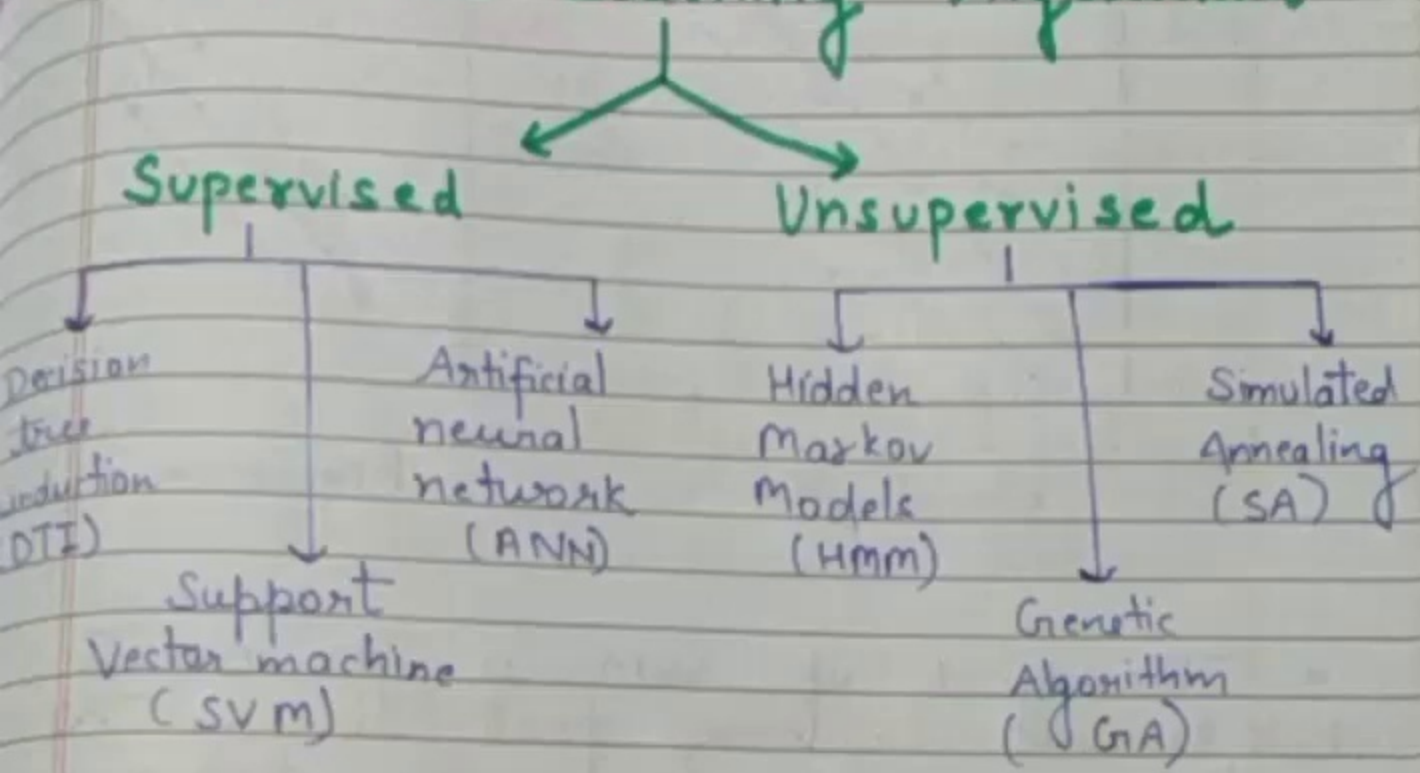
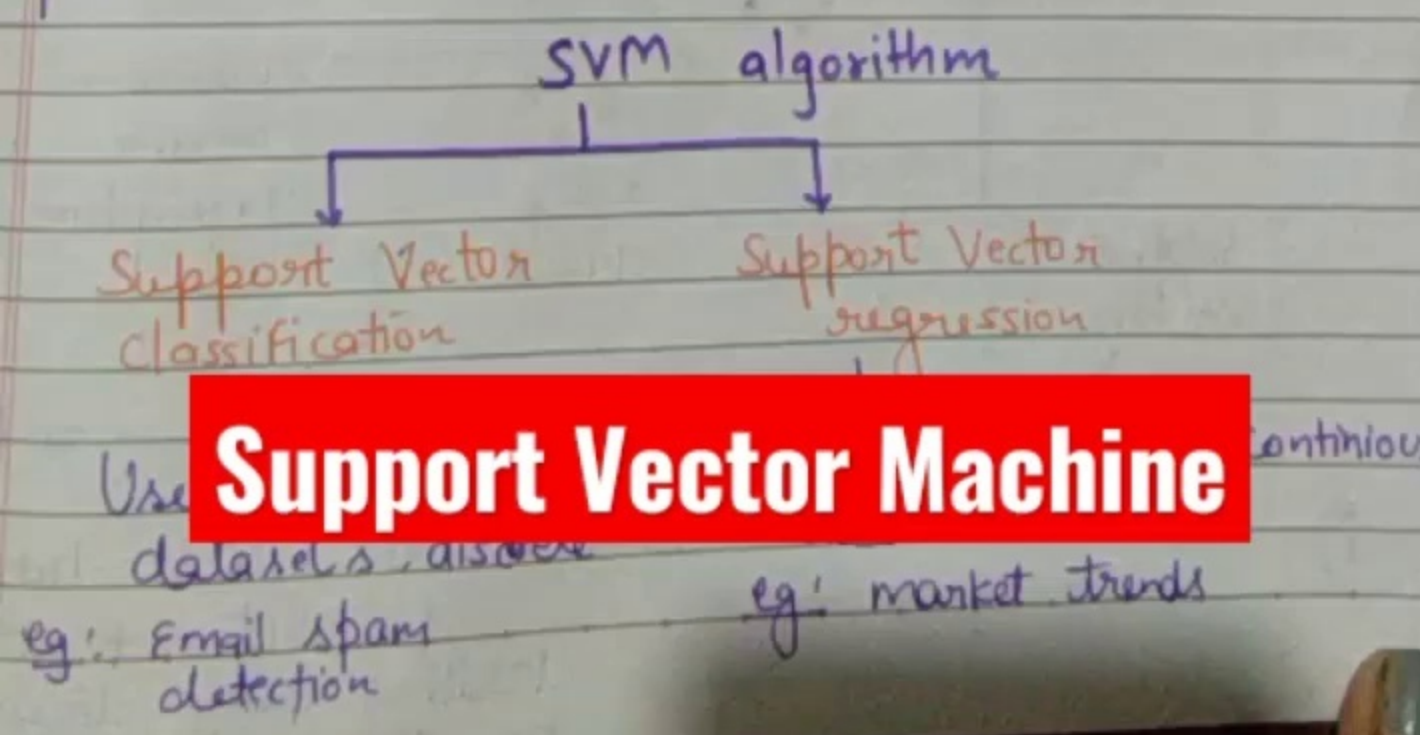
# Machine Learning Algorithm




## Support Vector Machine

Support Vector Machine is a supervised learning method, which is used to solve classification as well as regression problem.




