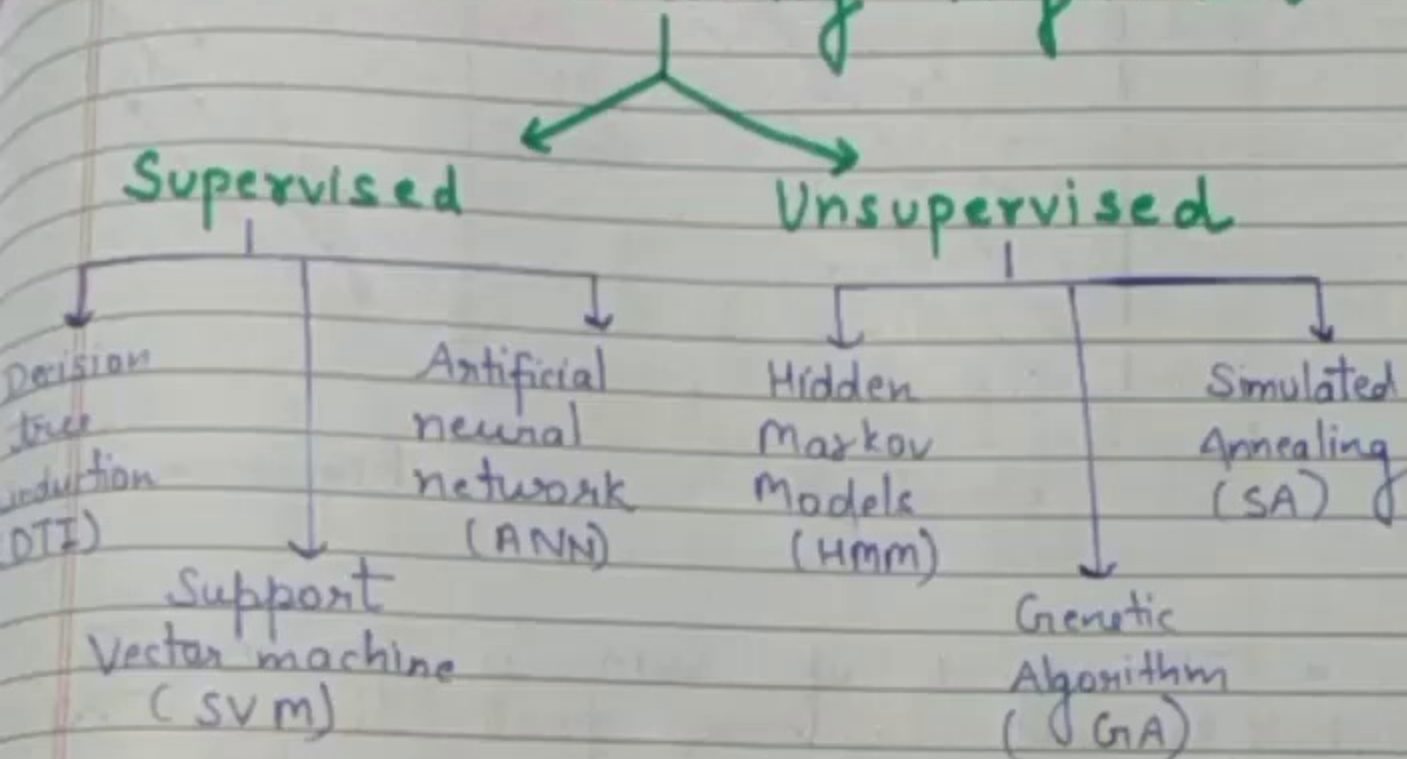
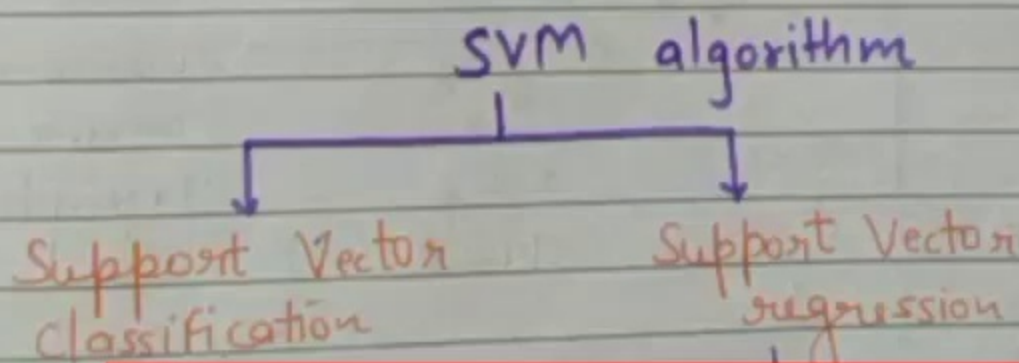


