



DSC 680

CRYPTOCURRENCY ANALYSIS

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[Company Name]



Introduction

If you have paid any attention to the financial channels or talking heads in 2020 to 2021 you would know that due to the COVID-19 crisis investing has taken off. There are now thousands of financial “experts” all over social media like: TikTok, Facebook, and Twitter. These individuals have brought new excitement to the investing world. Bringing more retail investors into the market than ever before. These investors have become more interested in things like stocks, SPACS, real estate, and cryptocurrency. We have even seen the likes of hundreds of celebrities and athletes backing these investments as well, which in turn brings even more attention and excitement into the market. Everyone now believes that they can make money at a drop of a hat, that the market is very easily predictable. "Plummeting costs and improving online brokerage platforms have definitely helped increase the number of individual investors in the market. Robinhood is often singled out for posting strong account growth, but accounts are up at all the major online brokerages. With the ease of opening a new account and the ability to invest with only a smartphone, the barriers to getting started are lower than ever before. Many of us have also had more time on our hands to commit to researching and trading stocks due to pandemic-related restrictions" (Chen, 2020).

Specifically, cryptocurrency has taken off more than ever, and had grown in popular. We have seen new cryptocurrencies popping up what seems monthly. Many of these cryptos have the backing of celebrities, social media personalities, and even some businesspeople. Because of this there has been both excitement and distrust of these new digital coins. These digital currencies are trading anywhere from \$30k USD to \$.0001 USD and amazingly there is buyers on both sides of the spectrum. Due to these cryptocurrencies being heavily manipulated, the

average person now believes this is the best get rich quick scheme. "The global cryptocurrency market size is likely to reach USD 1758.0 million by 2027, exhibiting a CAGR of 11.2% during the forecast period. Cryptocurrency is a system of virtual currency exchange that is aimed to eliminate financial intermediaries. It offers low ownership costs, quicker and safer transactions internationally through a decentralized record storing platform called 'distributed ledger'" (Fortune Business Insights, 2021).

Cryptocurrency is seemingly becoming the newest way to make money, to many individuals this is a brand-new creation. However, that is not the case cryptocurrency has been around for a relatively long-time. The origins of cryptocurrency have been around since the 1980s. Many of these conceptual digital currencies failed due to lack of popularity and ease to use. However, over time they began to grow and develop due to what is known as blockchain technology. This technology combined with the creation of Bitcoin which utilized and helped better this technology. "Modern cryptocurrencies were first described in 1998 by author Wei Dai. The concept fully emerged in 2009 with the release of a white paper that explains the foundations of blockchain and bitcoin. The author of the white paper is "Satoshi Nakamoto," which is presumably a pseudonym for either a person or group of people" (Rosenberg, 2021).

Due to this popularity and growth of excitement we have decided to take a deeper look into crypto currency and the ability to price predict. The three cryptos that we will be looking at are Bitcoin(BTC), Ethereum(ETH), and Dogecoin(DOGE). These cryptos have taken off in popularity and have taken the financial and social media world by storm. The goal of this study will be to see if we can accurately predict the various changes of these cryptocurrencies. What has been well known about the crypto market is the extreme volatility that it faces. This is one

of the reason investors want an advantage in this market. Through a predictive model, we will see if it is possible to accurately predict the future prices for cryptocurrency. A goal in investing is to always have an advantage, and by utilizing a predictive model, it may be possible to get ahead of trends, and create better returns.

