



**FACULTY OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE**

CS 401

2021 Fall

SENIOR PROJECT PROPOSAL

Stock Price and Direction Prediction via Deep Attention-based Convolutional Neural Networks

By

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Description:

Since stock prices are time series data, most academic studies have focused on time series forecasting in machine learning models. Unfortunately, these models do not perform as well as they need to. In this project, we will be designing a novel model that predicts Stock Price and Direction with the help of Deep Attention-based Convolutional Neural Networks based on image processing properties using 2-D images after converting the 1-D time-series signal images to 2-D images with the help of the technical indicator. We will be testing the model we have built and compare its performance to state-of-the-art models at the end of this project. If the results are as expected, we aim to put the model to the test on a major crypto exchange platform such as Binance. We'll start by gathering price and technical indicator data for a variety of cryptocurrencies. Then, utilizing this information, we'll construct a two-dimensional image with the stock price as one dimension and technical indicators as the other. We will obtain our model by training deep attention-based convolutional neural networks with these images. The implementation part of the project will be done in Python Programming Language.

Our Schedule:

1. The first step is to learn how to convert a 1-D image into a 2-D image, a literature review will be conducted on this topic.
2. The second step, 2-D image will be processed with the help of Convolutional Neural Networks.
3. The third step, we will train by modeling the processed image we have obtained.
4. The fourth step, we will test the model we trained.

References:

1. https://www.researchgate.net/publication/324802031_Algorithmic_Financial_Trading_with_Deep_Convolutional_Neural_Networks_Time_Series_to_Image_Conversion_Approach