# Machine Learning Algorithm



## 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

continuous

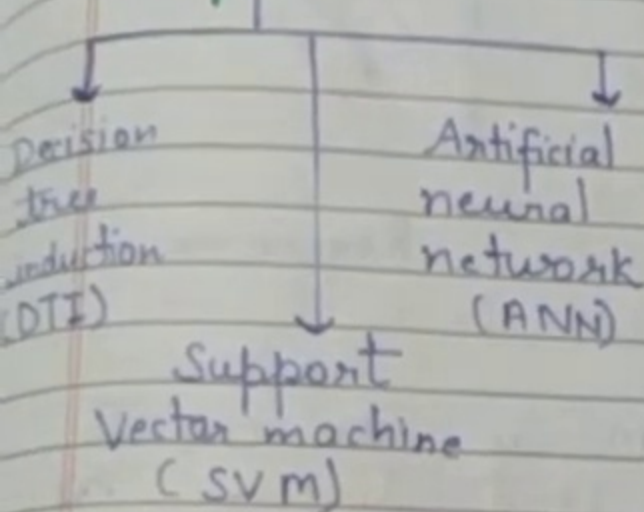
datasets, discrete

eg: Email spam detection

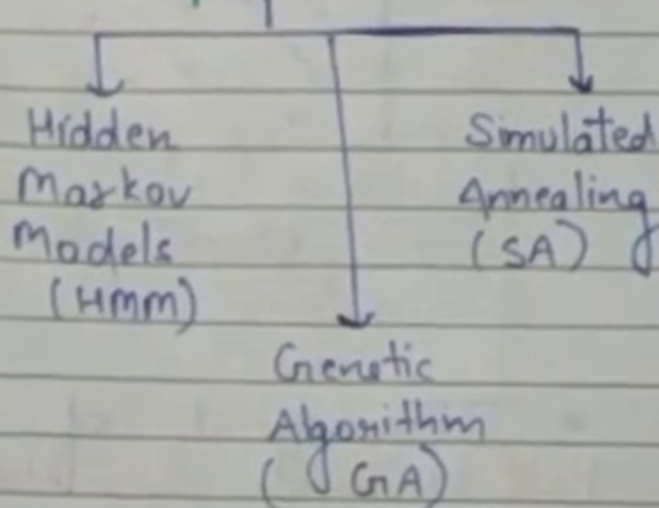
eg: market trends

# Machine Learning Algorithm

## Supervised



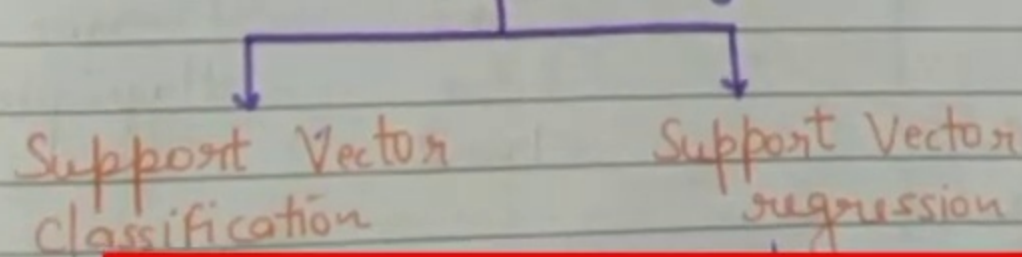
## Unsupervised



## 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 Machine

Use

datasets, discrete

eg: Email spam detection

eg: market trends

Continuous



# 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  
detection

eg: market trends

# Machine Learning Algorithm

## Supervised

Decision  
tree  
reduction  
(DT)

Artificial  
neural  
network  
(ANN)

Support  
Vector machine  
(SVM)

## Unsupervised

Hidden  
Markov  
Models  
(HMM)

Simulated  
Annealing  
(SA)

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

Used to classify  
datasets, discrete

eg: Email spam  
detection

Support Vector  
regression

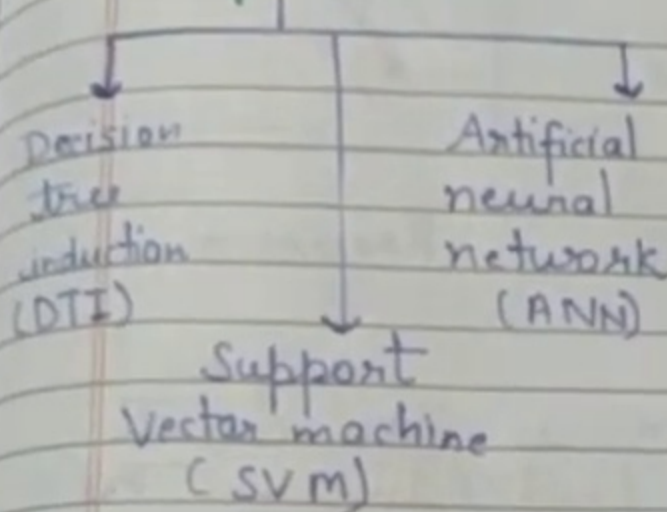
Used to predict continuous  
~~discrete~~ values

