**Spring 2024: CS5720 Neural Networks & Deep Learning - ICP-9**

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Types of ANNs and Recurrent Neural Network

GitHub Link: https://github.com/Shanu1405/icp-9

Use Case Description:

Sentiment Analysis on the Twitter dataset

Programming elements:

1. Basics of LSTM

2. Types of RNN

3. Use case: Sentiment Analysis on the Twitter data set

In class programming:

1. Save the model and use the saved model to predict on new text data (ex, “A lot of good things are happening. We are respected again throughout the world, and that's a great [thing.@realDonaldTrump](mailto:thing.@realDonaldTrump)”)

2. Apply GridSearchCV on the source code provided in the class.

A screenshot of a computer

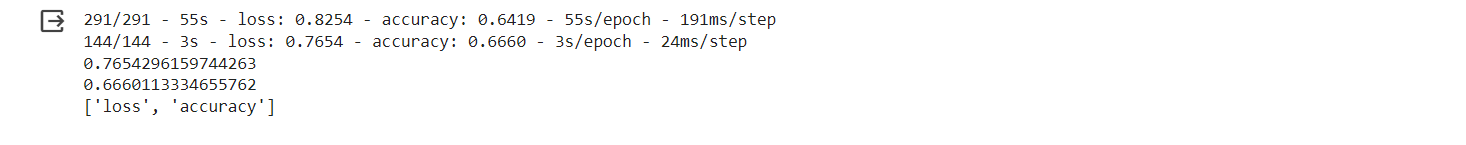
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A screenshot of a computer code

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A screenshot of a computer

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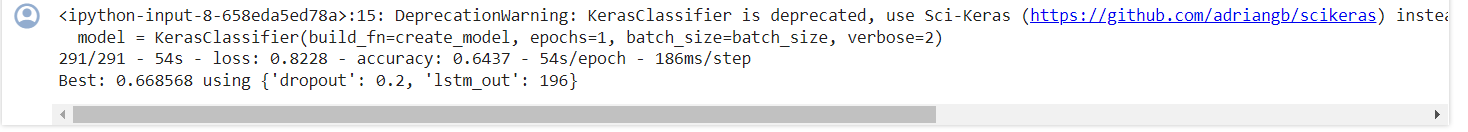
This code loads the saved model using the load\_model function, and then preprocesses the new text data in the same way as the training data. The predict method is called on the loaded model to get the predicted

class probabilities for the new text data. The class with the highest probability is chosen as the predicted sentiment. The predicted sentiment and probabilities are then printed to the console.

To apply GridSearchCV on the provided source code, we can use the GridSearchCV class from sklearn to search for the best combination of hyperparameters for the LSTM model. The hyperparameters that can be tuned are the number of LSTM units, the dropout rate, and the learning rate of the optimizer.

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This code defines the create\_model function that returns a Keras model with the specified hyperparameters. The KerasClassifier class is used to create a wrapper for the create\_model function,

which can be used as an estimator for GridSearchCV. The hyperparameters to be tuned are defined in the param\_grid dictionary. GridSearchCV is then called with the KerasClassifier object, the param\_grid dictionary.