**Support Vector Machine**

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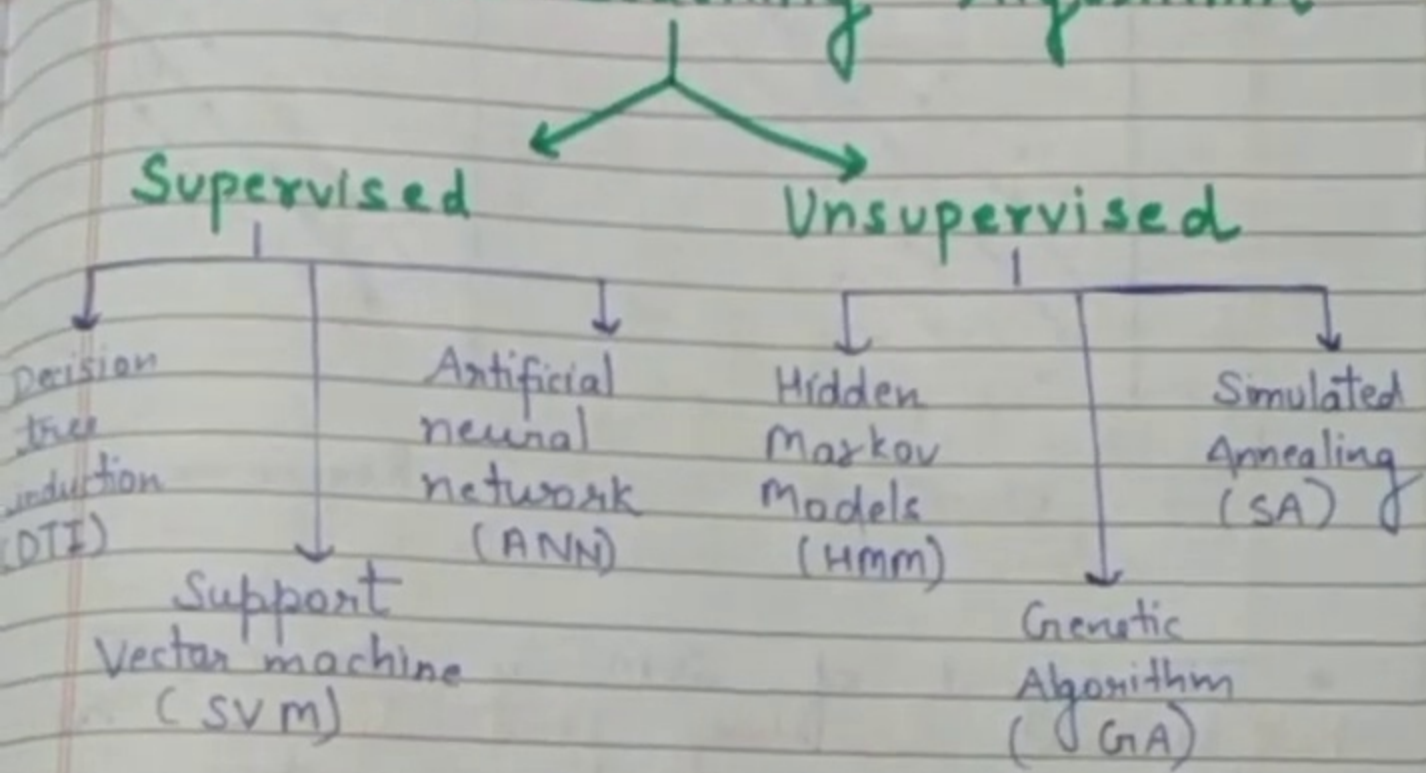


## 1. Support Vector Machine

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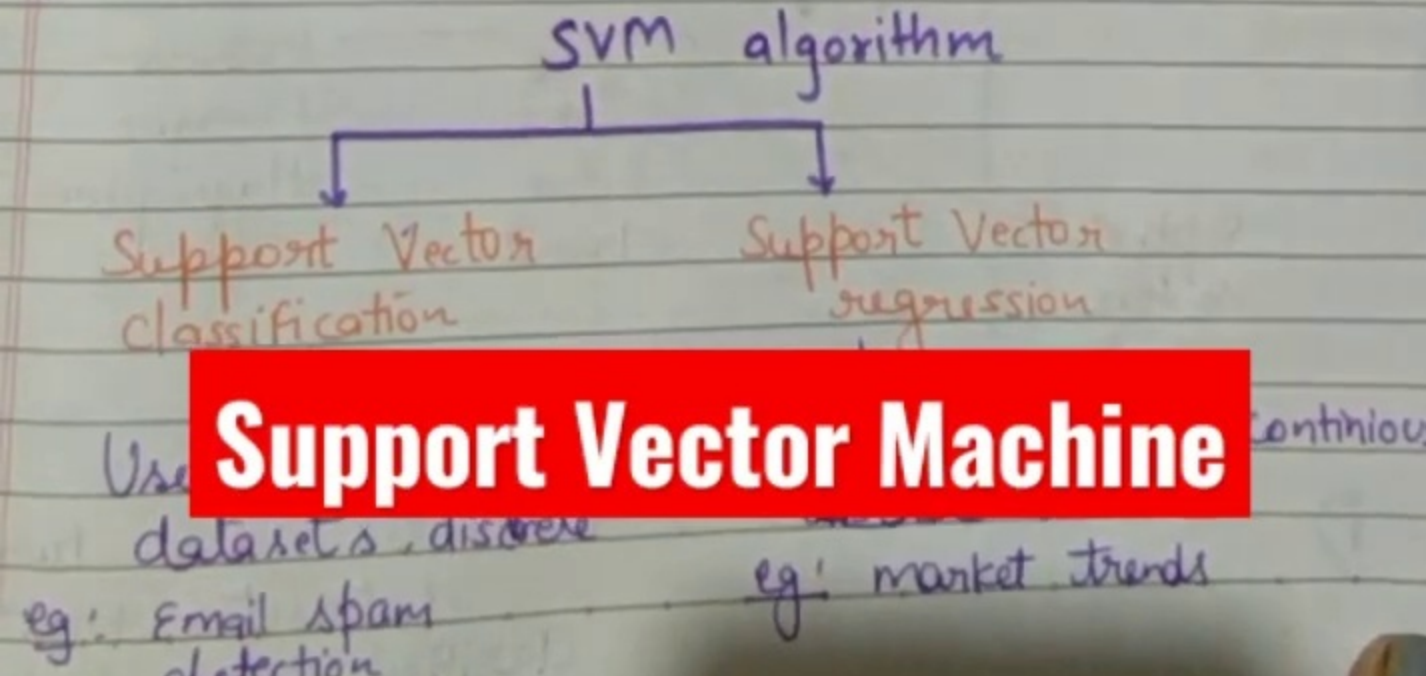