eg: market trends

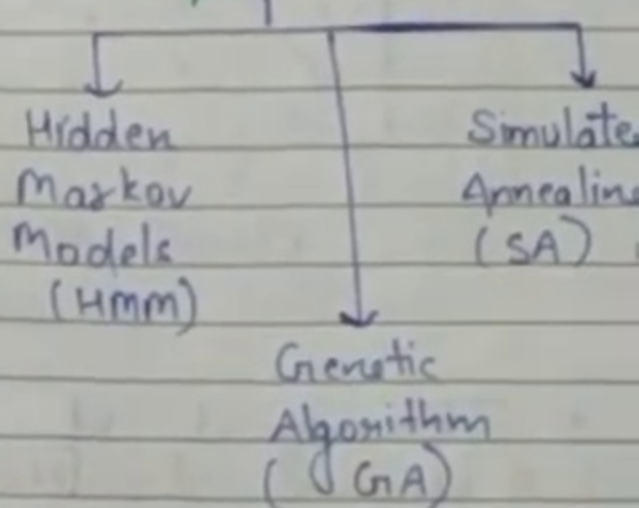


# Machine Learning Algorithm

## Supervised



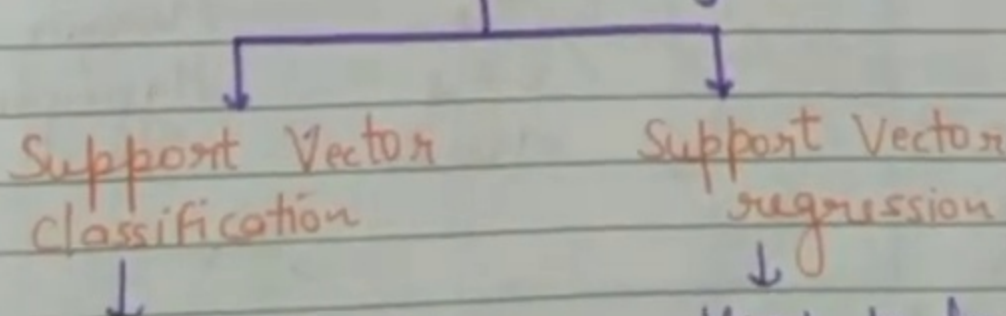
## Unsupervised



## 1. Support Vector Machine

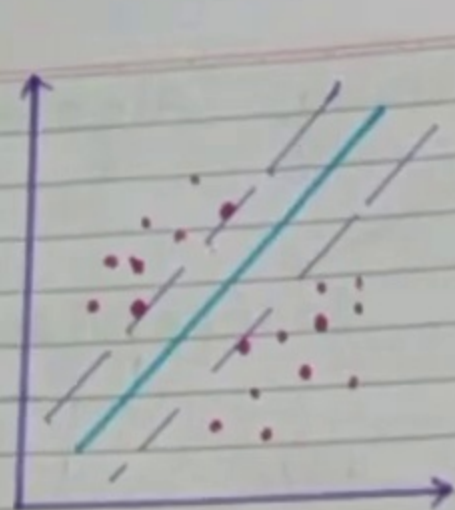
- Support Vector Machine is a supervised learning method, which is used to solve classification as well as regression problem.