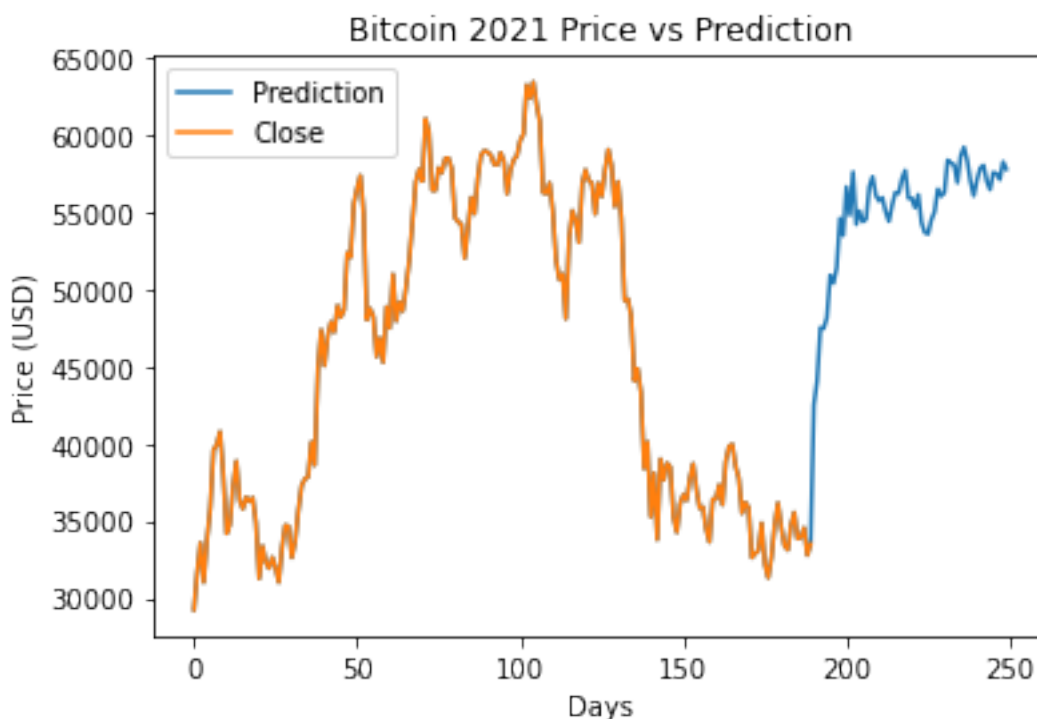
Cryptocurrency Prediction Ability

The goal of this study and report was to see if the various changing price points for different cryptocurrency coins could in fact be predicted. In the cryptocurrency market it is well known that volatility is a major challenge. Due to this going in I knew that I had to take this volatility in as a major consideration. Using various different resources available I was able to formulate a plan to develop a prediction model. In this study our overall goal is to predict the next 60 day of price changes for cryptocurrency.

Using Python, I utilized machine learning techniques to create prediction model. I then took this model and used them on the following three coins that we were working with to see if we could create accurate or realistic results. Each of these models were worked through in the same fashion, we first utilized the LSTM model to see what actual vs predictive prices differences would be. From there we then took the next step in the development of the machine learning predictive model, to build and train the model. Once doing this I pulled the new predicted prices and added them back into the data set that we were working with. This allowed us to see if the price predictions for the next 60 days would make logical sense based off the model we utilized. The results of this technique can be found detailed below for BTC, ETH, and DOGE.