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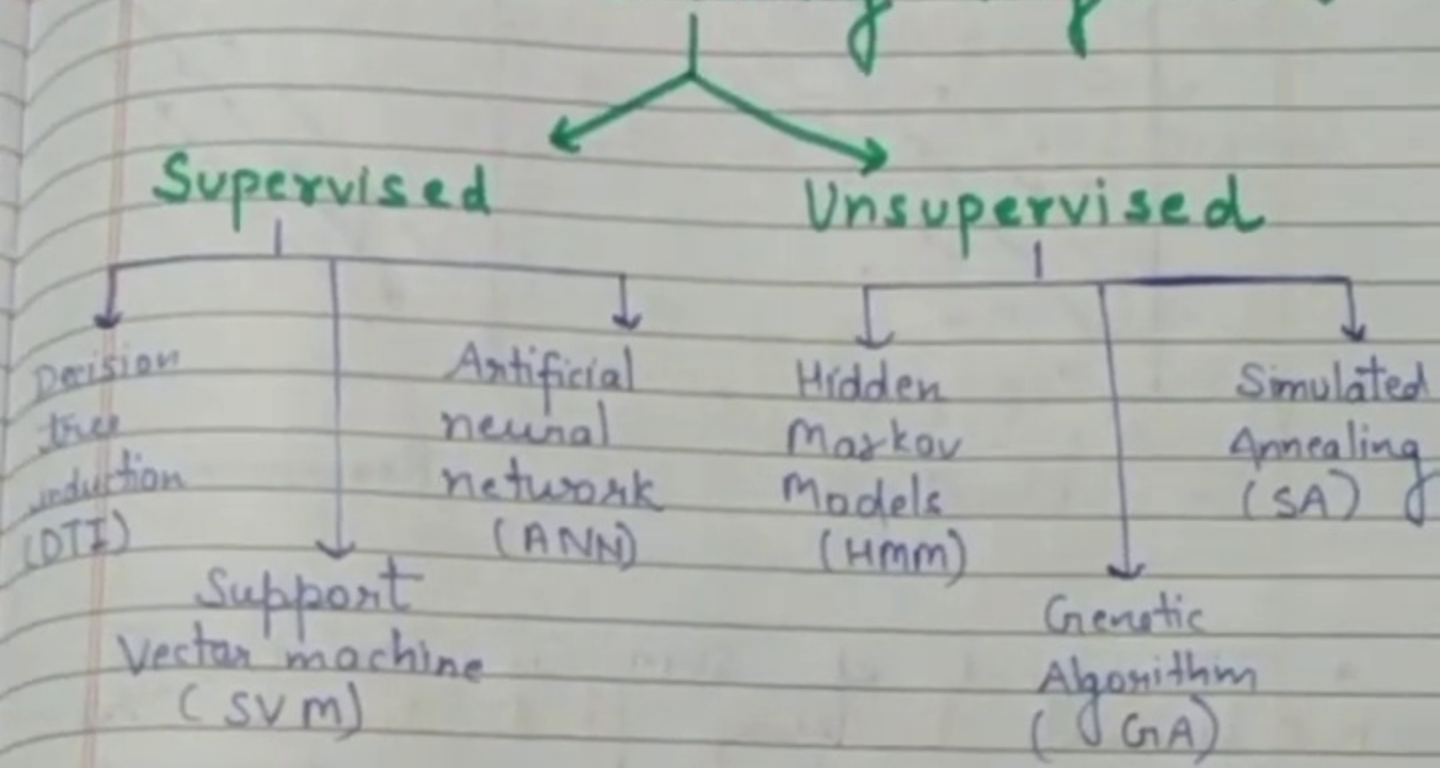


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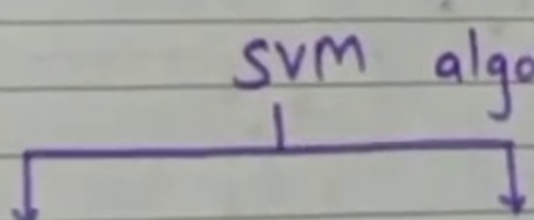
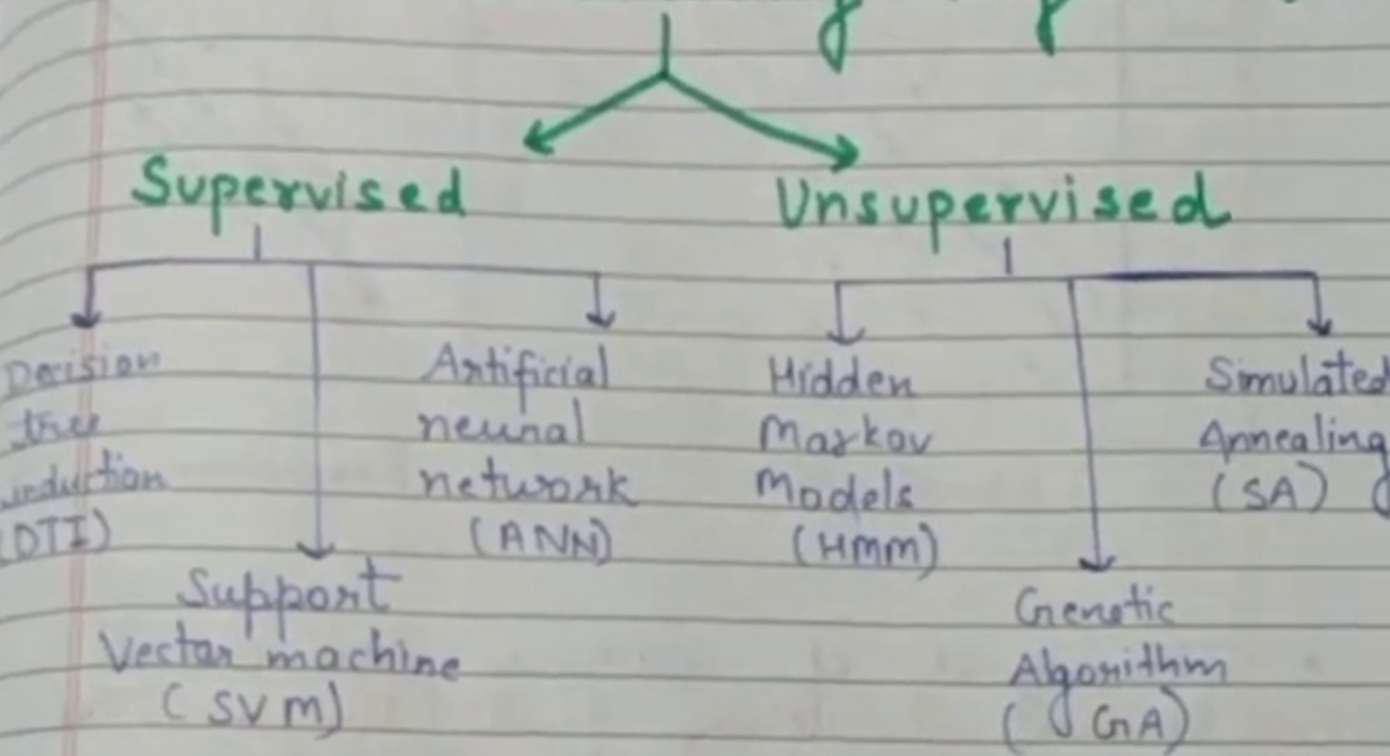



