



ML MODEL BUILD & DEPLOY

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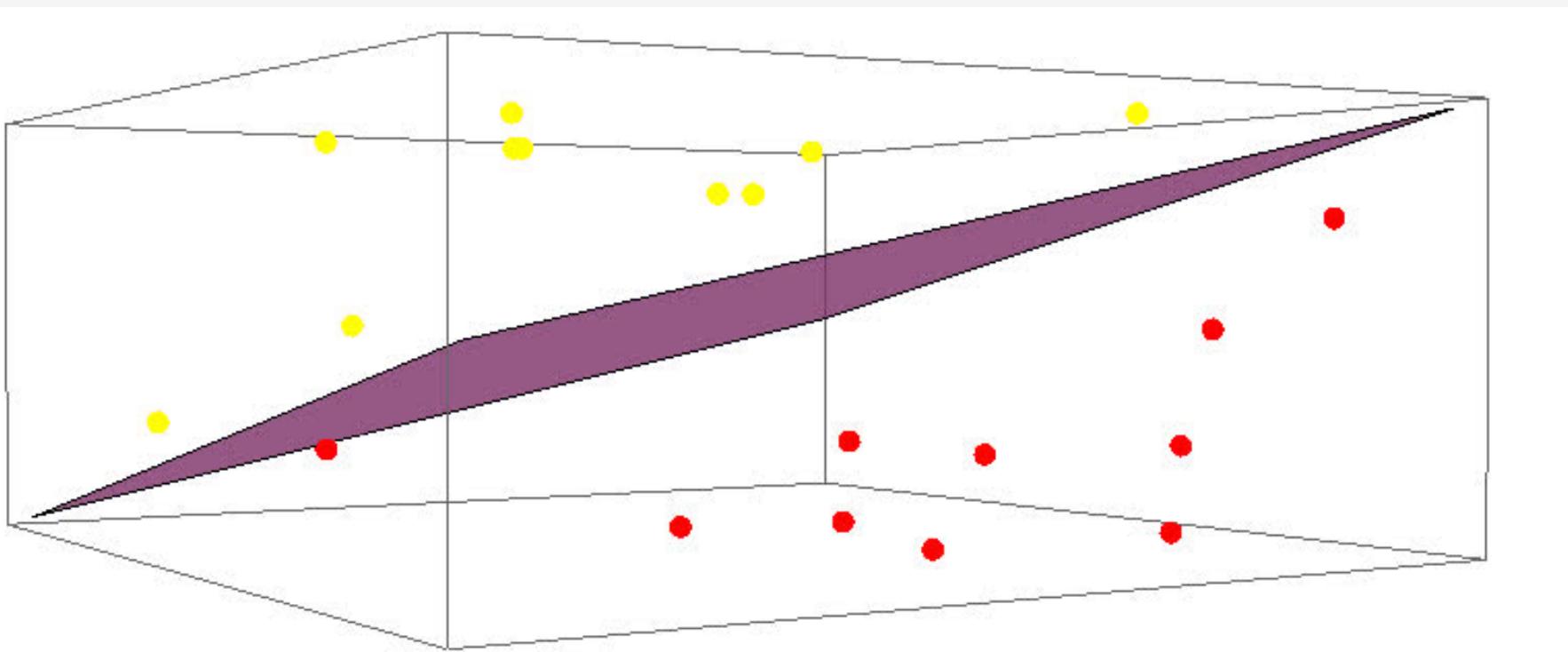
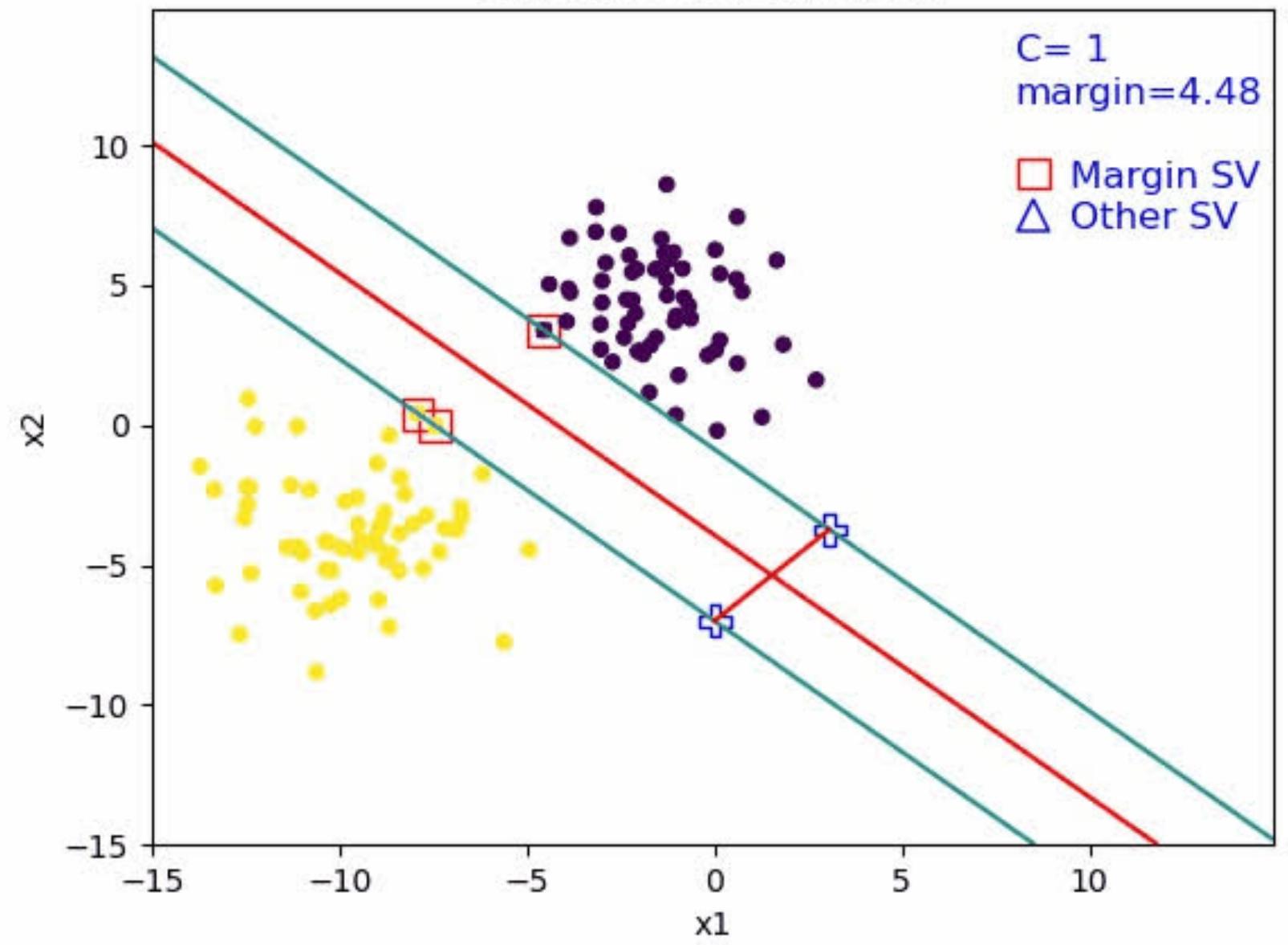
03