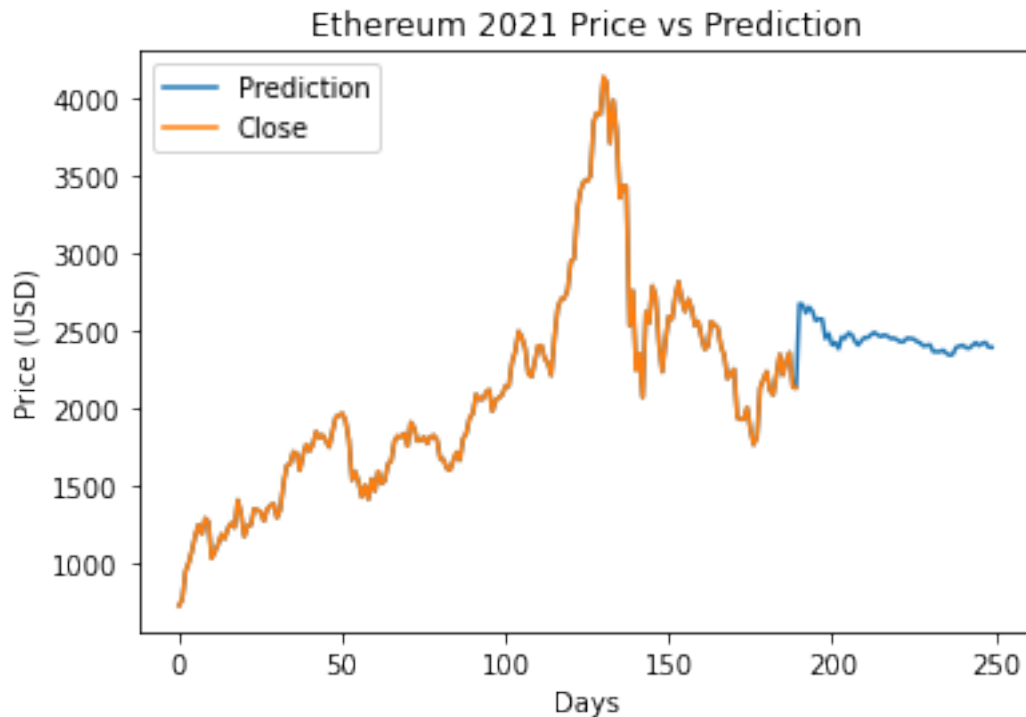
The first cryptocurrency we will look at is Bitcoin, which is by far the most well-known cryptocurrency available for trade. Bitcoin has been a cryptocurrency that has had a long history of volatility, and this has been no exception. For this predictive analysis we will look at the price fluctuations that have occurred in 2021 and utilize this information to predict the next 60 days of prices for 2021.

The results provided from this predictive model were not as accurate as I would have liked. At the confidence level I had for this model it predicted a price discrepancy that I did not deem as possible. The model predicted that the price of Bitcoin would almost double in less than a few days going forward. This can be shown in the graph provided below, as well as in the attached notebooks. Even though we have seen large scale fluctuations in cryptocurrencies and volatility of more than 30 to 50% gains or losses in a few days, I don't believe the model is accurate for the case of Bitcoin.



The next cryptocurrency we looked at was Ethereum to determine if this could be predicted. ETH is another strong cryptocurrency, and many within the industry consider it to be very respected like Bitcoin. Since its inception in 2015 Ethereum has not had as much volatility compared to other popular coins. Though it has had a few jumps and drops, for almost 3 years it was a very stable coin.

The results provided from the use of the predictive model were more comforting compared to the use of it on Bitcoin. As seen in the visualization provided below, we are able to see that ETH seems to be a much more realistic chart compared to what we saw with Bitcoin. It looks like a very possible chart based off the known volatility and changes that can occur in the cryptocurrency market. We can also see that the graph follows a historical trend with ETH, where it tends to hit a peak and then slowly average out and stay at a steady price. When comparing the two coins using this model, I believe it works out better for ETH. However, I did not get to the confidence level I would want to utilize this model in for ETH trading purposes, it was able to develop a possible prediction.