Support Vector Machine

eg: Email Spam detection

eg: market trends

# Machine Learning Algorithm

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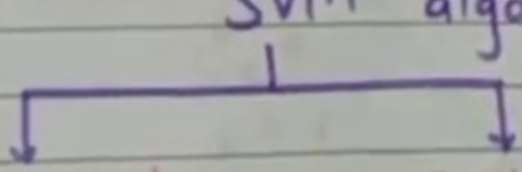
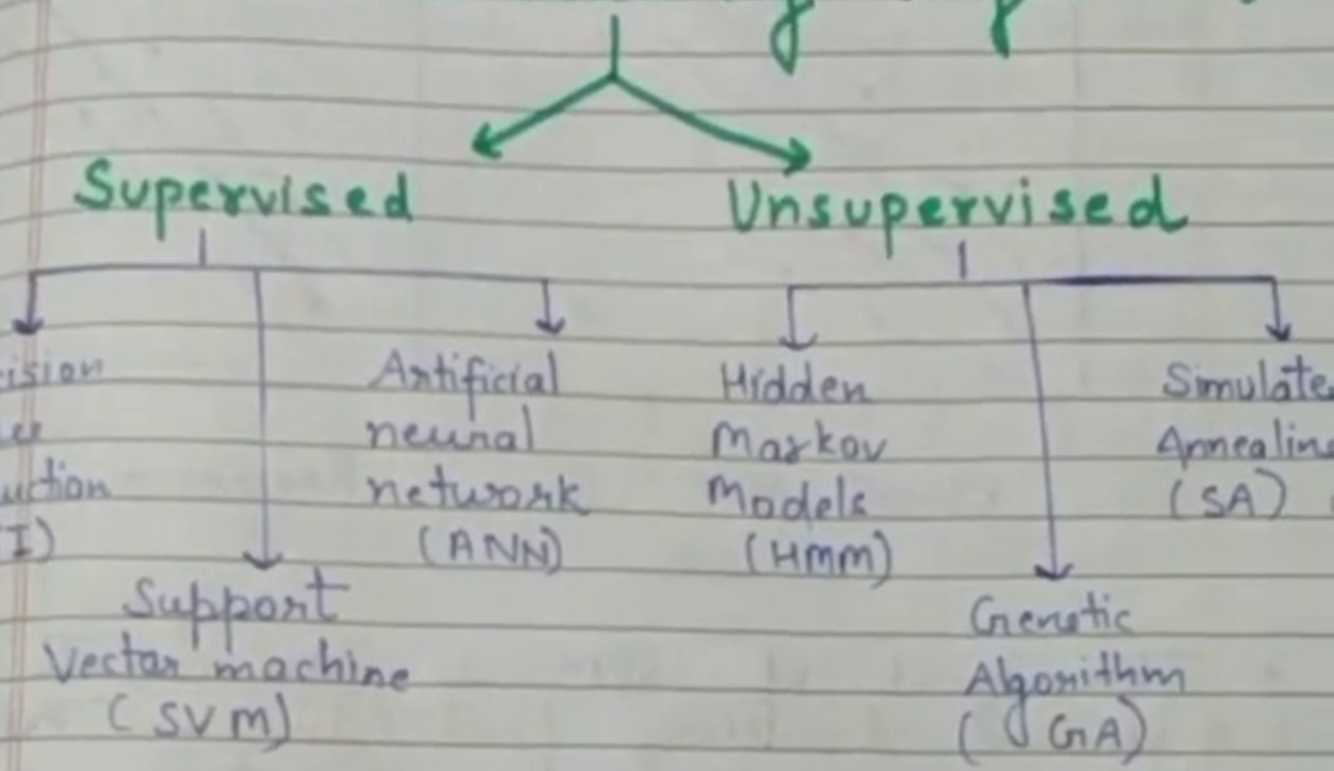
- 


Support Vector classification
↓
Used to classify datasets, discrete
eg: Email spam detection