### SVM algorithm

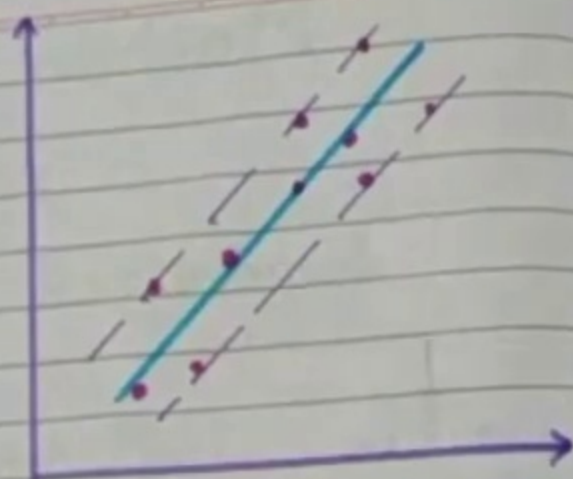


Used to classify datasets, discrete  
eg: Email spam detection

Used to predict continuous values  
eg: market trends

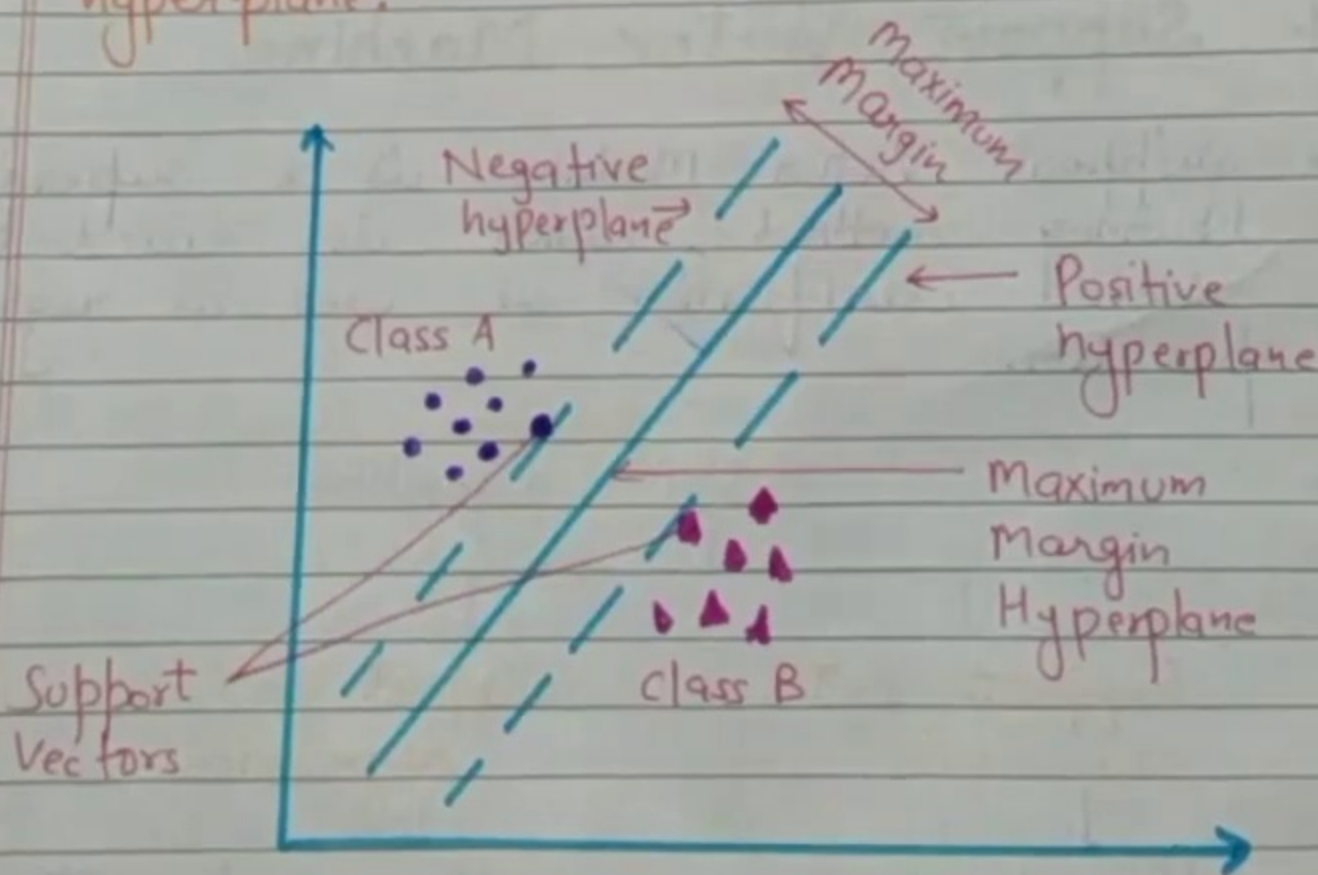


Classification



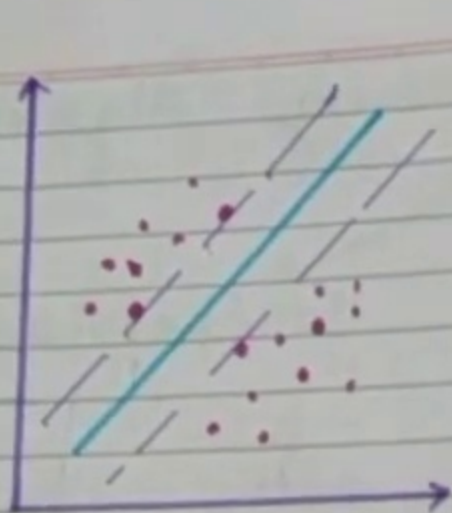
Regression

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

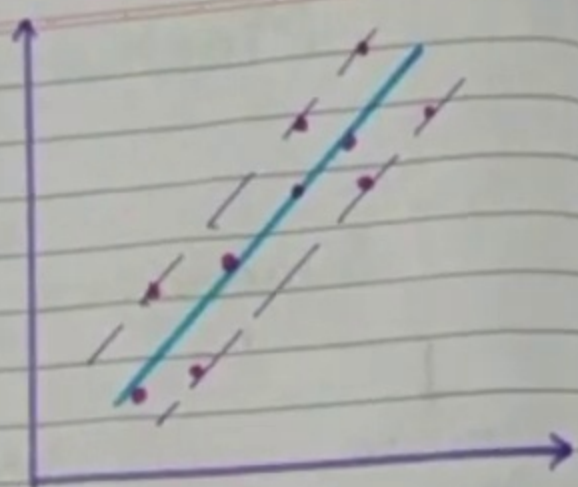


Class A and Class B  $\rightarrow$  These are two datasets that are classified using decision boundary.



