Google Developer Student Clubs

IIIT Allahabad

GDSC

GDSC AI/ML Wing Recruitment - 2024

***Problem Statement*:** *Stock Price Prediction and Algorithmic Trading Model Development for BTC/USDT Crypto Market*

DOMAIN DESCRIPTION: Algorithmic trading in the cryptocurrency market involves deploying machine learning (ML) models and computer programs, integrating financial market expertise, data analysis, statistical modeling, and programming skills. The objective is to unlock the potential of ML-based algorithmic trading, aiming to consistently generate robust returns, outperform benchmarks, and safeguard capital in the dynamic cryptocurrency market.

Task1: Develop a predictive model for future stock prices using historical data from 2017 to 2021. Split the dataset so that more than 50% (2021) is used for testing. Train your model on the smaller portion, then apply it to the larger test set. The model's performance will be evaluated using the mean squared error (MSE) of its price predictions on this test data.
Task2: Algorithmic trading in the cryptocurrency market involves deploying machine learning (ML) models and computer programs, integrating financial market expertise, data analysis, statistical modeling, and programming skills. The objective is to unlock the potential of ML-based algorithmic trading, aiming to consistently generate robust returns on **(Daily or Hourly dataset),** outperform benchmarks, and safeguard capital in the dynamic cryptocurrency market.

APPROACHES TO GO AHEAD WITH:

Some other common approaches in Algorithmic Trading that can be employed for this competition:

1. Time series models like ARIMA, STL, LSTM networks etc.
2. Machine learning models like regression models, decision trees, random forests, support vector machines etc.
3. Deep learning models, such as recurrent neural networks and convolutional neural networks etc.
4. Reinforcement learning techniques, such as Q-learning or deep reinforcement learning etc.
5. Technical analysis using various indicators or combinations of indicators to generate noise free signals etc.
6. Various miscellaneous approaches like bagging and boosting for accurate prediction, monte carlo methods or stochastic models like Markov chains etc.

REQUESTED METRICS FOR MODEL (Task 1):

1. Less MSE

REQUESTED METRICS FOR MODEL (Task 2):

1. Gross Profit
2. Net Profit
3. Max Drawdowns

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JUDGING CRITERIA

The judging criteria will be based on the following aspects, with a focus on the BTC/USDT market:

1. Performance (30 points): MSE score
2. Model Logic (20 points): Apply robust Algorithms to generate good returns.
3. Code Quality and Data Visualization (10 points):
4. Interview (40):
5. Interview will only be scheduled for those candidates who have made their submission on the email which we have shared. Submission should be made by their College ID.

For Assistance you may use these Links:

- https://www.simplilearn.com/tutorials/machine-learning-tutorial/stock-price-prediction-using-machine-learning
- https://www.youtube.com/@CodeTradingCafe

Submission:

Candidates have to submit their notebook/colab on the email shared by us.

Rules:

1. Ensure all code submissions are your original work. Do not copy code from videos or other sources. Your work will undergo plagiarism detection, and you will be subject to a comprehensive evaluation during the interview process.
2. All submissions must be individual work. Collaborative or group efforts are not permitted.