Support Vector regression
↓
Used to predict continio values
eg: market trends

# Machine Learning Algorithm

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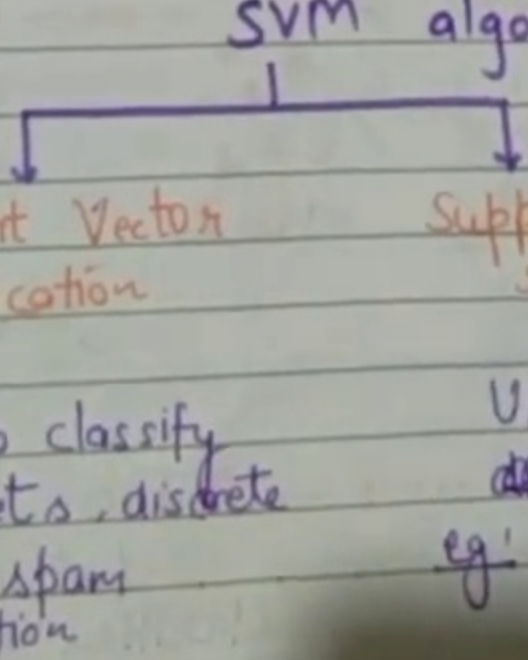
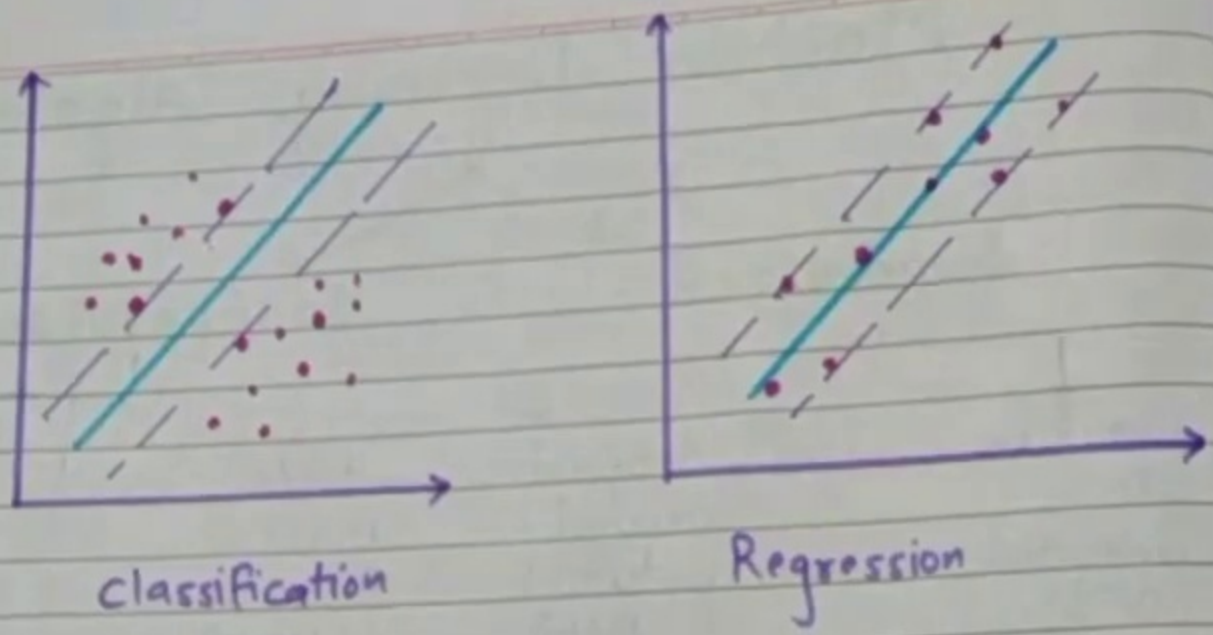
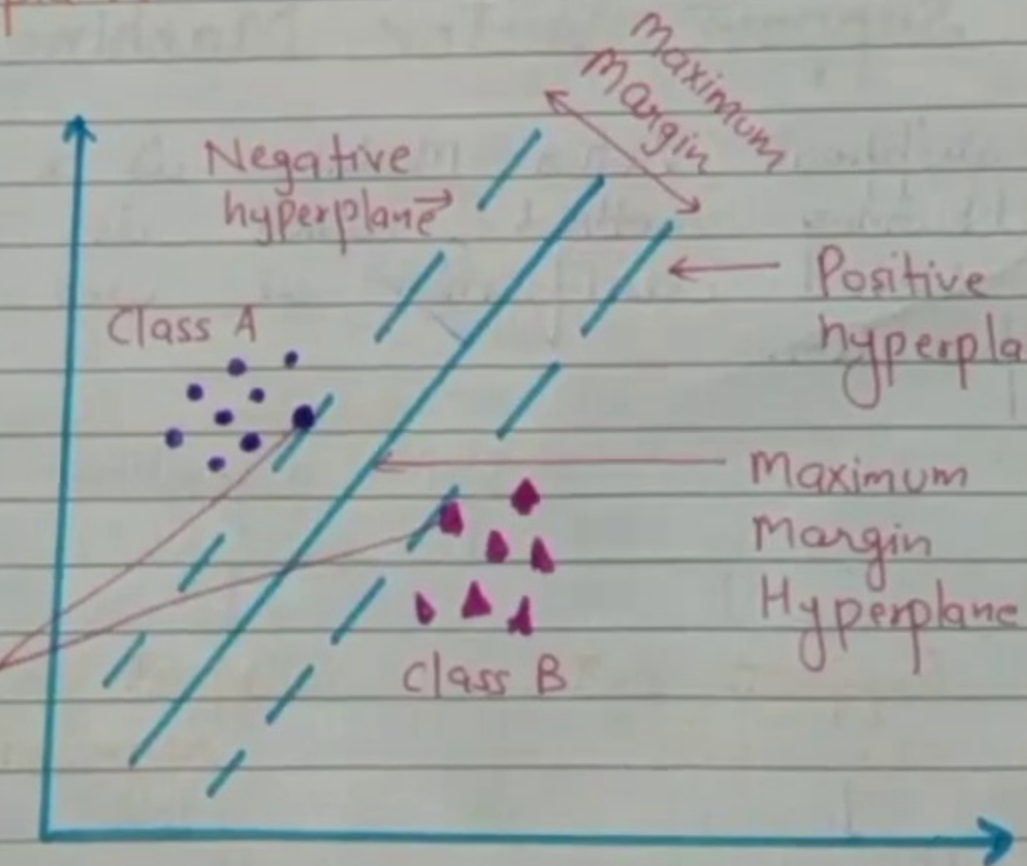
- 



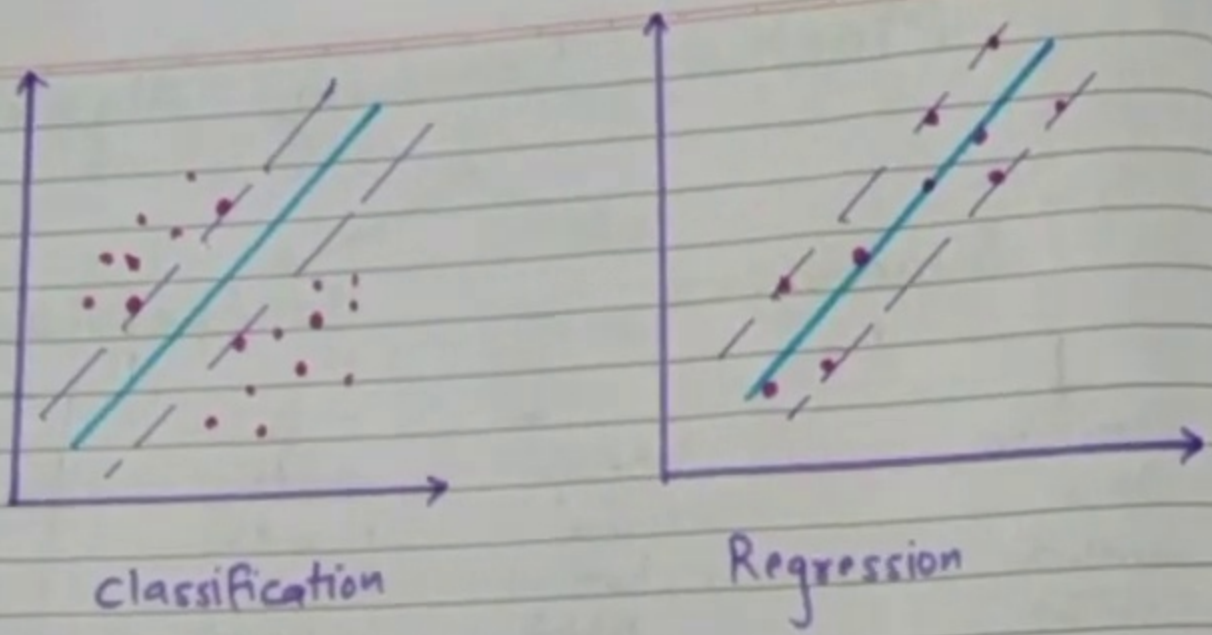
classification

Regression

- The goal of SVM is to create best decision boundary / best line. This best decision boundary is known as hyperplane.




Class A and Class B → These are two datasets that are classified using decision boundary.