Deploy
the Model

1. Introduction to SVM

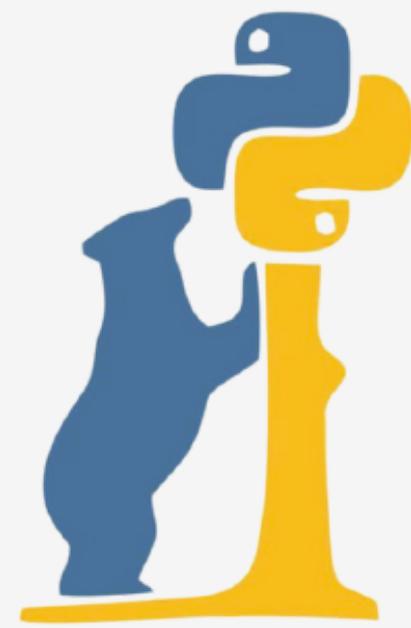
- SVM works by mapping data to a high-dimensional feature space so that data points can be categorized, even when the data are not otherwise linearly separable (This gets done by kernel function of SVM classifier).
- A separator between the categories is found, then the data is transformed in such a way that the separator could be drawn as a hyperplane.

Linearly separable data

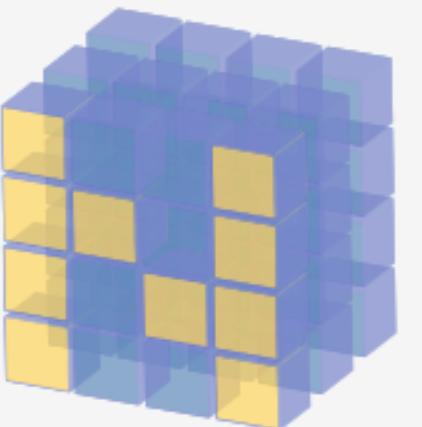


2. Necessary imports

Pandas



matplotlib



NumPy

3. About the Dataset



UCI Machine Learning Repository

Discover datasets around the world!

