc Cyber Security
Internship

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**MSc Project Submission Sheet**

**School of Computing**

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| **Project Title:** | Detection of Insider Threats Based on Deep Learning Using LSTM-CNN Model | | |
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# Configuration Manual

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# 1 Pre-requisites

The research is based on neural network and requires a set of pre-requisites for the proper functioning of implementation.

## 1.1 Hardware Specification

In our study, size of 12 GB dataset is used. Dealing with such large dataset to perform, hardware requirement should be met. However, the specification mentioned is the recommended but not the maximum.

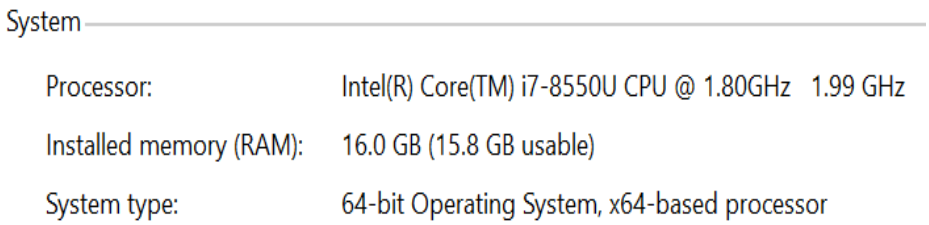


**Figure 1: Hardware Details**

## 1.2 Operating System

This paper have used Windows 10 as the OS the for base machine. However, any operating system is recommended.

# 2 Setting up Google Colaboratory

Steps required to set up Google Colab [1].

- The user should have an account in google
- Required to use Drive
- Create a new folder in Drive.
    - New -> Folder , or
    - New -> More -> Google Colaboratory

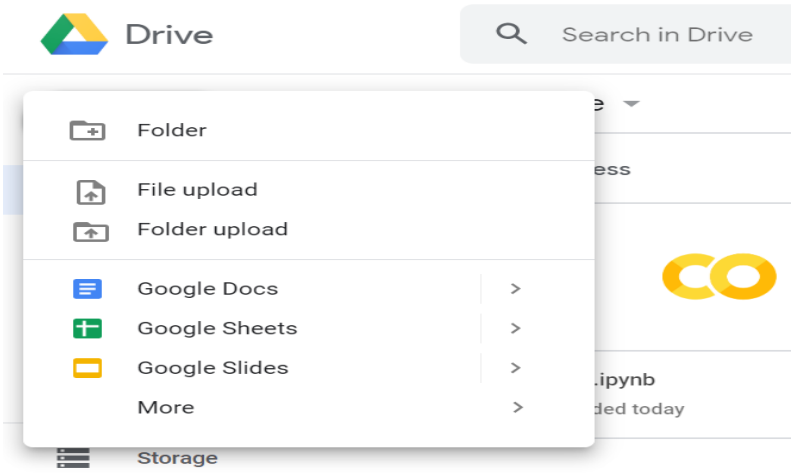


**Figure 2: Creating new file in Colab**

- Hardware accelerator is set up by enabling GPU. This provides 12 GB memory to use potentially for 12 hours.

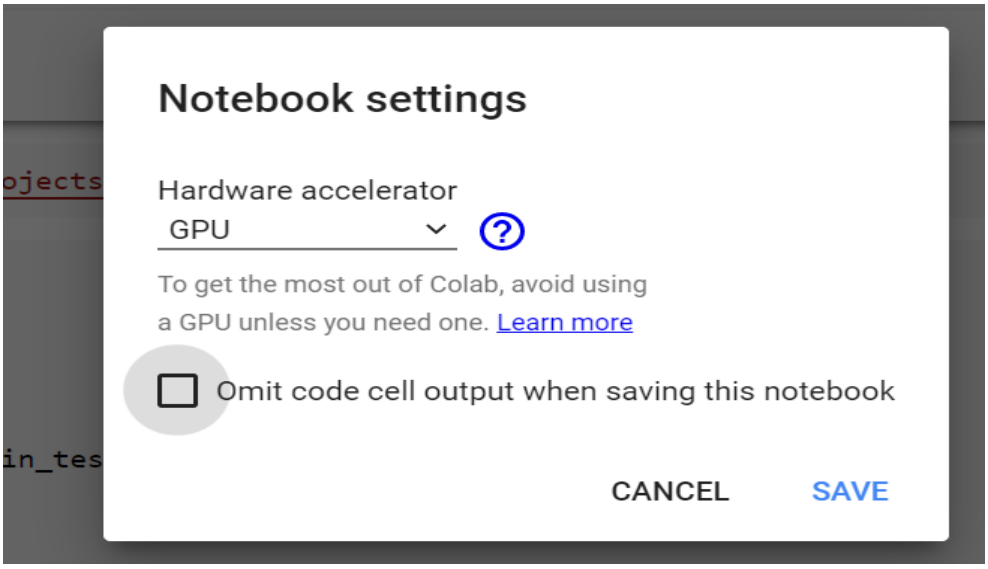


**Figure 3: Enabling GPU**

- Following command is used to check if the GPU is enabled

```
#' ' means CPU whereas '/device:G:0' means GPU
import tensorflow as tf
tf.test.gpu_device_name()
```

- Google Drive can be mounted with Colab by using FUSE or Google colab library.

```
from google.colab import drive
drive.mount('/content/drive/')
```

**Figure 4: Mounting of google drive in colab**

# 3 Installation of Required Libraries

The main reason to use google colab is it comes with all the libraries in built.
TensorFlow and Keras Framework is used in the implementation part of the paper. The following code can be used to check.

```
import tensorflow as tf

print(tf.__version__)
```

However, it is important to check for the latest version of Tensorflow which is version 2.

## 3.1 Accelerating the Training

HDF5 which is .h5 are the memory mapped file which is used for easy storage, maintain and edit data.

## 3.2 Pickle Module

This is used when the file can be saved, and use it for later. It has the file extension of .pxl

# 4. Dataset

This study have used insider threat data set from Carnegie Mellon University – Software Engineering Institute. This dataset is a public dataset based on the collection of synthetic insider threat test datasets [2].

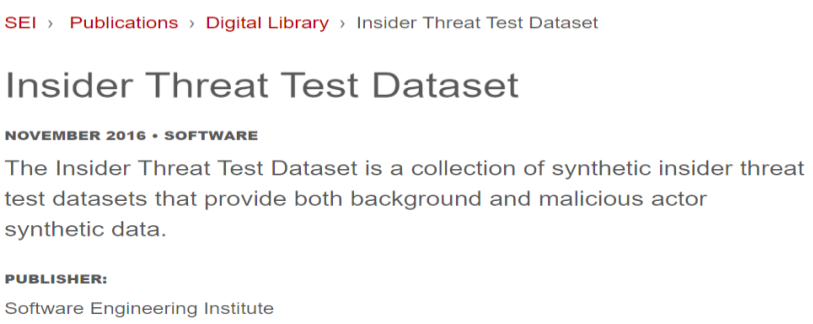


**Figure 5: Dataset Details**

# 5 References

[1] G. Colab, "Welcome to Colaboratory," Google, [Online]. Available: https://colab.research.google.com/notebooks/intro.ipynb#scrollTo=GJBs_flRovLc.

[2] S. E. Institute, "Insider Threat Dataset," Carnegie Mellon University, November 2016. [Online]. Available: https://resources.sei.cmu.edu/library/asset-view.cfm?assetid=508099.