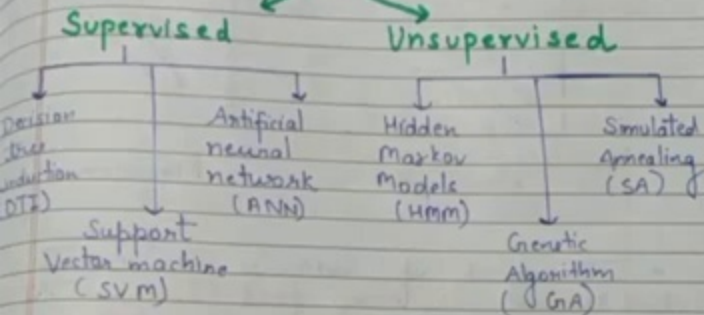
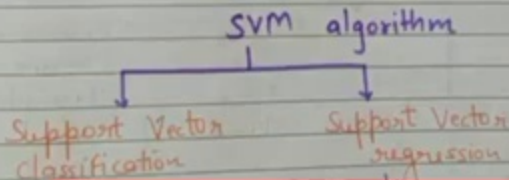


Machine Learning Algorithm



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

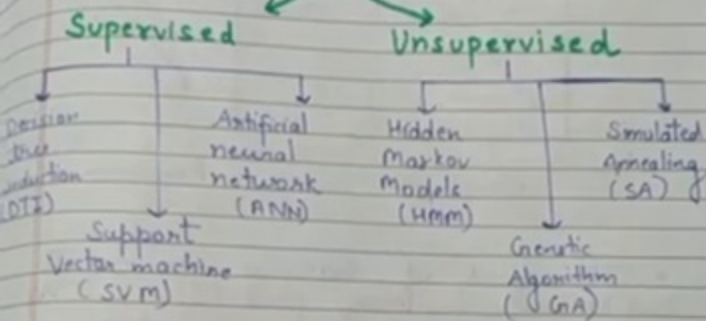
Use datasets, discrete

eg: Email spam detection

eg: market trends

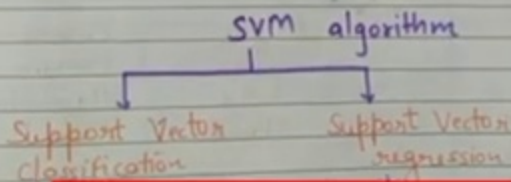
continuous

Machine Learning Algorithm



Support Vector Machine

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Support Vector Machine

Use

dataset's, discrete

continuous

eg: Email spam detection

eg: market trends

Machine Learning Algorithm

Supervised

Unsupervised

Decision
Tree
Induction
(DTI)

Artificial
neural
network
(ANN)

Hidden
Markov
Models
(HMM)

Simulated
Annealing
(SA)

Support
Vector machine
(SVM)

Genetic
Algorithm
(GA)

1. Support Vector Machine

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

SVM algorithm

Support Vector
classification

Support Vector
regression

Support Vector Machine

eg: Email spam
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1. Support Vector Machine

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SVM algorithm

Support Vector
classification

Used to classify
datasets, discrete

eg: Email spam
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Support Vector
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Used to predict continuous
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SVM algorithm