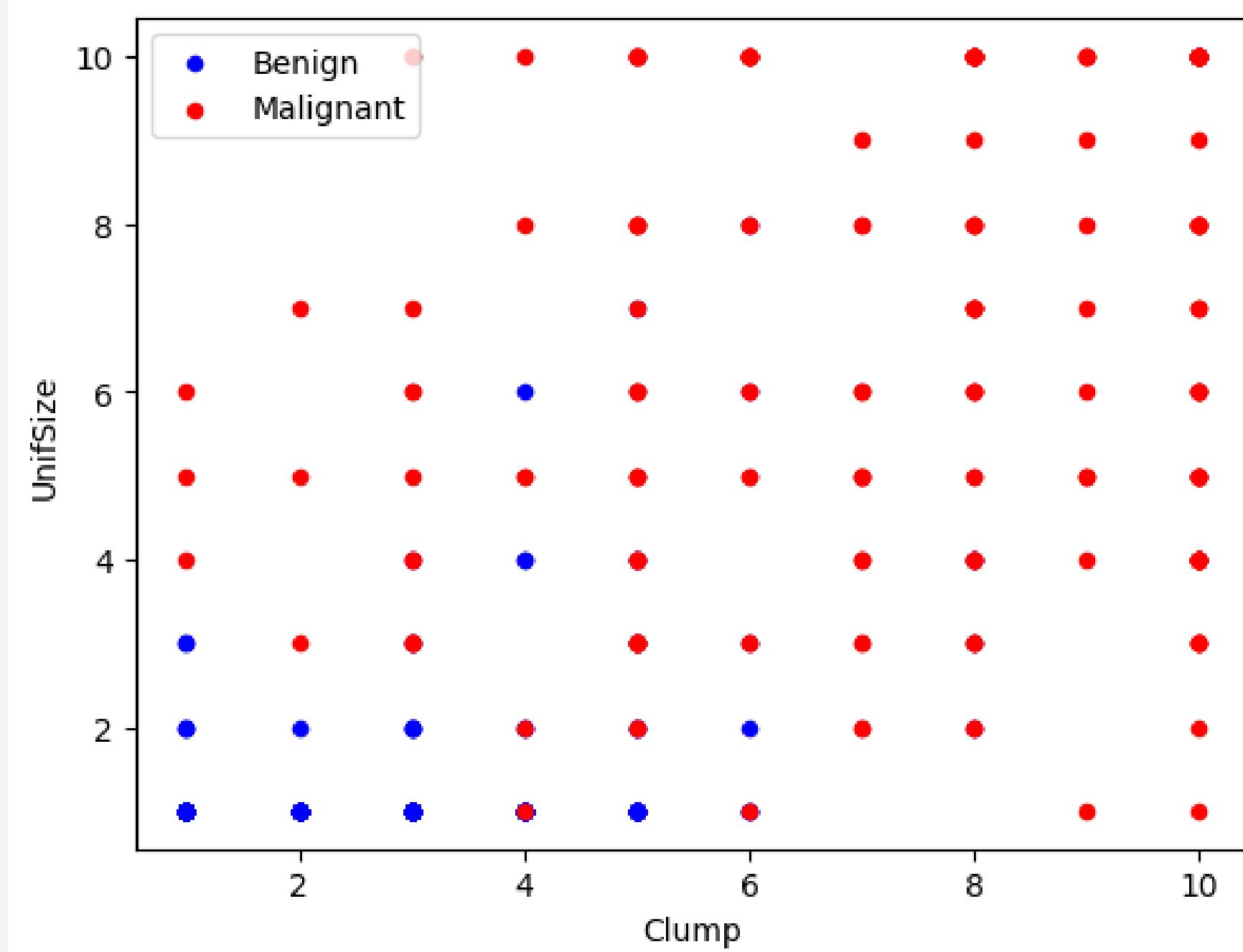
 ics.uci.edu

4. Load Data From CSV File

```
cell_df = pd.read_csv("name.csv")
```

**retrieves data in the form of
the data frame.**

5. Distribution of the classes



Here we will plot the graph of features

