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Introduction to Computer Science and Programming

Group 3

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Designing CRYPTO Analyzer by Python

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1) **Introduction**

First of all, it should be noted that no analysis is 100% reliable and there is always some risk. Predict Web application is useful for Crypto traders that after his/her Technical & Fundamental Analysis look at this Predict app. If your analysis and the prediction of the application was in the same direction, then you can trade with more confidence.

2) **Background**:

It is rare to find any article or paper on Crypto Currency forecasting.
After research we found there are a few software for financial market prediction that we don't know they use which algorithms in prediction. Whereas, we will use simple regression and Support vector machines (SVM) forecasts, that focus on the Crypto market.

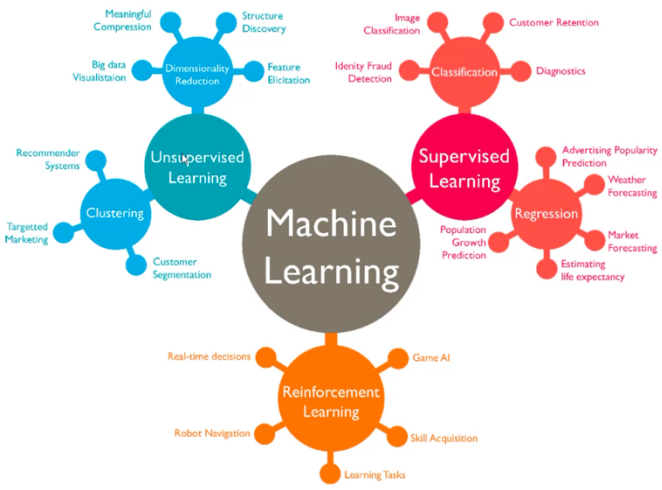
"Using support vector machine in Forex predicting" Published in: 2018 IEEE International Conference on Innovative Research and Development (ICIRD)[1]

Some learning websites used of reading Data Downloaded from Yahoo Finance Website, in the format in a CSV file and Excel,[2] while we fetch data automatically and online.

3) **Project**:

Supervised learning, also known as supervised machine learning, is a subcategory of machine learning and artificial intelligence. It is defined by its use of labeled datasets to train algorithms that to classify data or predict outcomes accurately.

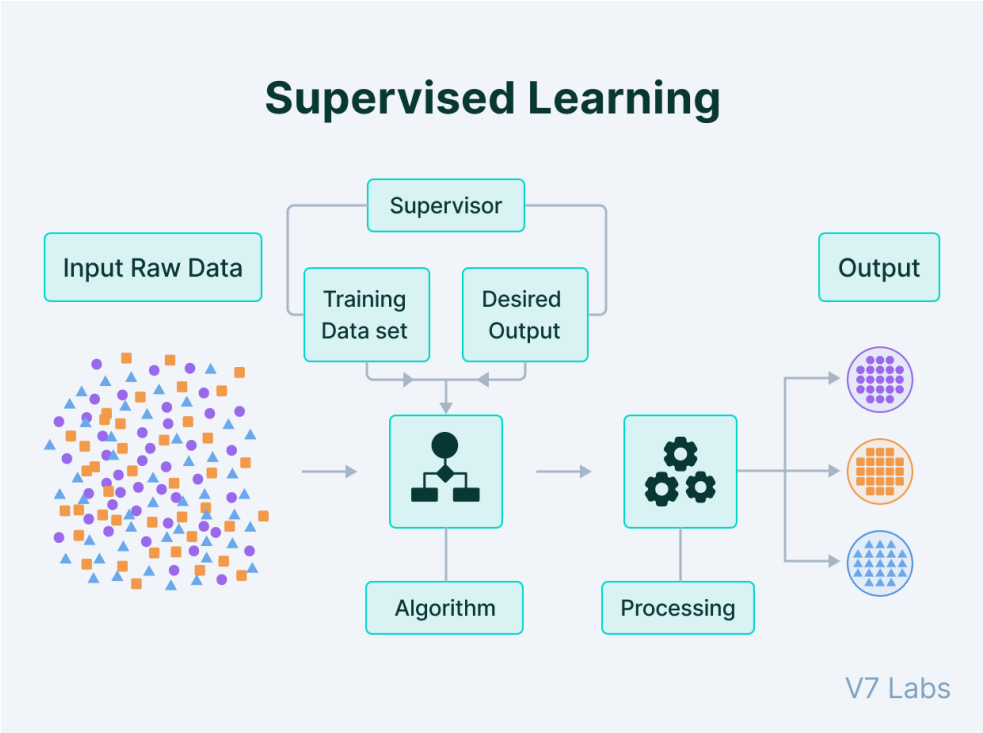
There are two types of Supervised Learning techniques: Regression and Classification.



