StockSocial

A simple stock prediction tool that checks for positive sentiment via Twitter, and utilizes Keras to analyze historical data.

Checking Sentiment:

```
user = tweepy.API(auth)

def stock_sentiment(quote, num_tweets):
    # Checks if the sentiment for our quote is positive
    tweet_list = user.search(quote, count=num_tweets)
    positive, null = 0, 0

    for tweet in tweet_list:
        blob = TextBlob(tweet.text).sentiment
        if blob.subjectivity == 0:
            null += 1
            next
        if blob.polarity > 0:
            positive += 1
        #print(tweet_list)

    if positive > ((num_tweets - null) / 2):
        return True
```

Checks set number of tweet for sentiment value using TextBlob.

Creating NumPy Array

```
def stock_prediction():
    # Collect data from csv
    open_price = []

    with open(hist_data_file) as f:
        for n, line in enumerate(f):
            if n != 0:
                open_price.append(float(line.split(',')[1]))

    open_price = np.array(open_price)
```

Predicting with Keras

```
def create_dataset(open_price):
    dataX = [open_price[n + 1] for n in range(len(open_price) - 2)]
    return np.array(dataX), open_price[2:]

trainX, trainY = create_dataset(open_price)
```

```
# Create and fit Multilinear Perceptron model
model = Sequential()
model.add(Dense(8, input_dim=1, activation='relu'))
model.add(Dense(1))
model.compile(loss='mean_squared_error', optimizer='adam')
model.fit(trainX, trainY, nb_epoch=200, batch_size=2, verbose=2)

# Prediction for tomorrow
prediction = model.predict(np.array([open_price[0]]))

# print(prediction)
result = 'The price will move from %s to %s' % (open_price[0], prediction[0][0])

return result
```

Activation Choice: Relu – has alpha value of 0
Optimizer Choice: Adam – straight-forward method for stochastic optimization that has low memory requirements.
Loss: Mean squared error - loss is simply scaled by the given value.
Verbose: one log line per epoch.

Improvements in progress:

- Using a more “sophisticated” sentiment analysis technique such as Azure Text Analytics.
- Applying technique to news data and StockTwits