6. Selection of unwanted columns

Check datatype of all the columns

```
if ( int ):  
    no change  
else:  
    convert it to integer datatype
```

7. Remove unwanted columns

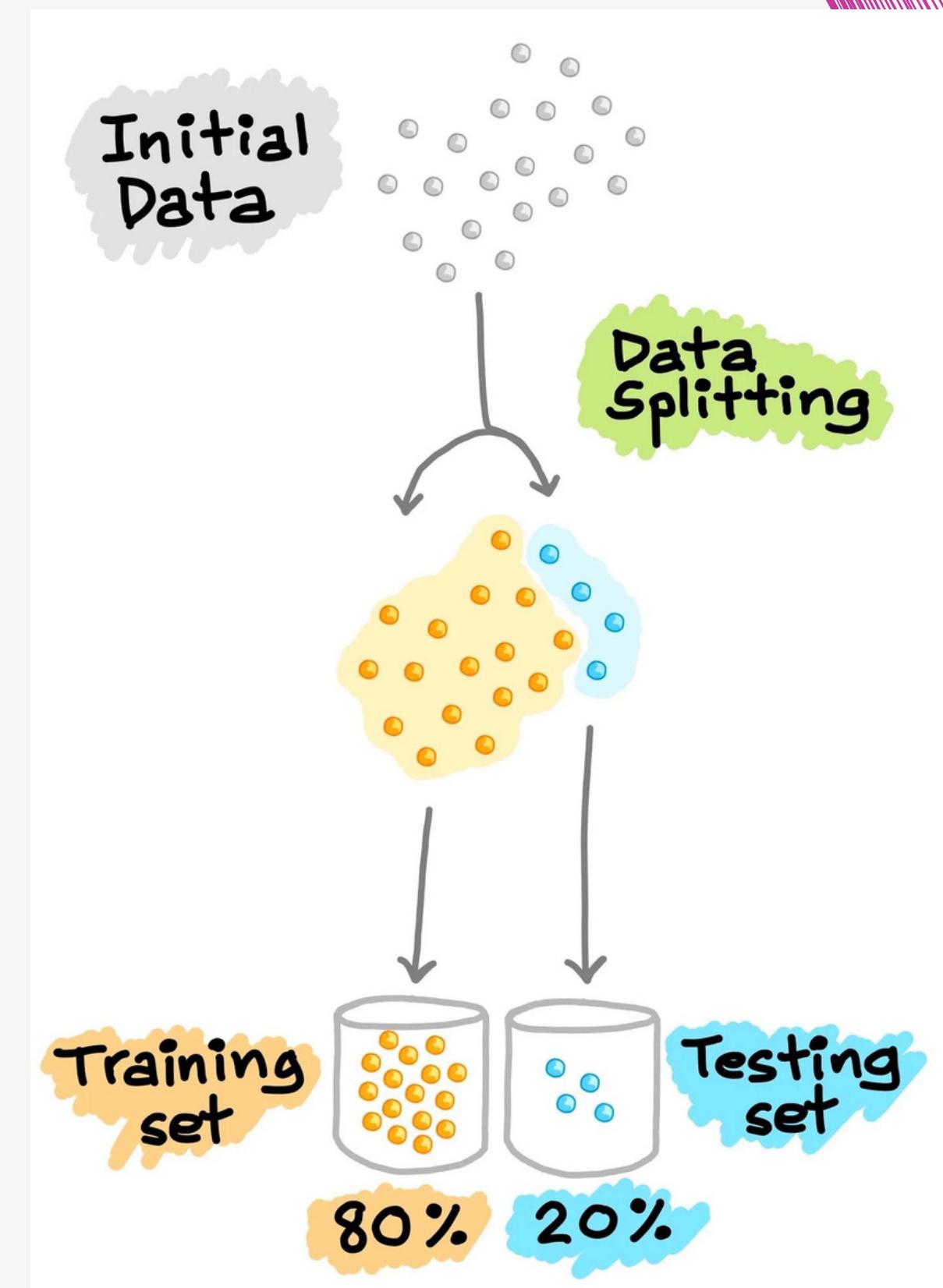
Remove the columns which are not be the part of training