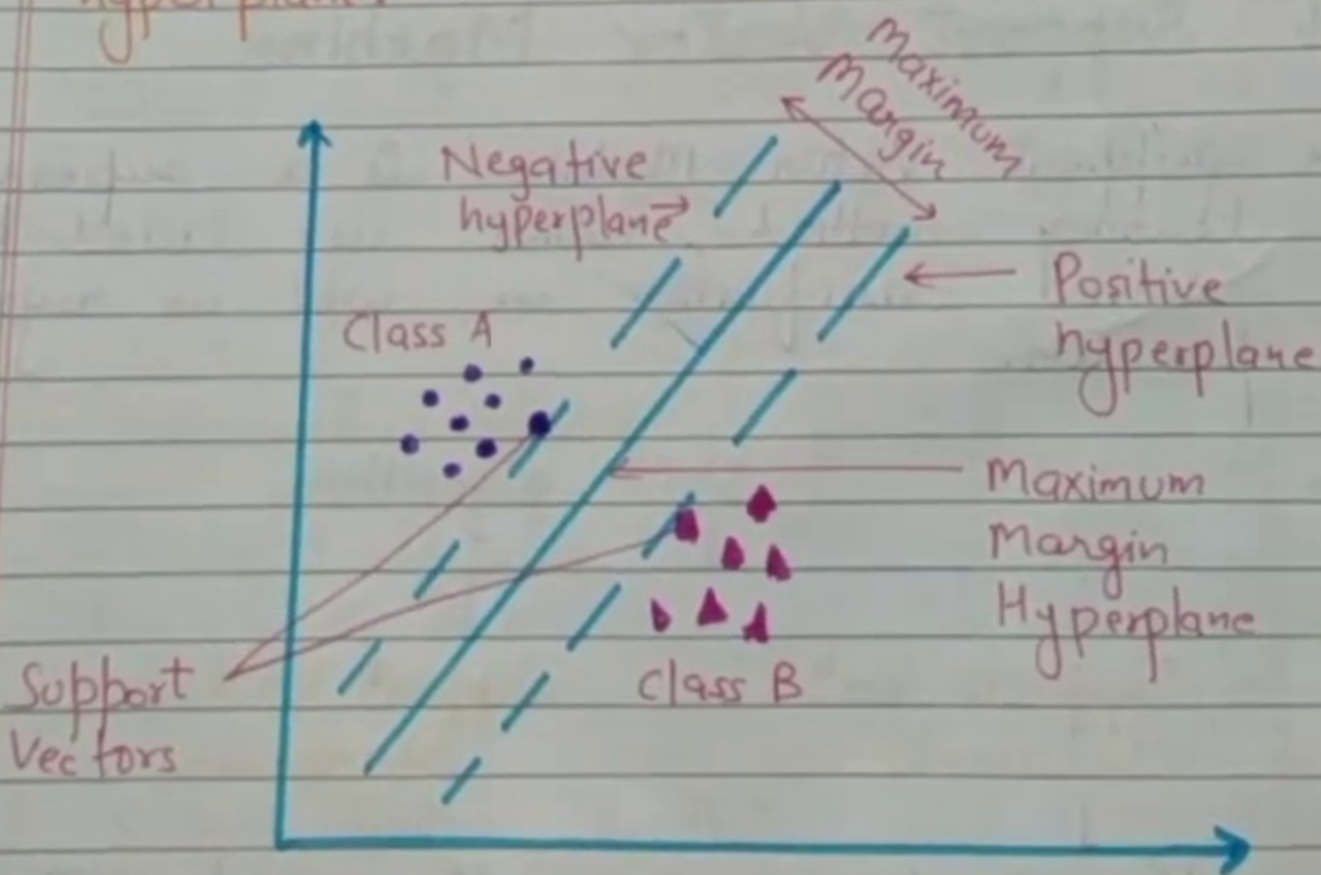


Classification



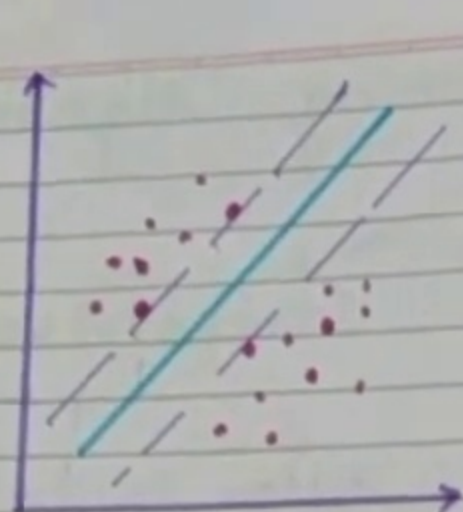
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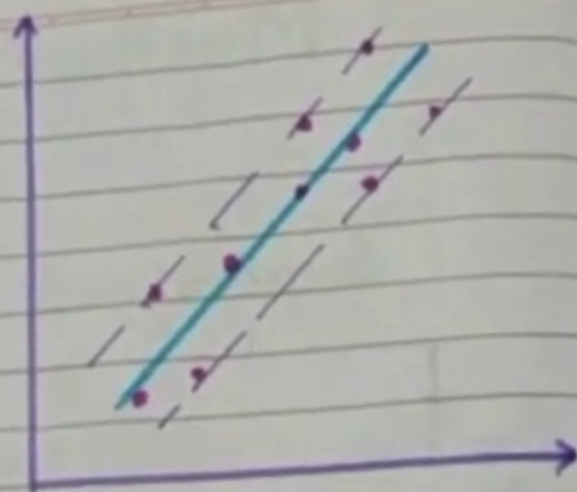


Class A and Class B →

These are two datasets that are classified using decision boundary.