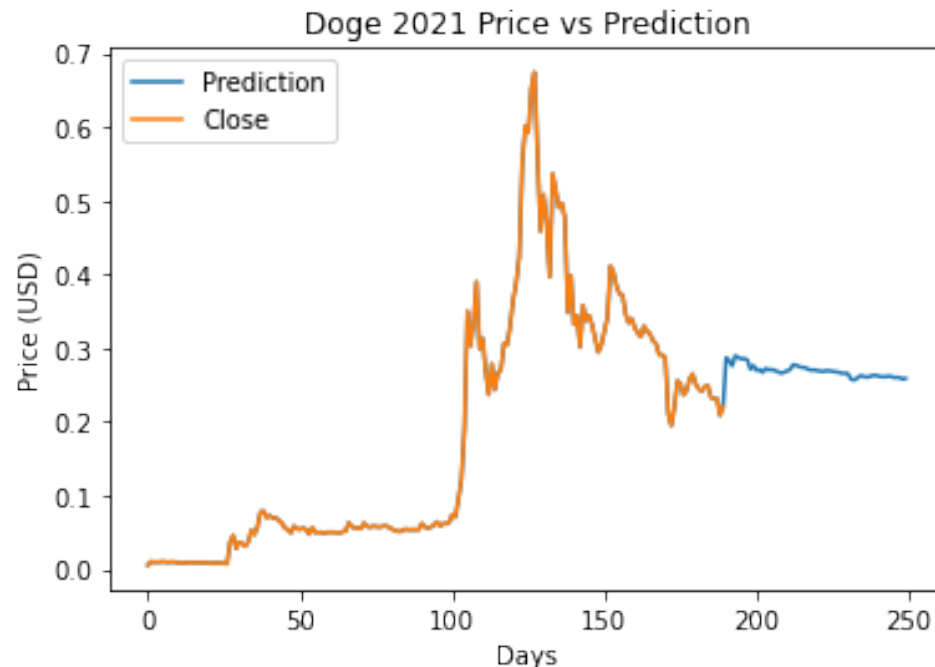


The next and final coin that we will be utilizing this model on is Dogecoin.

Dogecoin is probably the most controversial and talked about cryptocurrency out on the market right now. This was considered to by many in the financial industry as a “fake” cryptocurrency due to the fact that it was once trading at less than \$.002, and that it was based off of a dog. However, with all that being said it has grown exponentially in popularity over the past year and a half. This is because of backing and support from celebrities like: Elon Musk, Snoop Dog, Guy Fieri, and many more. This again contributed to the volatility of this coin taking it from less than a penny to a high of \$.73 at its peak.

When looking at the predictive model we utilized, we once again see similar success to the ETH model. Where we can see a price point over the next 60 days that looks feasible based off the typical volatility of cryptocurrency. In the graph below you

can see that the model predicts DOGE to jump back up close the \$.30 range where it will then level off, as we have seen this coin do historically.



Overall, looking at these models I can say that I do not have full confidence to utilize them as the determining factor for investment purposes in cryptocurrency. Due to the overwhelming volatility and uncertainty in this market I do not believe that it is possible to accurately predict cryptocurrency, rather this model should be looked at as a resource to be paired with other available tools for determining digital coin prices.

Future of Cryptocurrency

Looking at the models that we ran and the overabundance of cryptocurrencies available I do not believe that this is the best option for investment purposes. Based off the information that I read and the model to predict prices I would say ETH would be the best choice.

"Ethereum's ether token 'currently looks like the cryptocurrency with the highest real use potential as ethereum, the platform on which it is the native digital currency, is the most

popular development platform for smart contract applications,' Goldman Sachs researchers wrote in a note to clients this week, first reported by Business Insider" (Bambrough, 2021). This looks to be the best and most stable option in the market. However, based off the information that I have seen I believe that the potential of a cryptocurrency crash could be on the horizon. "The sudden price crash wiped more than \$1 trillion worth of value from the combined cryptocurrency market capitalization in recent months" (Bambrough, 2021). This market as whole will continue to grow and develop as the want for a digital currency grows. I think there will be steps in place in the future to see more regulation for this market, which may create more issues overall.