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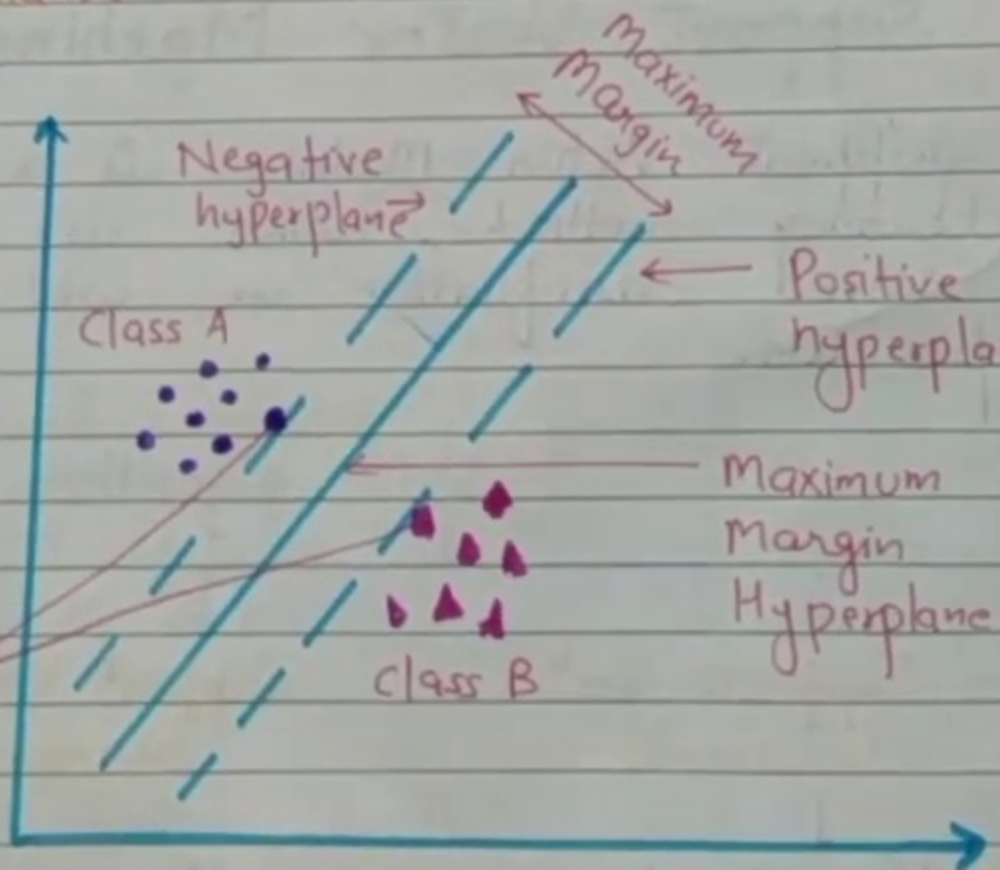


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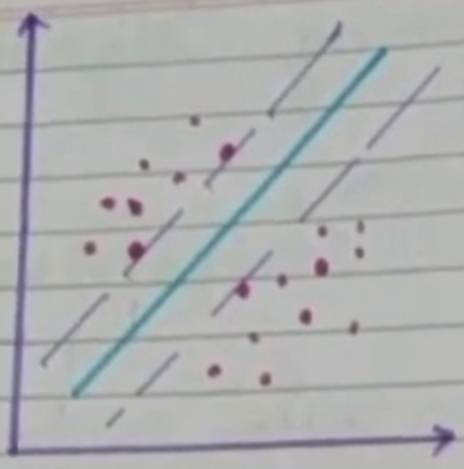
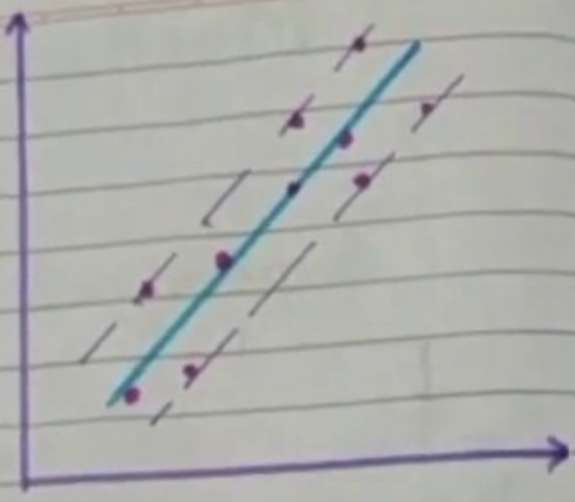


classification



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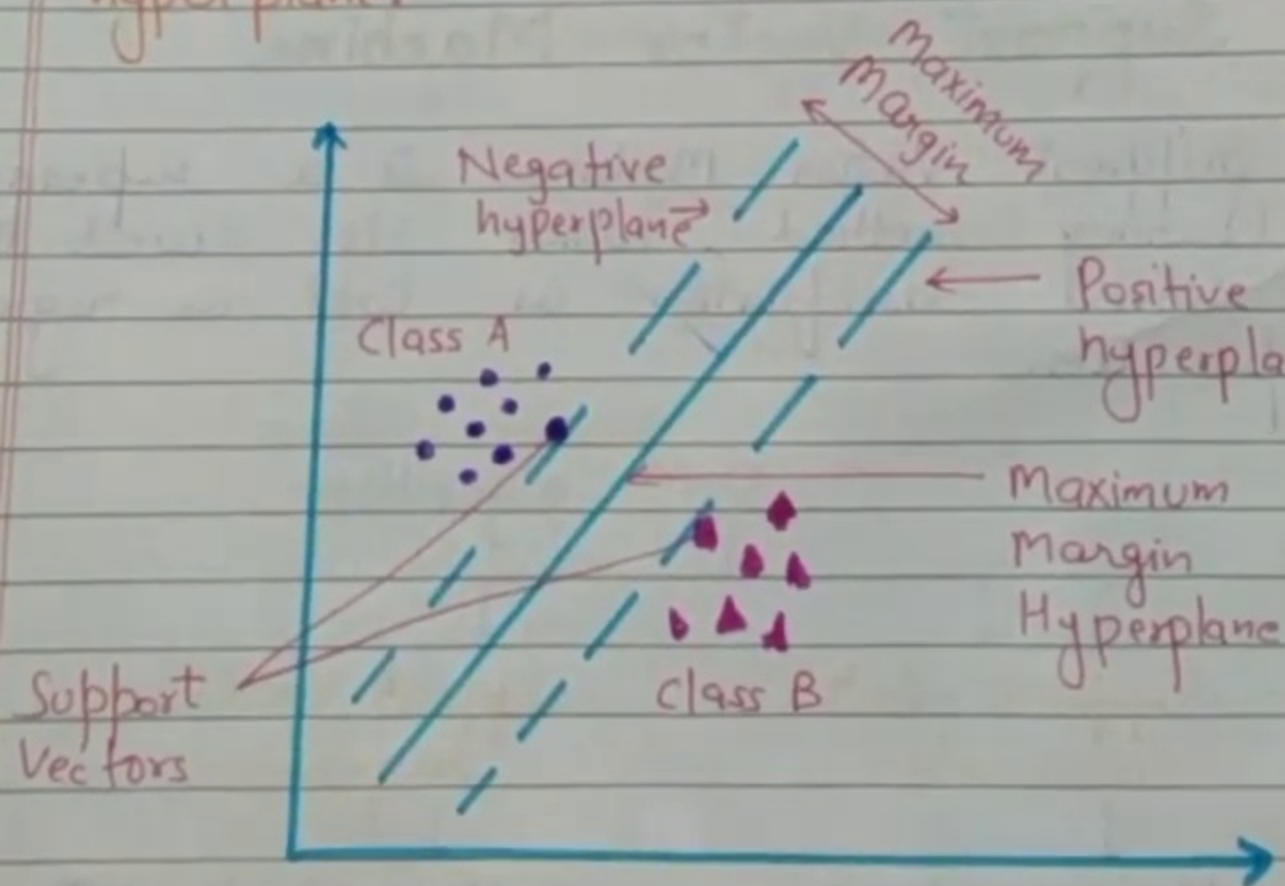


