TO THE MOON

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bitcoin ACCEPTED HERE

Predicting Bitcoin Price Using Recurrent Neural Networks with Long Short-Term Memory

What is Cryptocurrency?

- 2008 Essay: "*Bitcoin: A Peer-to-Peer Electronic Cash System*" by Satoshi Nakamoto
- Open Source
- Blockchain / Ledger
- Volatile / Bitcoin Rollercoaster
- What eeeees it man?

Why Bitcoin?

- The first decentralized digital currency
- It has the most recorded data
  - Daily/Hourly
- Racks n Racks = $tack$ n $tack$
- Most popular
- Why not Bitcoin?

Goals

- Construct a neural network that will accurately predict the next-day average price of Bitcoin

Dataset

- Kaggle
  - USD or Yen
- 2012 – 2018

	Timestamp	Open	High	Low	Close	Volume_.BTC.	Volume_.Currency.	Weighted_Price
0	1480913160	758.12	758.20	758.12	758.13	5.76837	4373.355968	758.161485
1	1480913220	758.18	758.18	758.00	758.18	2.20489	1671.407708	758.045847
2	1480913280	758.08	758.08	758.08	758.08	2.44986	1857.189869	758.080000
3	1480913340	758.19	758.20	758.19	758.20	1.39213	1055.512856	758.199921
4	1480913400	758.19	758.20	758.19	758.20	0.49255	373.450410	758.197970

Data Preprocessing

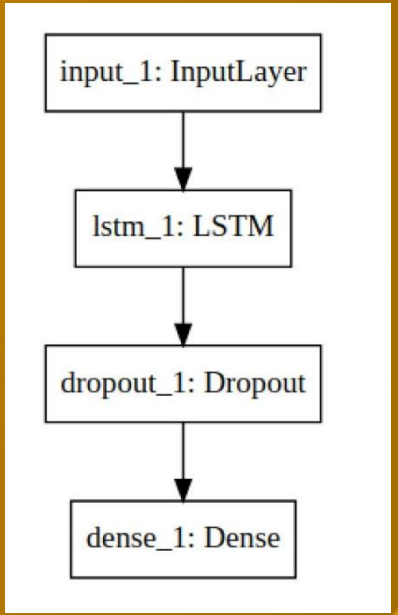
- Found daily average
- Used
  - 95% for training
  - 5 % for testing
- Min-Max normalization

$$x_i^* = \frac{x_i - \min(X_{\text{train}})}{\max(X_{\text{train}})} - \min(X_{\text{train}})$$

Tools

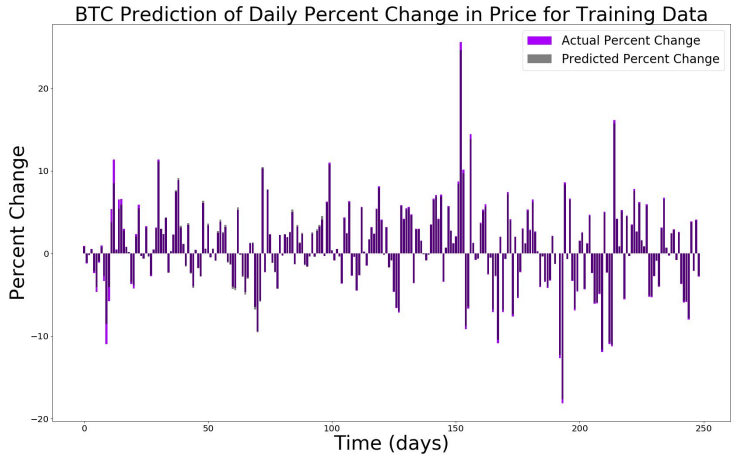
- Recurrent Neural Network
  - LSTM
  - Dropout(20%)
  - Dense
- Selu Activation