Support Vector Machine or SVM is one of the most popular Supervised Learning algorithms, which is used for Classification as well as Regression problems.

The results show that, besides the individual schemes, the SVM can be used to predict the data after training the learning samples, and it is necessary to use the particle swarm optimization algorithm to optimize the parameters of the support vector machine. [3]

[1] https://ieeexplore.ieee.org/abstract/document/8376303
[2] https://www.geeksforgeeks.org/predicting-stock-price-direction-using-support-vector-machines/
[3] https://www.v7labs.com/blog/supervised-vs-unsupervised-learning



	Logistic Regression	Support Vector Machine
1	It is an algorithm used for solving classification problems.	It is a model used for both classification and regression.
2	It is not used to find the best margin, instead, it can have different decision boundaries with different weights that are near the optimal point.	it tries to find the “best” margin (distance between the line and the support vectors) that separates the classes and thus reduces the risk of error on the data.
3	It works with already identified identified independent variable.	It works well with unstructured and semi-structured data like text and images.
4	It is based on statistical approach.	It is based on geometrical properties of the data.
5	It is vulnerable to overfitting.	The risk of overfitting is less in SVM.
6	Problems to apply logistic regression algorithm. 1. Cancer Detection: It can be used to detect if a patient has cancer(1) or not(0) 2. Test Score: Predict if the student is passed(1) or not(0). 3. Marketing: Predict if a customer will purchase a product(1) or not(0).	Problems that can be solved using SVM 1. Image Classification 2. Recognizing handwriting 3. Cancer Detection

LR Vs SVM[4]

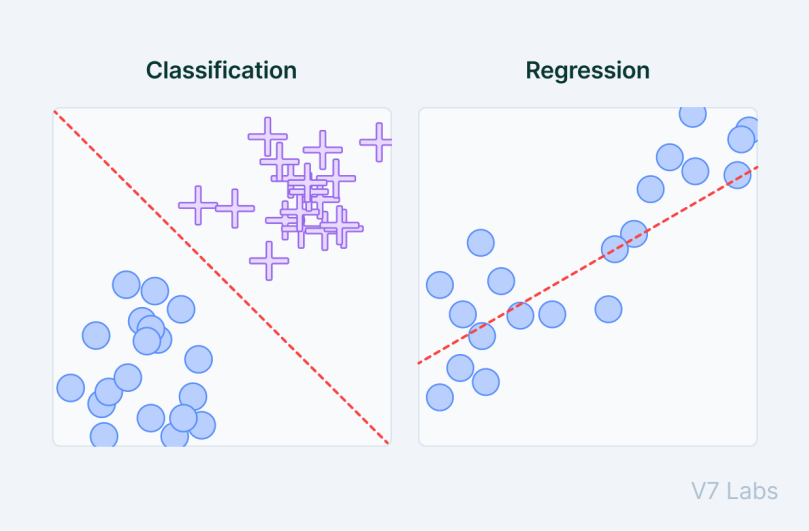
[4] https://www.geeksforgeeks.org/differentiate-between-support-vector-machine-and-logistic-regression/