Support Vector
Classification

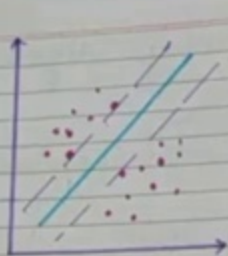
Used to classify
datasets discrete

eg: Email spam
detection

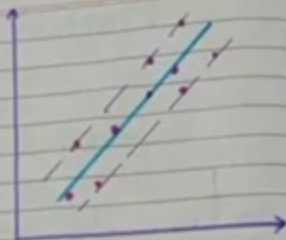
Support Vector
Regression

Used to predict continuous
values

eg: market trends

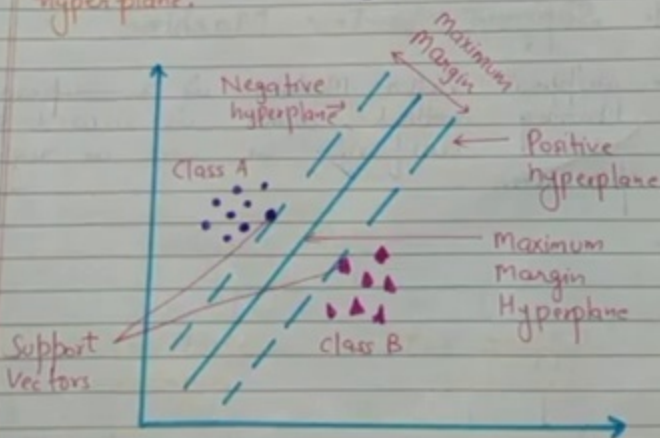


Classification

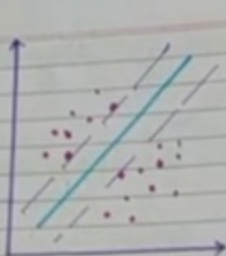


Regression

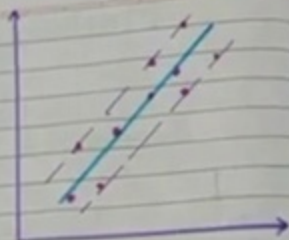
The goal of SVM is to create a decision boundary / best line. This best decision boundary is known as hyperplane.



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

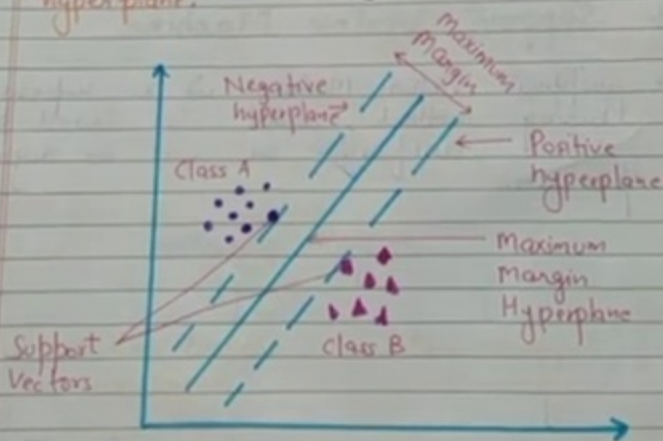


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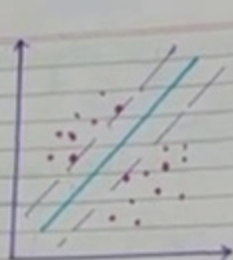


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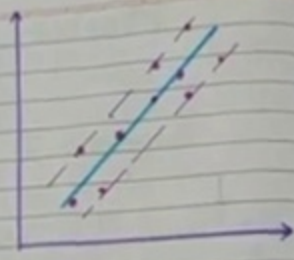
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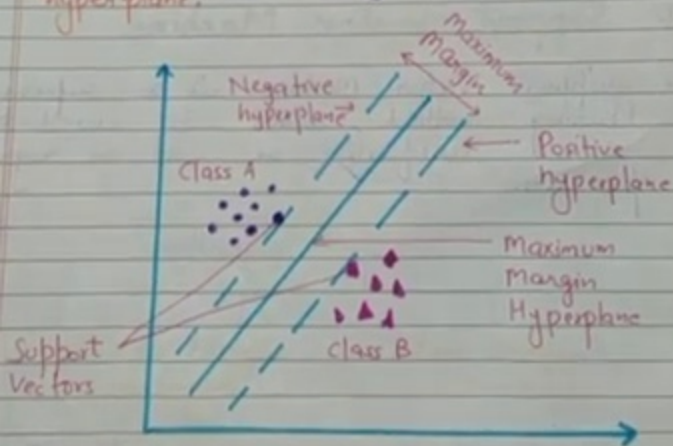


