Predicting 'AAPL' with an LSTM Model

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Objective

- Predict Apple stock price with a Neural Network
- Used LSTM (Long Short Term Memory) network
  - LSTM is a type of NN that have internal "memory cells" that can retain important information from earlier in a sequence
    - If lookback is 60 days, the model can identify and learn important patterns in intermediary days (ie 5, 20, 45) and use them to make a better prediction
  - Makes the LSTM model perfect for Stock Price Prediction

How It Works

1. Prepare the Data
   a. Use yfinance to get historical stock data
   a. Scale all prices to a range (0 to 1) → Helps the AI learn efficiently
   b. Define lookback window to create training examples → We show the last 60 days and ask the model to predict day 61
2. Build the Model
   a. Using PyTorch
   b. Layers to remember important patterns + final layer turns it into one prediction
3. Train the Model
   a. Show thousands of training examples
   b. Loss function: Measures how wrong the predictions are
   c. Optimizer: Adjusts the internal connections to create a better prediction

Results

- Could predict general trend and direction but nothing too accurate
  - Due to other factors influencing market (eg investor sentiment, trade relations, etc)
- On average, predictions were off by $27.12

AAPL Stock Price Prediction (PyTorch)