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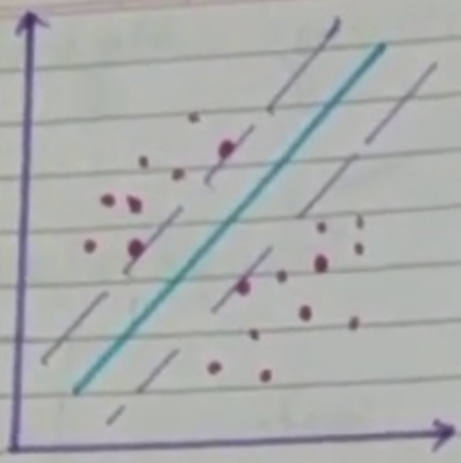

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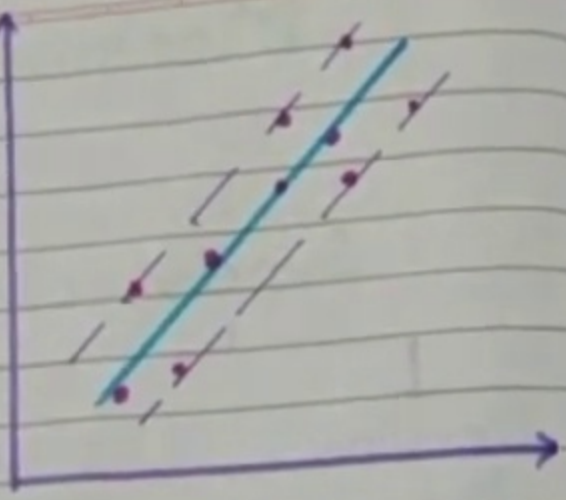

Regression

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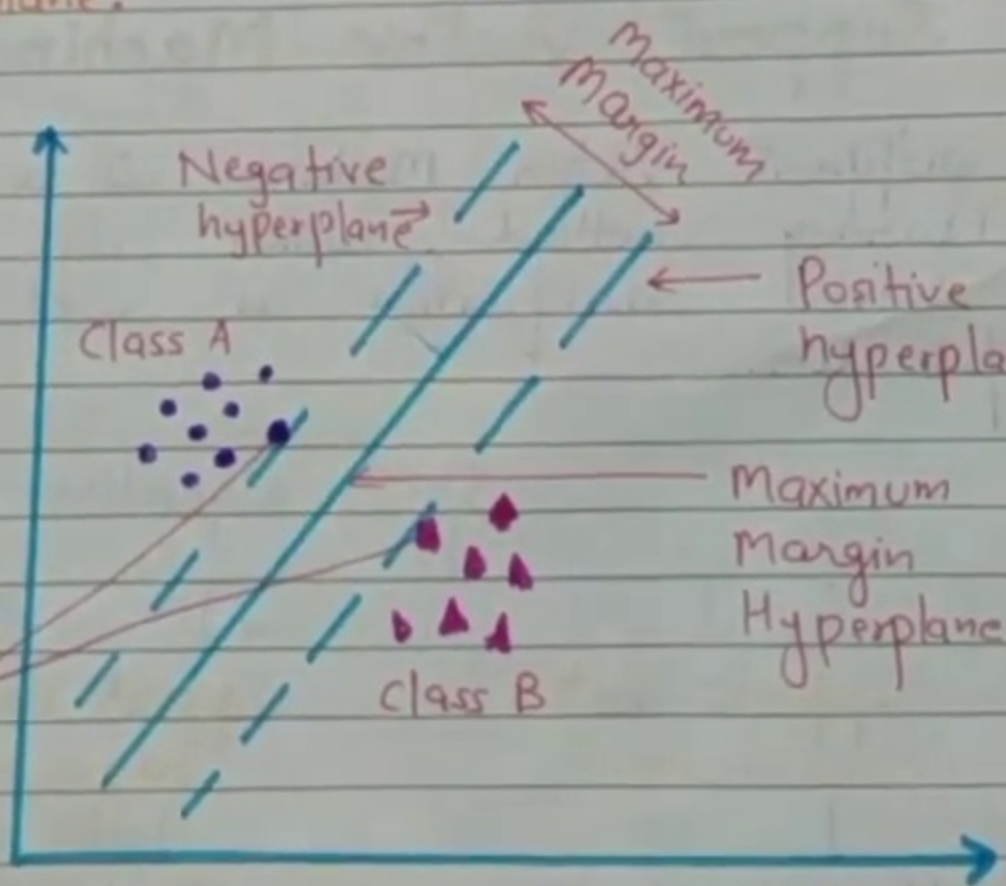



Class A and Class B → These are two datasets that are classified using decision boundary.

ii) Support Vectors - SVM chooses the extreme points or ~~support~~ that helps in creating the hyperplane. These extreme points are called as support vectors.

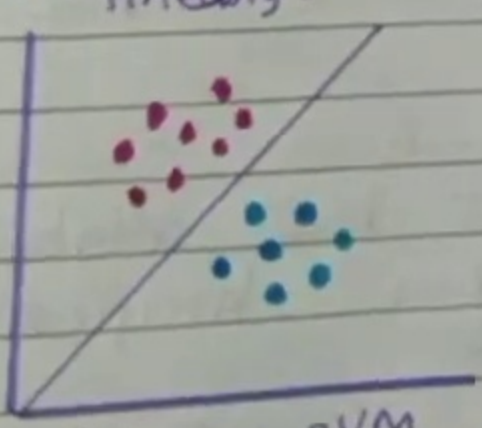
iii) Hyperplane - There can be multiple decision boundaries to segregate classes but we need to find best decision boundary that helps to classify data. This best boundary is known as hyperplane.

iv) Margin - Distance between negative and positive hyperplane

Applications → Text classification
Face Detection
Image classification

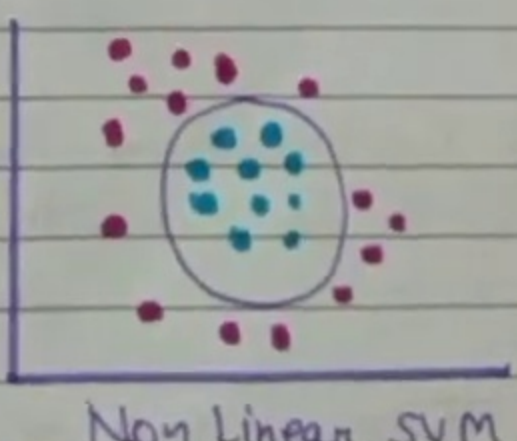
## Types of SVM

Linear
Separated data linearly:



Linear SVM

Non-Linear
Data can't be separated by



Non Linear SVM

ii) Support Vectors:- SVM chooses the extreme points that helps in creating the hyperplane. These extreme points are called as support vectors.