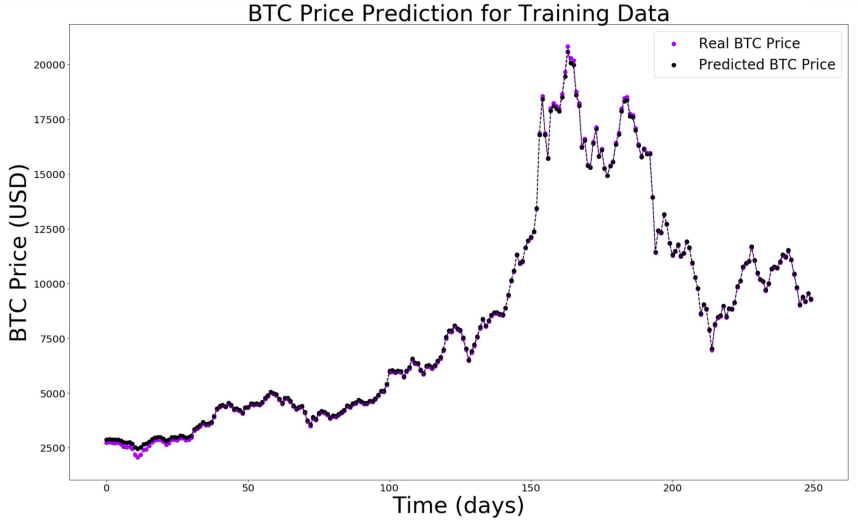
$$\text{selu}(x) = \lambda \begin{cases} x & x > 0 \\ \alpha e^x - \alpha & x \leq 0 \end{cases}$$



Training

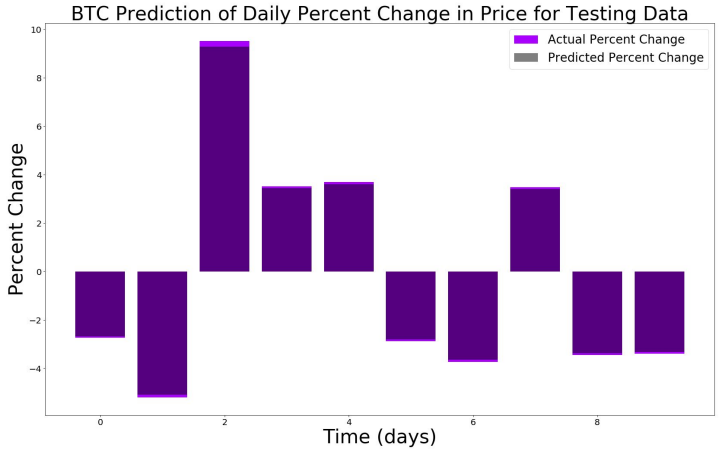
- Validation Split 80/20
- 500 epochs

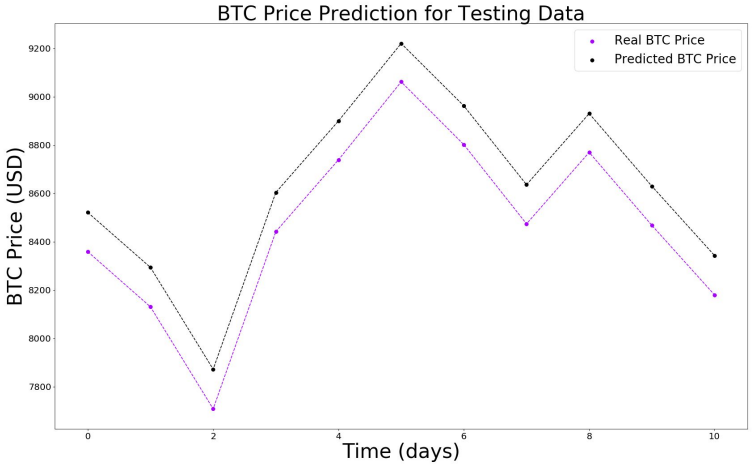




Testing

- Higher than Real price (pretty close though)





DEMO

Conclusion

- Very close to actual price
  - Although above the actual price
  - Percent change between days was far more accurate
- Maybe Bias?

Questions or Comments?