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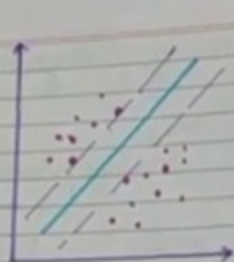


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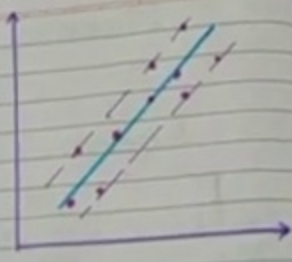
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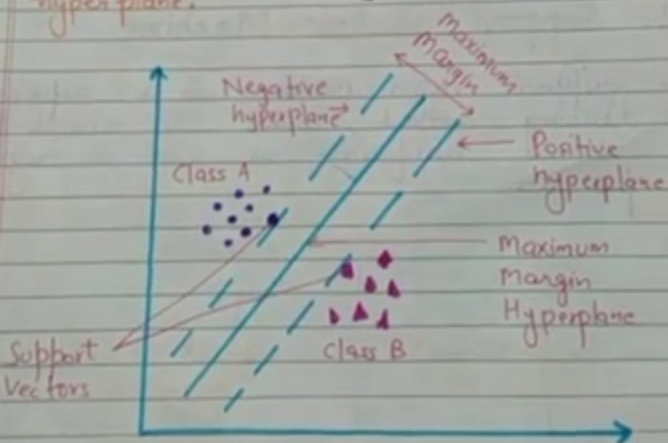


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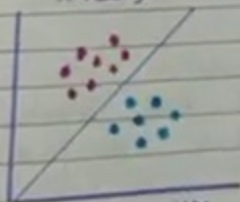
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- ii) **Support Vectors** - SVM chooses the extreme points on ~~hyperplane~~ that helps in creating the hyperplane. These extreme points are called as support vectors.
- iii) **Hyperplane** - There can be multiple decision boundaries to segregate classes 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

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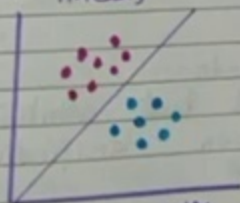
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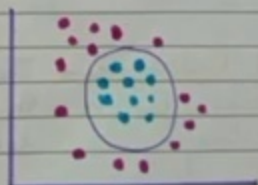
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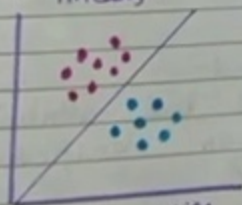
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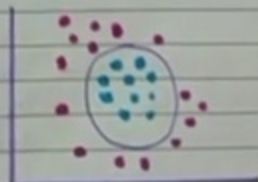
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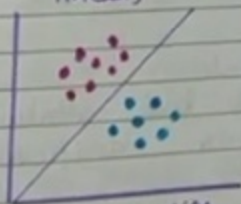
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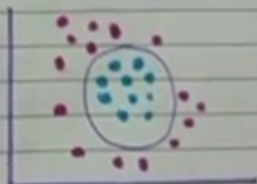
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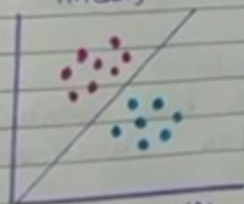
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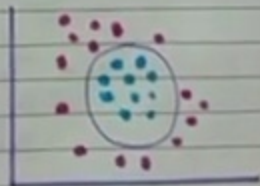
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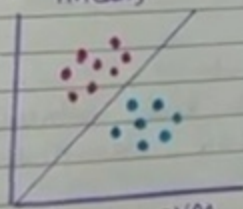
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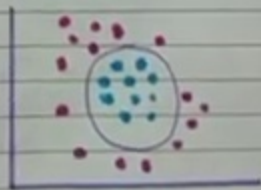
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