Results

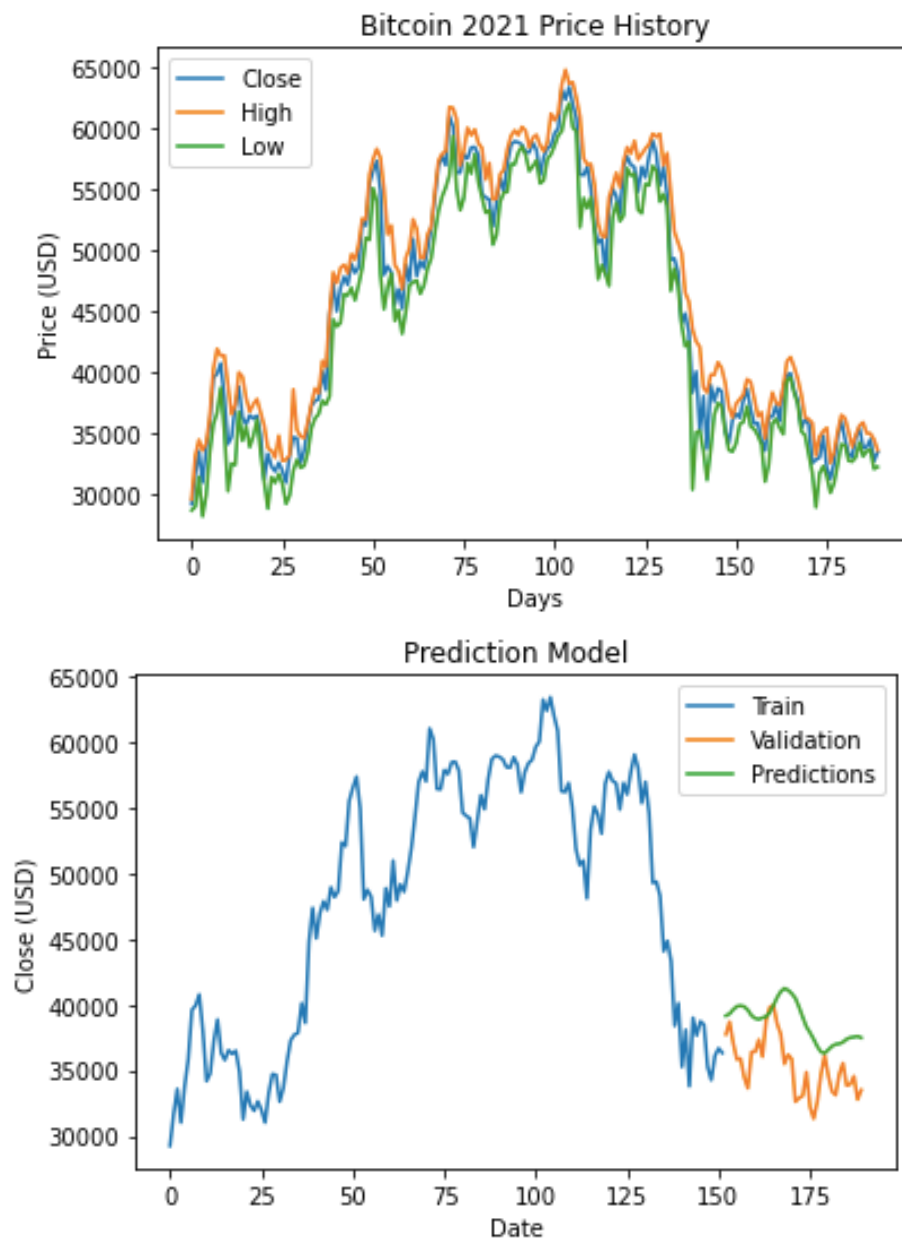
The final step in this study would be to look 60 days from now to see overall performance of these cryptocurrencies. In by doing this we will be able to better determine the accuracy of the model that was created. It will provide us with a better understanding and grasp if the volatile crypto market can be predicted.