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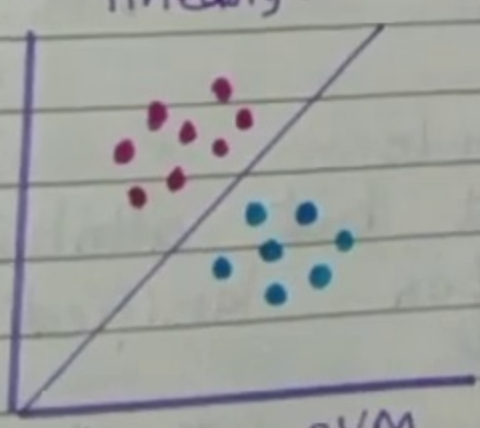

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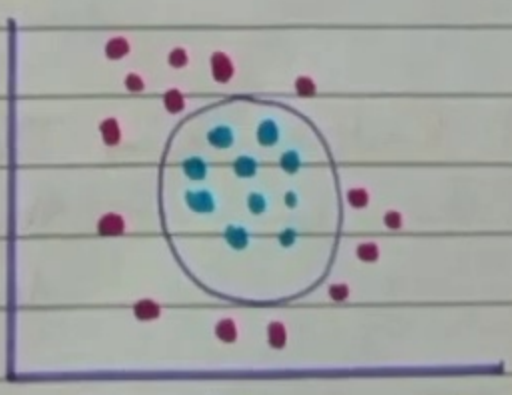

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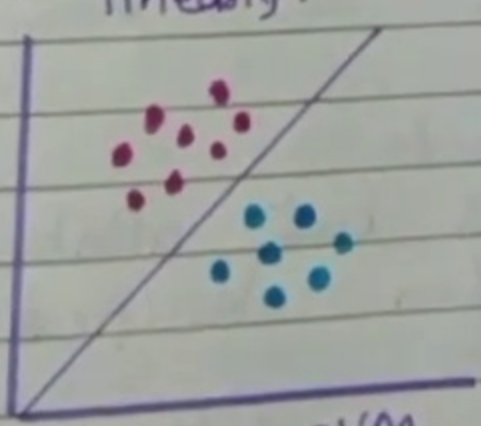

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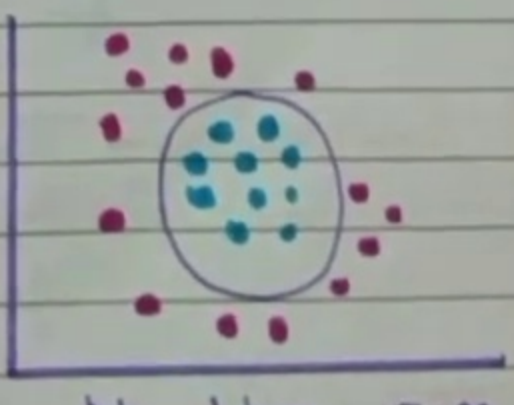

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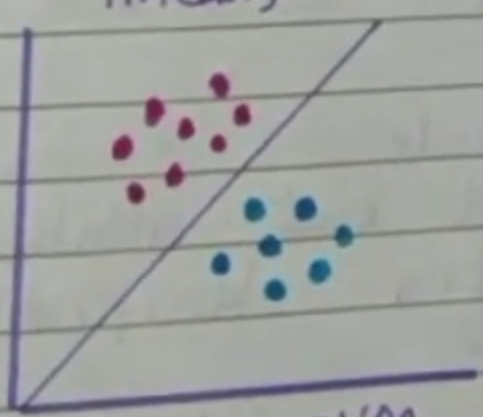

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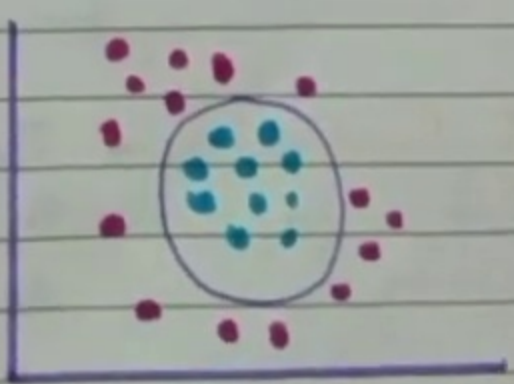

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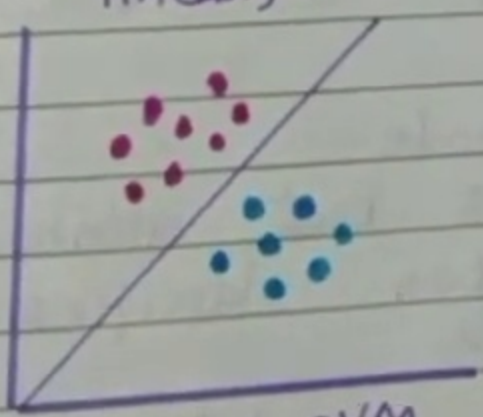

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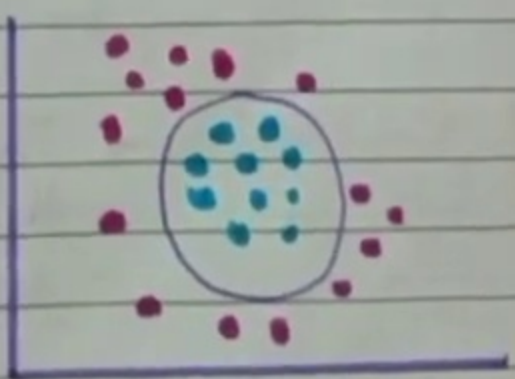

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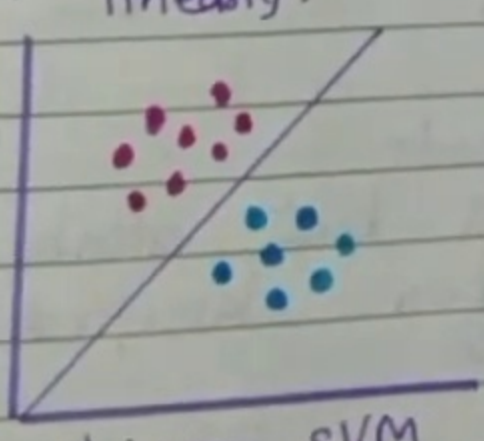

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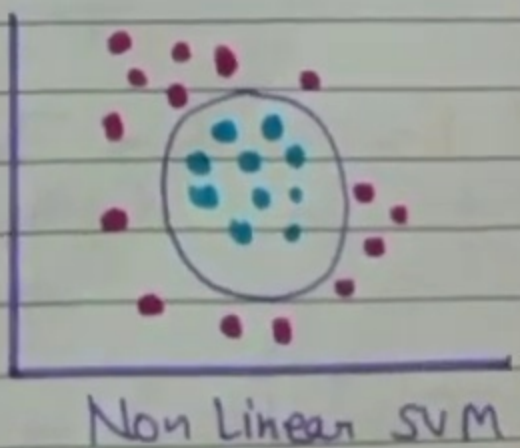

Non Linear SVM