Macroeconomic Predictions with Deep Learning

The Problem

Background

Deep Learning for Computational Data Science has exposed us to various architectures which can be used for accurate predictions

Key Idea

Policy making and business strategies are often based on accurate estimates of various macroeconomic indicators of the economy

Problem statement

To explore deep learning applications in economic predictions

GDP prediction

Problem: To predict the GDP of India given past gdp

Gross Domestic Product (GDP) is the total value of goods and services produced in a country in a year

It is used to measure economic performance of the country and for international comparisons

Data and Implementation

- Data was collected from the RBI's Database on Indian Economy (dbie.rbi.org.in)
- GDP data of India for 54 quarters was collected based on availability of GDP data of the same base year
- The first 40 data points were used for training and the rest for testing
- A sliding window LSTM was implement with window size 5 to increase the dataset size

```
/usr/local/lib/python3.6/dist-packages/ipykernel_launcher.py:2: Use
```

Layer (type)	Output Shape	Param #
lstm_3 (LSTM)	(None, 5, 5)	140
dropout_3 (Dropout)	(None, 5, 5)	0
lstm_4 (LSTM)	(None, 256)	268288
dropout_4 (Dropout)	(None, 256)	0
dense_2 (Dense)	(None, 1)	257
activation_2 (Activation)	(None, 1)	0

```
Total params: 268,685
Trainable params: 268,685
Non-trainable params: 0
```

LSTM Architecture

Result:

- The model did not converge i.e. it did not train.

- The training error never seemed to really decrease even after running for 5000 epochs