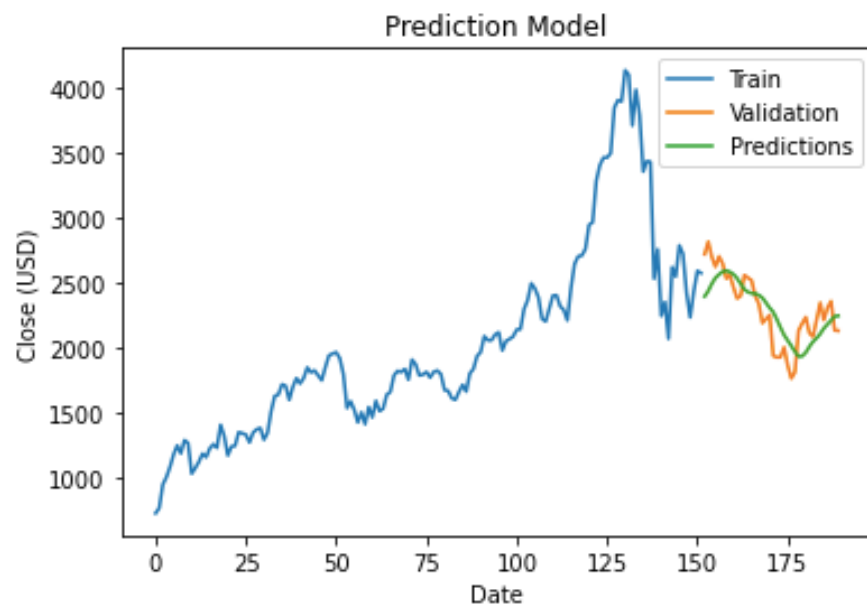
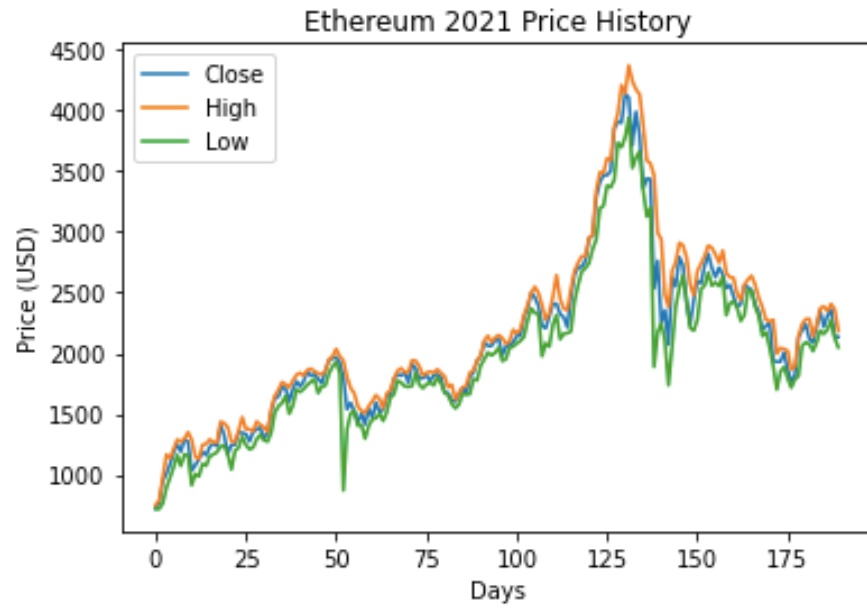
Even though we were able to pull some predictions through the models we created. I believe that a prediction model should not be utilized when making investment decisions for cryptocurrency. If you utilize this prediction model in conjunction with other tools like research, data, and analytics. We can help make better investment decisions. Investing requires all sorts of knowledge base and information to guide accurate investments.

