Test Plan and Results

Overall Test Plan

This test plan provides a validation for the Stock Predictor machine learning model. The document presents a set of test suites that the model must pass in order to be considered functional and usable to the users. Information about each individual test case regarding certain criterias, scopes and expected results are also specified.

Test Case Descriptions

CM1.1	**Create New Model**
CM1.2	This test will ensure the user must be able to create new machine learning model.
CM1.3	Inputs: The inputs for this test will be the command line the user enters with default learning hyperparameters to build the neural network model.
CM1.4	Outputs: Tensorflow creates a new RNN model to train and predict stock prices.
CM1.5	Normal
CM1.6	Blackbox
CM1.7	Functional
CM1.8	Unit Test
SS1.1	**Select stock symbol**
SS1.2	This test will ensure the user can select the stock choice they want the model to train and make prediction.
SS1.3	Inputs: The experimenter might select from a list of available stock prices from the database.
SS1.4	Outputs: The system creates a new RNN model and gets the selected stock dataset as training data points.
SS1.5	Normal
SS1.6	Blackbox
SS1.7	Functional
SS1.8	Unit Test
SP1.1	**Select learning hyperparameters**
SP1.2	This test will check the use of tuning different parameters with the environment and ensure that users are allowed to change default flags and parameters for customized model.
SP1.3	Inputs: The experimenter might select from a list of available stock prices from the database.
SP1.4	Outputs: The system creates a new customized RNN model with changed default parameter.
SP1.5	Normal
SP1.6	Whitebox
SP1.7	Functional

SP1.8 Unit Test

LM1.1 **Load existing trained model**
LM1.2 This test will check that users are able to load a previously saved model to continue training and making predictions.
LM1.3 Inputs: The user selects the saved model to open and load to the system.
LM1.4 Outputs: The model is loaded into the terminal and the status and results are displayed if any.
LM1.5 Normal
LM1.6 Blackbox
LM1.7 Functional
LM1.8 Unit Test

SM1.1 **Save trained model**
SM1.2 This test will check that users are able to save a trained model the local directory.
SM1.3 Inputs: The user selects the option to save the model into the computer.
SM1.4 Outputs: The model is saved into the computer.
SM1.5 Normal
SM1.6 Blackbox
SM1.7 Functional
SM1.8 Unit Test

TM1.1 **Train the machine learning model**
TM1.2 This test will check that the learning and prediction process of the RNN model according to the training options and the learning procedure specified by the learning components.
TM1.3 Inputs: The user run the command line arguments with the --train flag to train the model.
TM1.4 Outputs: The prediction results (including plots, data files, trained model) is saved into the source directory.
TM1.5 Normal
TM1.6 Whitebox
TM1.7 Functional
TM1.8 Unit Test

EM1.1 **Export the machine learning model**
EM1.2 This test will check the export function of Tensorflow and the model to be used by other programs.
EM1.3 Inputs: The user run the command line arguments with the --export flag to save and export the model.
EM1.4 Outputs: The prediction results (including plots, data files, trained model) is saved into the source directory.
EM1.5 Normal
EM1.6 Whitebox
EM1.7 Functional
EM1.8 Unit Test

Test Case Matrix

	Normal/ Abnormal	**Blackbox/ Whitebox**	**Functional/ Performance**	**Unit/ Integration**
CM	Normal	Black	Functional	Unit
SS	Normal	Black	Functional	Unit
SP	Normal	White	Functional	Unit
LM	Normal	Black	Functional	Unit
SM	Normal	Black	Functional	Unit
TM	Normal	White	Functional	Unit
EM	Normal	White	Functional	Unit