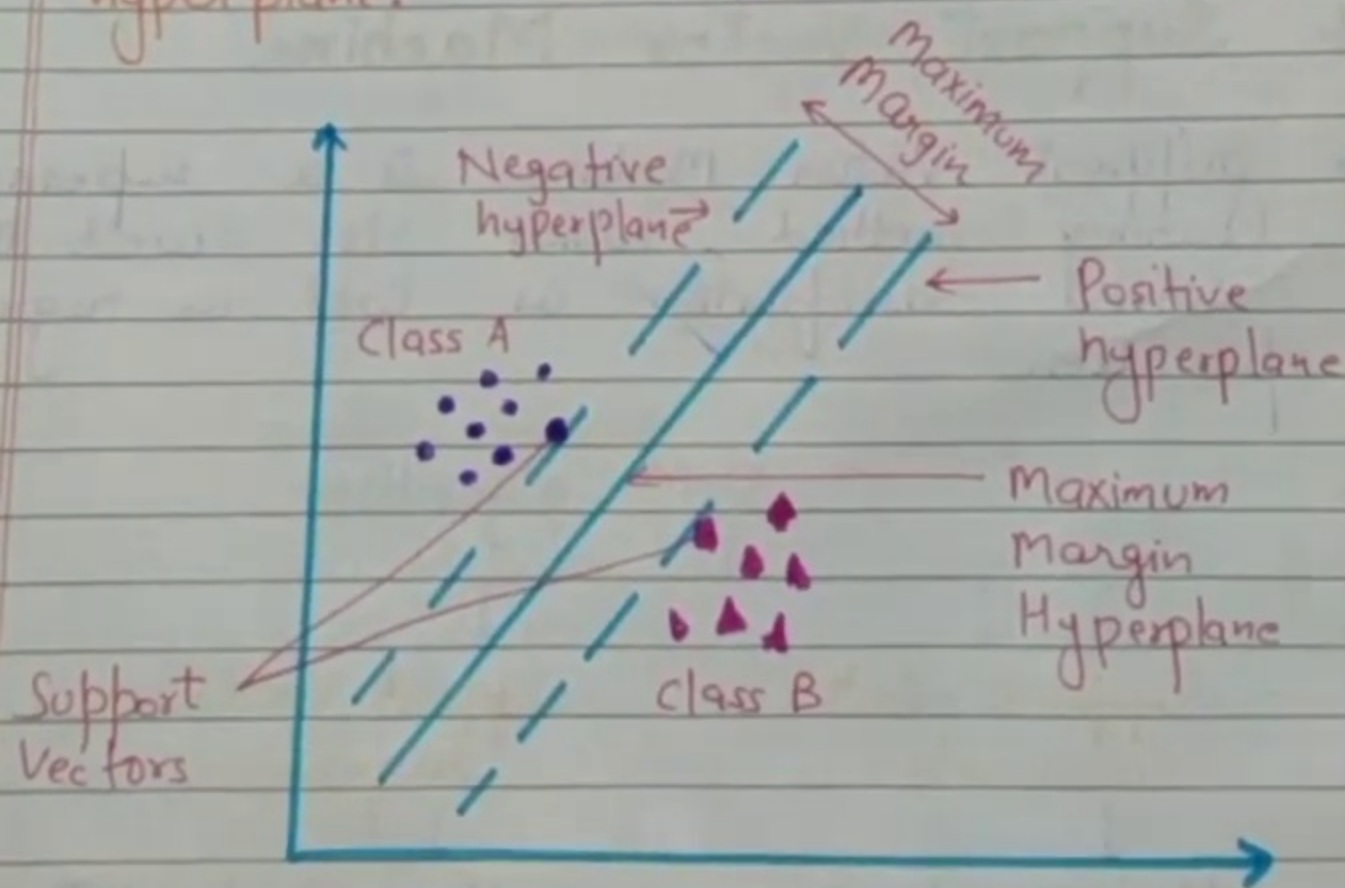


Classification



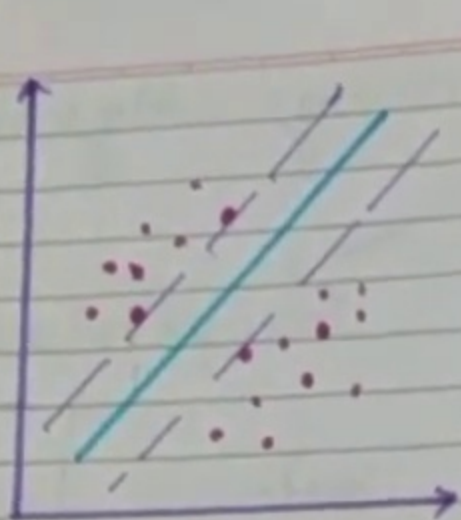
Regression

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

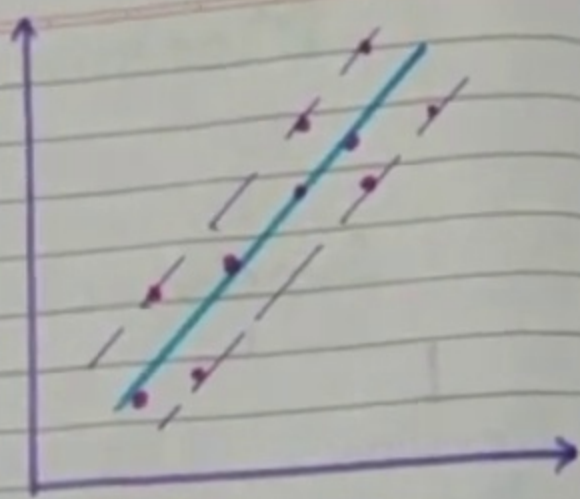


Class A and Class B  $\rightarrow$  These are two datasets that are classified using decision boundary.