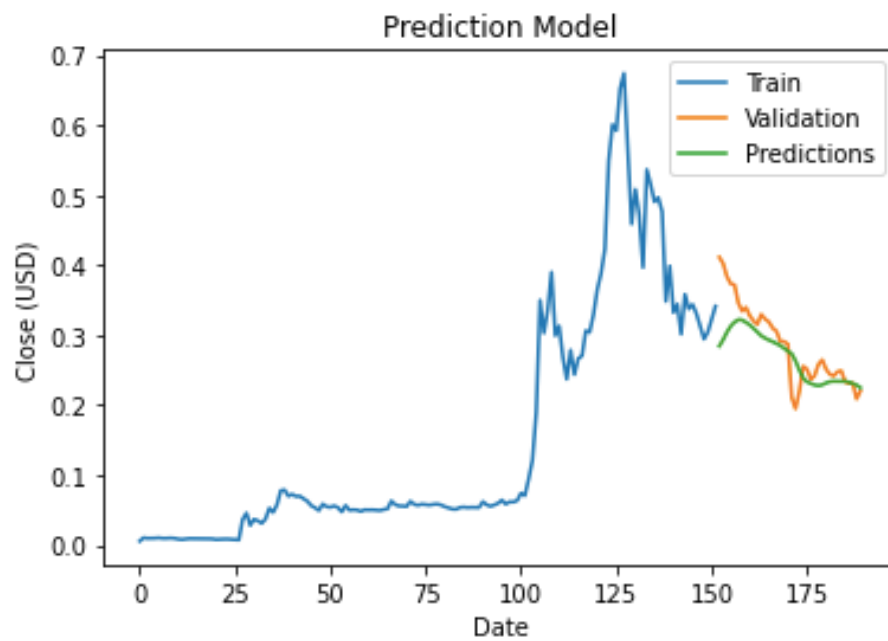
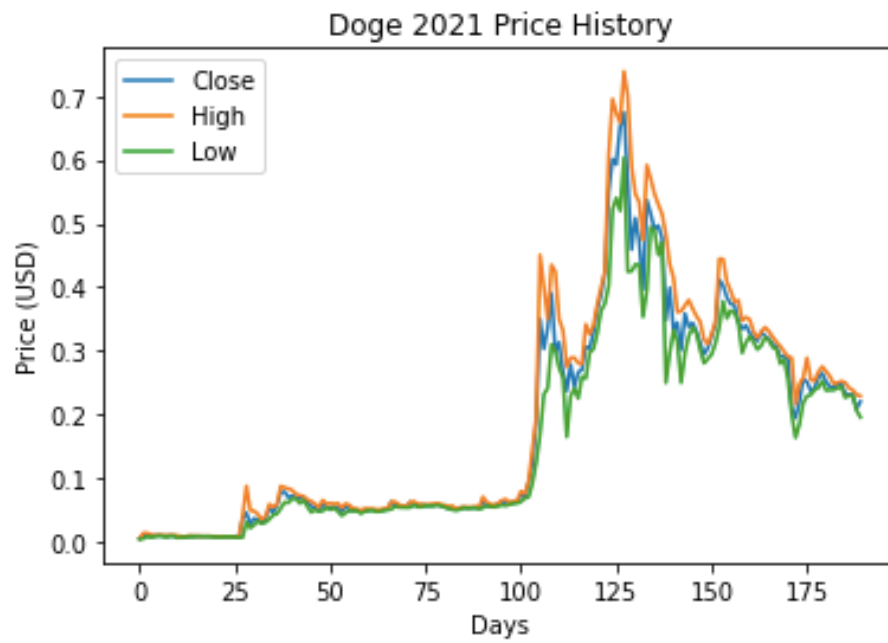
Overall, I believe this investment model created could be a tool that can help make money in the cryptocurrency market. But it should not be the only decision maker when deciding on future investments. Investments have risks, and due to this we need to utilize all potential resources prior to our decision-making processes.

Appendix

Please also reference attached code notebook and pdf for more details. Find below graphs, charts, and other important information regarding this study. These are just the basis of which the study was built upon. The attached notebook will provide more information.







ETH Average Weekly Close with Predictions



Dogecoin Average Weekly Close with Predictions



Bitcoin Average Weekly Close with Predictions



References

Bambrough, B. (2021, July 8). *Crypto Price Warning: Goldman Sachs Issues Surprise Future Of Bitcoin And Ethereum Prediction*. Forbes.