A	B	C	D	E	F	G	H	I	J	K
ID	Clump	UnifSize	UnifShape	MargAdh	SingEpiSize	BareNuc	BlandChrom	NormNucl	Mit	Class
1000025	5	1	1	1	2	1	3	1	1	2
1002945	5	4	4	5	7	10	3	2	1	2
1015425	3	1	1	1	2	2	3	1	1	2
1016277	6	8	8	1	3	4	3	7	1	2
1017023	4	1	1	3	2	1	3	1	1	2
1017122	8	10	10	8	7	10	9	7	1	4
1018099	1	1	1	1	2	10	3	1	1	2
1018561	2	1	2	1	2	1	3	1	1	2
1033079	2	1	1	1	2	1	1	1	5	2



8. Divide the data as Train/Test dataset

- The training dataset, which is used to train or fit the machine learning model
- The test dataset is another subset of original data, which is independent of the training dataset



9. Modeling (SVM with Scikit-learn)

```
sklearn.svm.SVC(kernel=' ',C=' ',gamma =num)
object_svm.fit( X_train ,Y_Train )
```

kernel: string, optional (default='rbf')

Specifies the kernel type to be used in the algorithm. ('linear', 'poly', 'rbf', 'sigmoid')

C: float, optional (default=1.0)

Penalty parameter C of the error term.

gamma: float, optional (default='auto')

Kernel coefficient for 'rbf', 'poly' and 'sigmoid'.

10. Evaluation (Results)

```
from sklearn.metrics import classification_report  
print(classification_report(Y_test , Y_Predict))
```

$$Accuracy = \frac{TP + TN}{TP + TN + FP + FN}$$

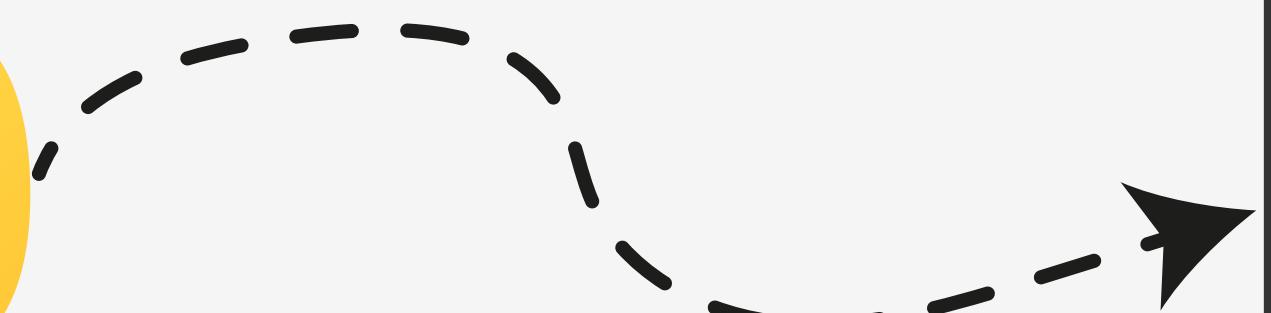
$$Precision = \frac{TP}{TP + FP}$$

$$Recall = \frac{TP}{TP + FN}$$

$$F1-score = \frac{2 \times Precision \times Recall}{Precision + Recall}$$

11. Model Export using pickle

```
import pickle  
pickle.dump(classifier , open('path/model.pkl','wb'))
```





ML MODEL DEPLOYMENT

By Sujal Kailash Lunawat

1)

Intoduction to
Flask

2)

Basic of Flask

3)

Deploying
Model in Flask

Introduction to Flask

Flask is a lightweight and flexible web framework for Python

Some features of Flask :

- Microframework: Lightweight & minimalistic.
- Routing: Simple URL mapping.
- Extensible: Supports various extensions.
- RESTful Support: Excellent for building APIs
- No ORM: Full control over database

Basic of Flask

1. Install any coding tool which support python like VScode , PyCharm or etc
2. To Install flask go the cmd and type :-

```
pip install flask
```