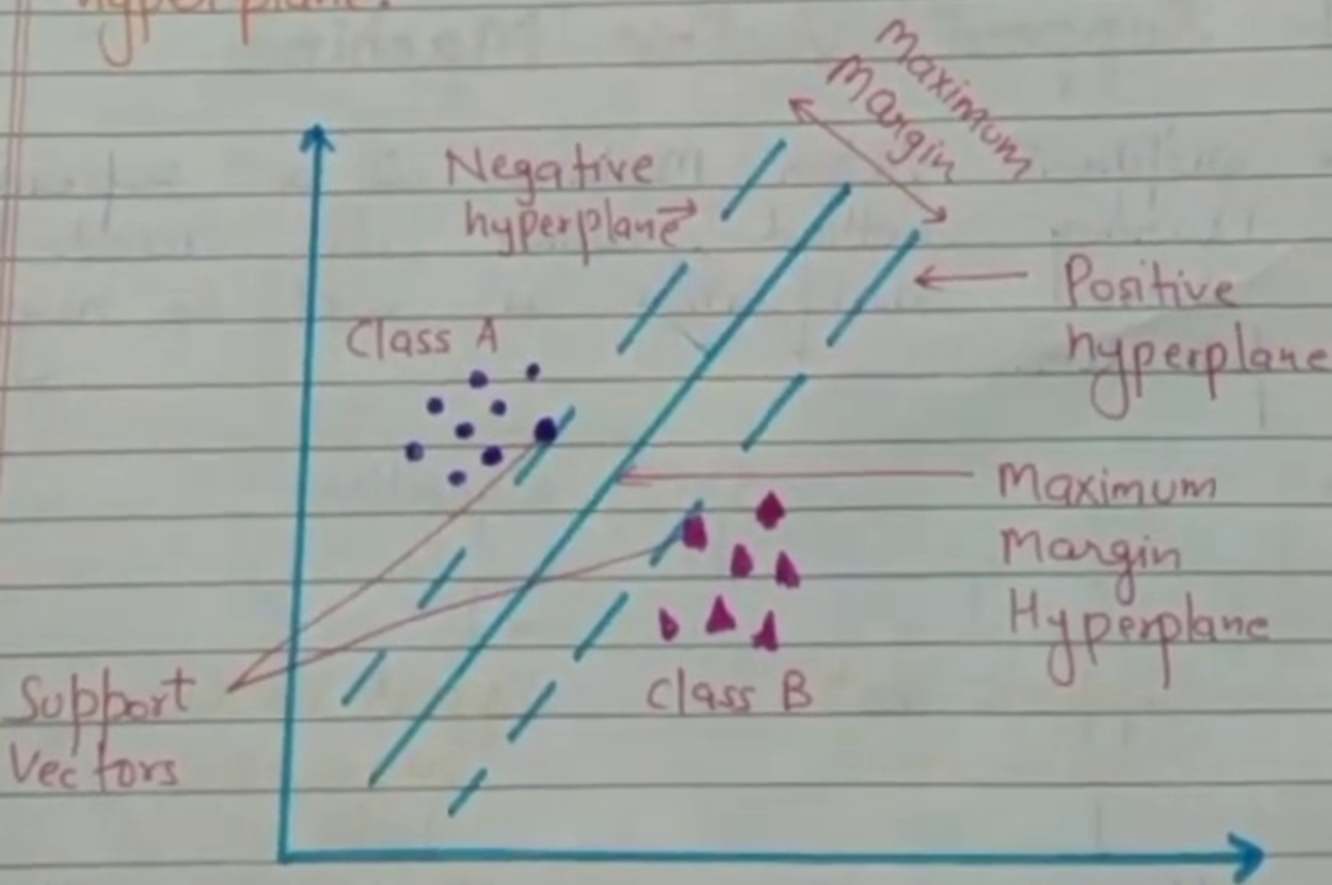


classification



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.

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.

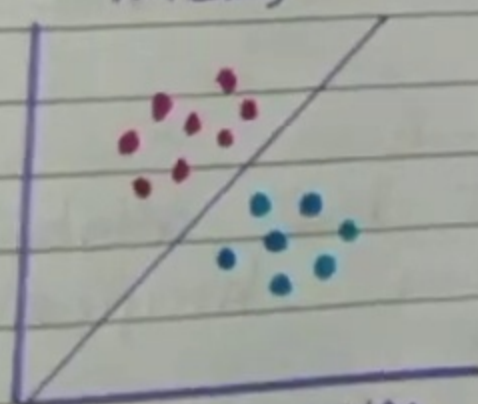
iv) Margin - Distance between negative and positive hyperplane

Applications → Text classification  
Face Detection  
Image classification

### Types of SVM

Linear

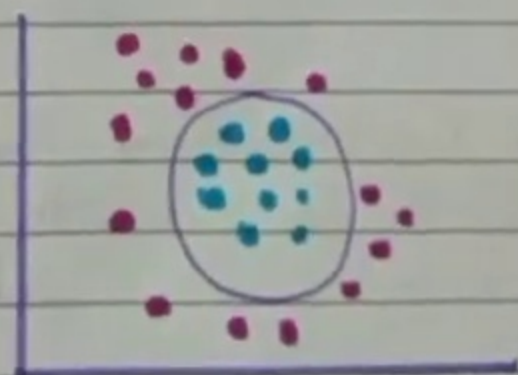
Separated data linearly:



Linear SVM

Non-Linear

Data can't be separated by



Non Linear SVM



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

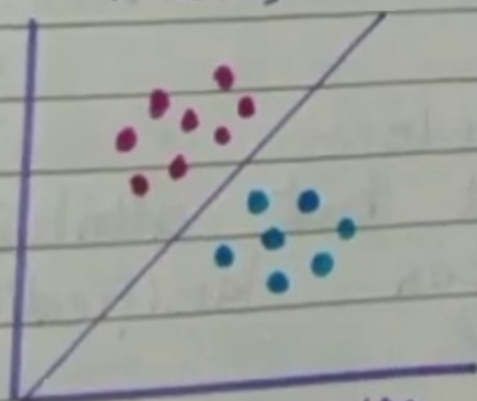
i) **Hyperplane** - There can be multiple decision boundaries to segregate classes but we need to find best decision boundary that helps to classify data. This best boundary is known as hyperplane.

**Margin** - Distance between negative and positive hyperplane

**Applications** → Text classification  
Face Detection  
Image classification

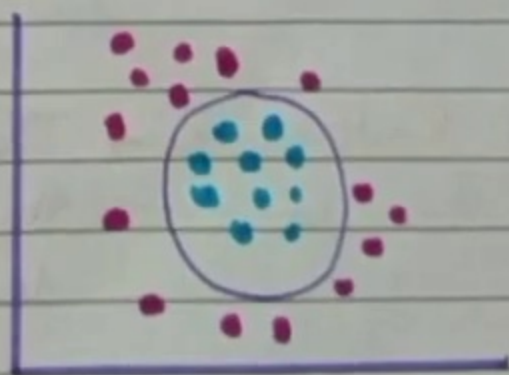
## Types of SVM

**Linear**  
Separated data linearly:



Linear SVM

**Non-Linear**  
Data can't be separated by line



Non Linear SVM

i) **Support Vectors** - SVM chooses the extreme points on ~~hyperp~~ that helps in creating the hyperplane. These extreme points are called as support vectors.

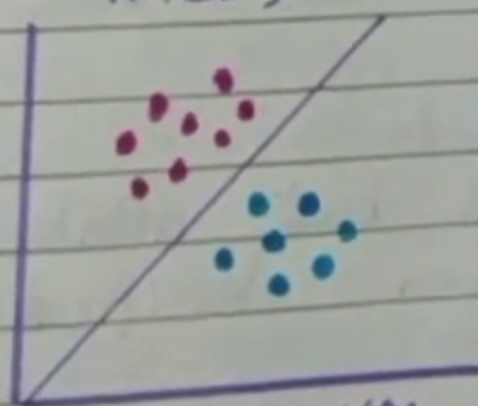
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**Margin** - Distance between negative and positive hyperplane