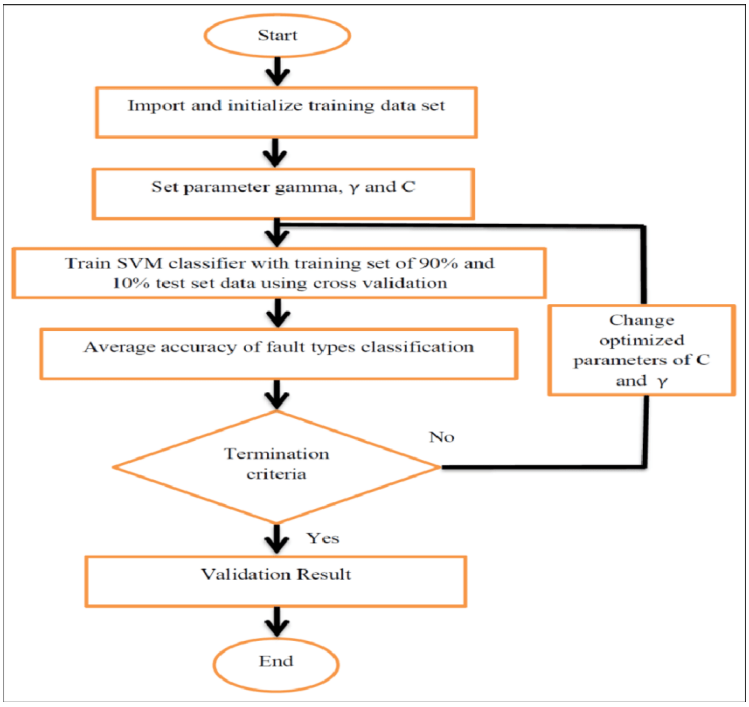
Classification

Classification refers to taking an input value and mapping it to a discrete value. In classification problems, our output typically consists of classes or categories. This could be things like trying to predict what objects are present in an image (a cat/ a dog) or whether it is going to rain today or not.

Regression

Regression is related to continuous data (value functions). In Regression, the predicted output values are real numbers. It deals with problems such as predicting the price of a house or the trend in the stock price at a given time, etc.





Flowchart of SVM Method

4) **Conclusion**:

In this project we learned that:

Streamlit's open-source app framework is a breeze to get started with. It's just a matter of :
Streamlit is an open-source Python library that makes it easy to create and share beautiful, custom web apps for machine learning and data science. In just a few minutes you can build and deploy powerful data apps.

pip install streamlit
streamlit hello

What is a Streamlit app?
Streamlit is an open source app framework in Python language. It helps us create web apps for data science and machine learning in a short time. It is compatible with major Python libraries such as scikit-learn, Keras, PyTorch, SymPy(latex), NumPy, pandas, Matplotlib etc.

Streamlit is an alternative to Flask. The most significant benefit of using Streamlit is the ability to include HTML code inside the framework Python file.

Is Flask or Streamlit better? Use Streamlit if you want to build a data dashboard with common components and don't want to reinvent the wheel. Use Flask if you want to build a highly customized solution from the ground up and you have the engineering capacity.

Is Streamlit better than Django? Amount of data visualization required in the application, although with Django and React, there are possibilities of visualization, you still have more hassle and need more time to develop. In case, your application requires rendering visualization of your data, using Streamlit would be a more recommended option.

Our Opinion:
It is better to focus on your favorite symbol to decrease risk of trade. If you know the SVM algorithm, you have to focus on any currency, by selecting Manually in the SVM section, you can change C and Gamma Manually. Just need to select the Manually checkbox in the app.

(In this app, different test sizes are used to compare results of accuracy, where test size of 0.2 is defined as 80% training data and 20% of testing data.)

Guide of use this app:

- After analysing the market, you can look at this program. This program predicts with 2 methods. For more efficiency it is better that the accuracy of both methods is the same. After some trial-and-error, you can find the effective C and Gamma for each symbol. Just focus on your favourite symbol.

- In our trendline we use the Days timeframe. (Daily chart)

Future:

- Maybe in the future somebody wants to extend our programs by use of Deep Learning algorithms. The base of the predict app is developed and just changes the algorithm section.
- To get more accuracy in live market, Deep Learning proved to be very effective. We can automate our trades using Reinforcement Learning and also using Stacked LSTM which gives exponential rise for our strategy returns.

References:

- https://www.datacamp.com/tutorial/svm-classification-scikit-learn-python

- Fault classification in smart distribution network using support vector machine - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Flowchart-of-SVM-Fault-Classification-in-Python_fig1_341795616 [accessed 18 Jan, 2023]
- https://toplearn.com/