Lets Code and learn basics



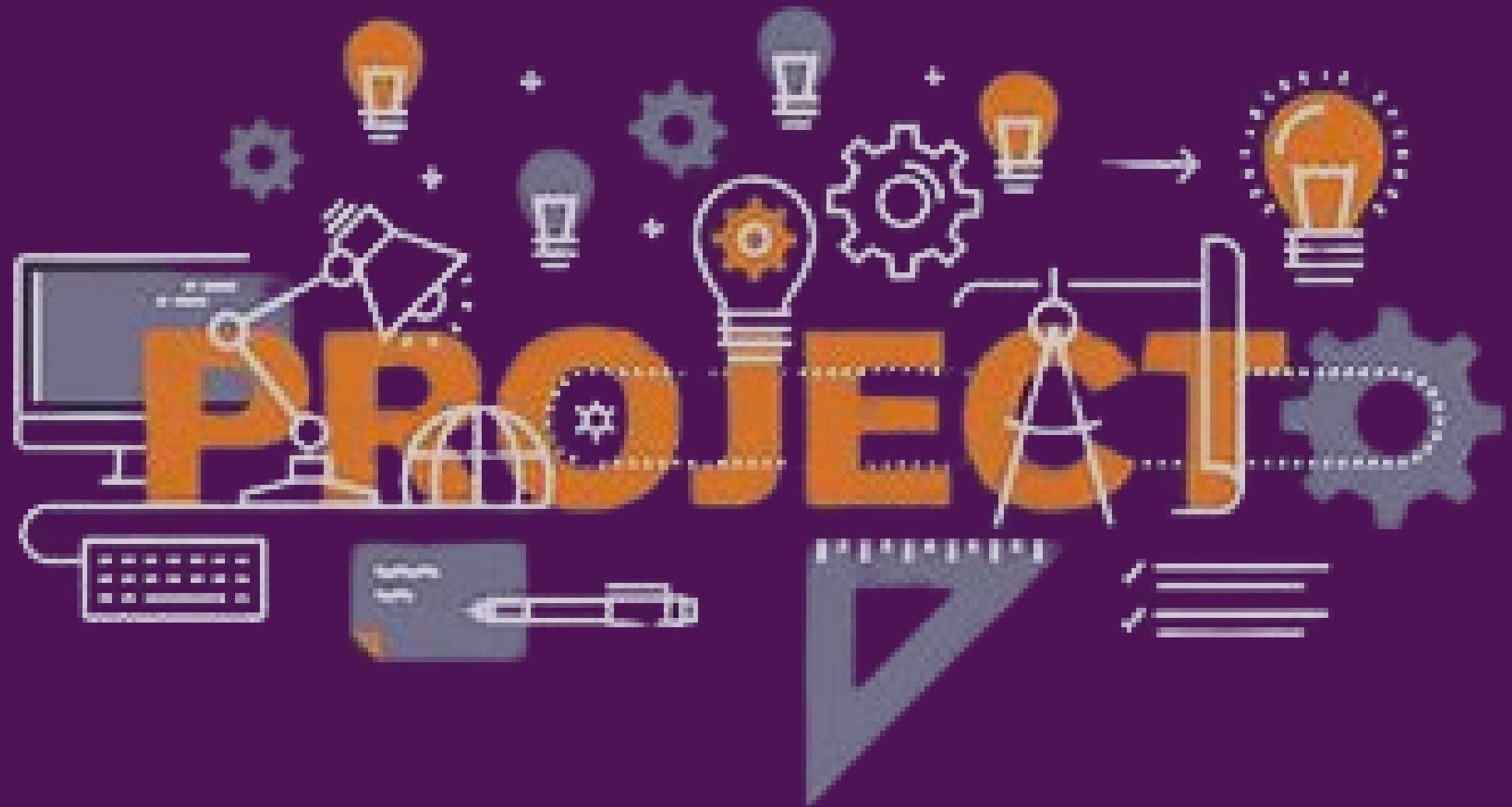
Coding and Programming

Deployment of model in flask

prerequisite:-

1. installation of python and flask
2. Build a ML model with an extension supported by Flask
3. installation of the dependencies required to run the ML model
4. basic knowledge of HTML for frontend

Lets
Code
and build the project



Thank you