<https://www.forbes.com/sites/billybambrough/2021/07/08/crypto-price-warning-goldman-sachs-issues-surprise-future-of-bitcoin-and-ethereum-prediction/?sh=39dd300942ea>

Business Desk. (2021, July 8). *Bitcoin to Fall, Ether to Rise: What Analysts Say About Crypto Future*. News18. <https://www.news18.com/news/business/bitcoin-to-fall-ether-to-rise-what-analysts-say-about-crypto-future-3941006.html>

Chen, J. (2020a, November 27). *Blue-Chip Stock Definition*. Investopedia. <https://www.investopedia.com/terms/b/bluechipstock.asp>

Chen, J. (2020b, December 31). *2020 Was a Big Year for Individual Investors*. Investopedia. <https://www.investopedia.com/2020-was-a-big-year-for-individual-investors-5094063>

Davies. (n.d.). *A short history of cryptocurrencies*. Retrieved July 14, 2021, from <https://daviescoin.io/blog/a-short-history-of-cryptocurrencies.html#:~:text=In%201983%2C%20the%20American%20developed,was%20coined%20was%20in%201998>.

Dogecoin Price Prediction Using Python & Machine Learning. (2021, April 20). YouTube. <https://www.youtube.com/watch?v=FMKnavsKoQxE>

Ethereum (ETH) Price Prediction using Machine Learning (SVR) & Python. (2021, July 8). YouTube. <https://www.youtube.com/watch?v=HiDEAWdAif0>

Fortune Business Insights. (2021, May 12). *Cryptocurrency Market to Hit USD 1758.0 Million by 2027; Growing Acceptance of Cryptocurrency in Various Nations to Foster Market Growth: Says Fortune Business InsightsTM*. GlobeNewswire News Room. <https://www.globenewswire.com/news-release/2021/05/12/2228140/0/en/Cryptocurrency-Market-to-Hit-USD-1758-0-Million-by-2027-Growing-Acceptance-of-Cryptocurrency-in-Various-Nations-to-Foster-Market-Growth-Says-Fortune-Business-Insights.html>

Karen, T. (2021, March 30). *Predicting Bitcoin's Price With Recurrent Neural Networks*. Medium. <https://levelup.gitconnected.com/predicting-bitcoins-price-with-recurrent-neural-networks-a27b4d2d839>

Kurt, G. (2020, March 18). *Predicting Bitcoin Prices With LSTM - Analytics Vidhya*. Medium. <https://medium.com/analytics-vidhya/predicting-bitcoin-prices-with-lstm-19e578d389c4>

Lucia, A. (2021, May 25). *Bitcoin Price Prediction Using Recurrent Neural Networks and LSTM*. Analytics Vidhya. <https://www.analyticsvidhya.com/blog/2021/05/bitcoin-price-prediction-using-recurrent-neural-networks-and-lstm/>

Nasdaq. (n.d.). *Daily Stock Market Overview, Data Updates, Reports & News*. <https://www.nasdaq.com/>

Predict The Future Price of Ethereum Using Python & Machine Learning. (2021, May 15). YouTube. <https://www.youtube.com/watch?v=OcpAkACOWW0>

Rearick, B. (2021, April 14). *Mark Cuban, Guy Fieri, Elon Musk and 6 Other Celebrities Helping Dogecoin Prices Rocket*. InvestorPlace. <https://investorplace.com/2021/04/mark-cuban-guy-fieri-elon-musk-and-6-other-celebrities-helping-dogecoin-prices-rocket/>

Rosenberg, E. (2021, March 30). *History of Cryptocurrency*. The Balance. <https://www.thebalance.com/history-of-cryptocurrency-5119511>

Yıldırım, S. (2020, April 15). *Cryptocurrency Prediction with LSTM - Towards Data Science*. Medium. <https://towardsdatascience.com/cryptocurrency-prediction-with-lstm-4cc369c43d1b>

Ten Questions:

- 1. What is the best crypto to invest in?**
- 2. Where do you see crypto going?**
- 3. Can we better improve the predictive model?**
- 4. What stands in the way of accurate predicting?**
- 5. How does this differ from stocks?**
- 6. Do you consider crypto to be a safe investment?**
- 7. What is the future of the crypto investments?**
- 8. Historically, how has crypto performed?**
- 9. Why is there so much volatility?**
- 10. Does the prices reflect actual value?**