**Applications** → Text classification  
Face Detection  
Image classification

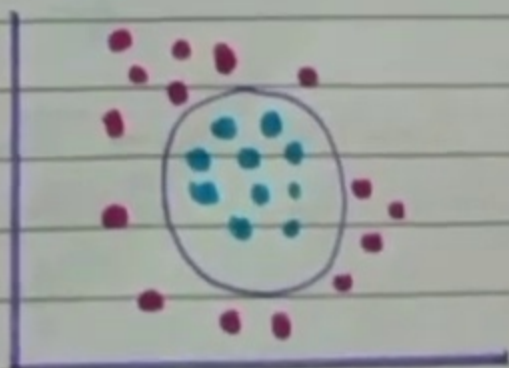
### Types of SVM

**Linear**  
Separated data linearly:



Linear SVM

**Non-Linear**  
Data can't be separated by line



Non Linear SVM



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

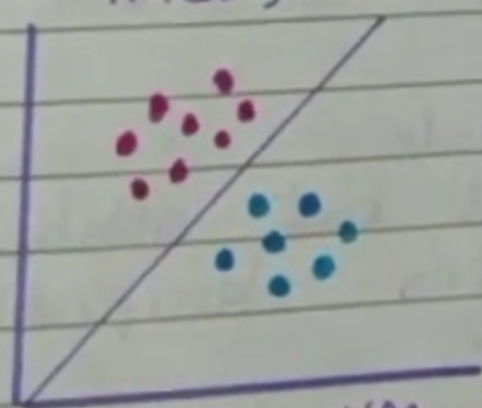
Hyperplane - There can be multiple decision boundaries to segregate classes but we need to find best decision boundary that helps to classify data. This best boundary is known as hyperplane.

Margin - Distance between negative and positive hyperplane

Applications → Text classification  
Face Detection  
Image classification

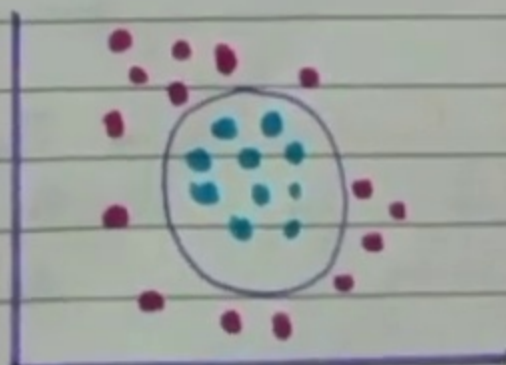
### Types of SVM

Linear  
Separated data linearly:



Linear SVM

Non-Linear  
Data can't be separated by linear



Non Linear SVM

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

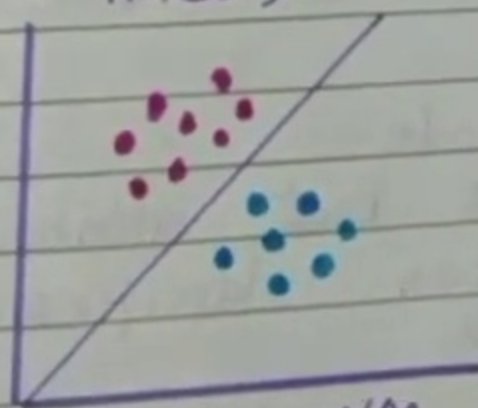
**Hyperplane** - There can be multiple decision boundaries to segregate classes but we need to find best decision boundary that helps to classify data. This best boundary is known as hyperplane.

**Margin** - Distance between negative and positive hyperplane

**Applications** → Text classification  
Face Detection  
Image classification

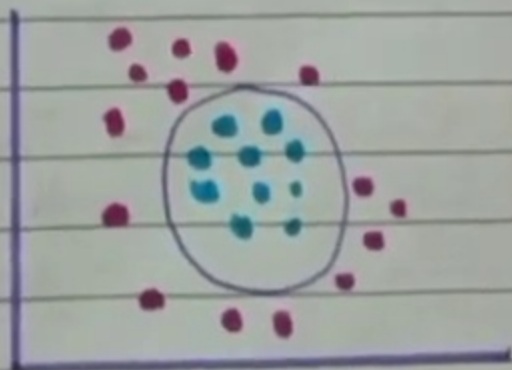
### Types of SVM

**Linear**  
Separated data linearly:



Linear SVM

**Non-Linear**  
Data can't be separated by line



Non Linear SVM



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

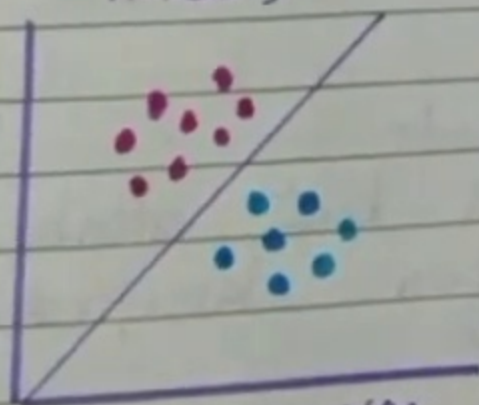
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Applications → Text classification  
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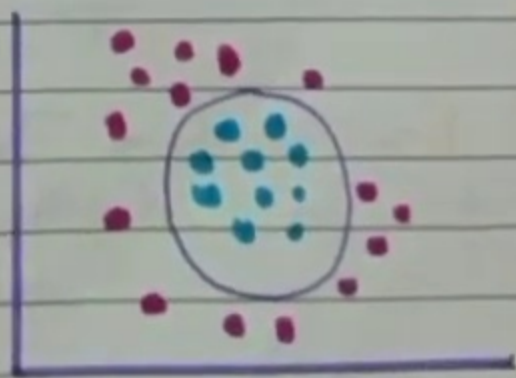
### Types of SVM

Linear  
Separated data linearly:



Linear SVM

Non-Linear  
Data can't be separated by



Non Linear SVM