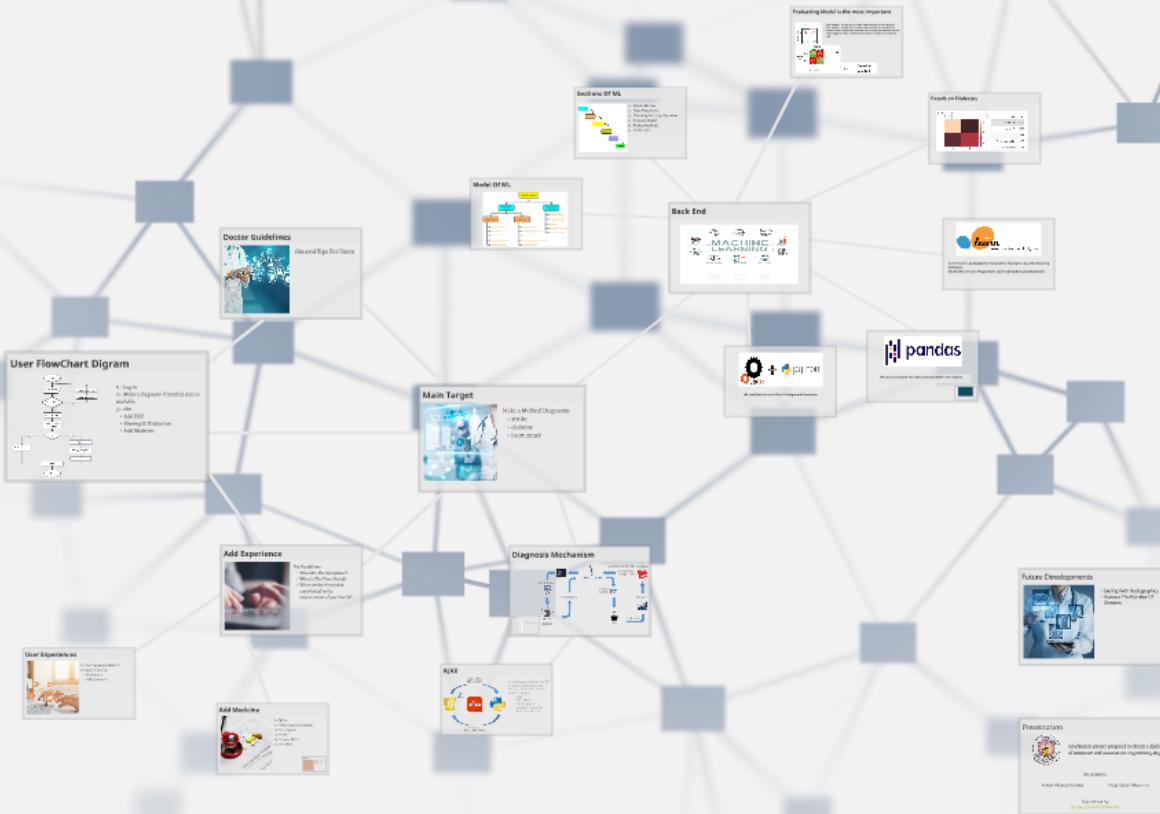


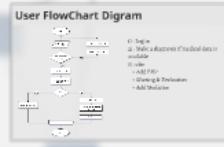


Electronic Doctor





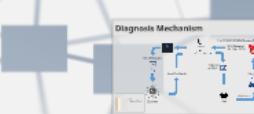
Electronic Doctor



Evaluating Models is the most important



pandas



Presentation



Graduation project prepared to obtain a diploma
of computer and automation engineering degree

By students

Anwar Khaled Barakat

Majd Issam Mounem

Supervised by
Dr.Eng.Ousama Bahbouh

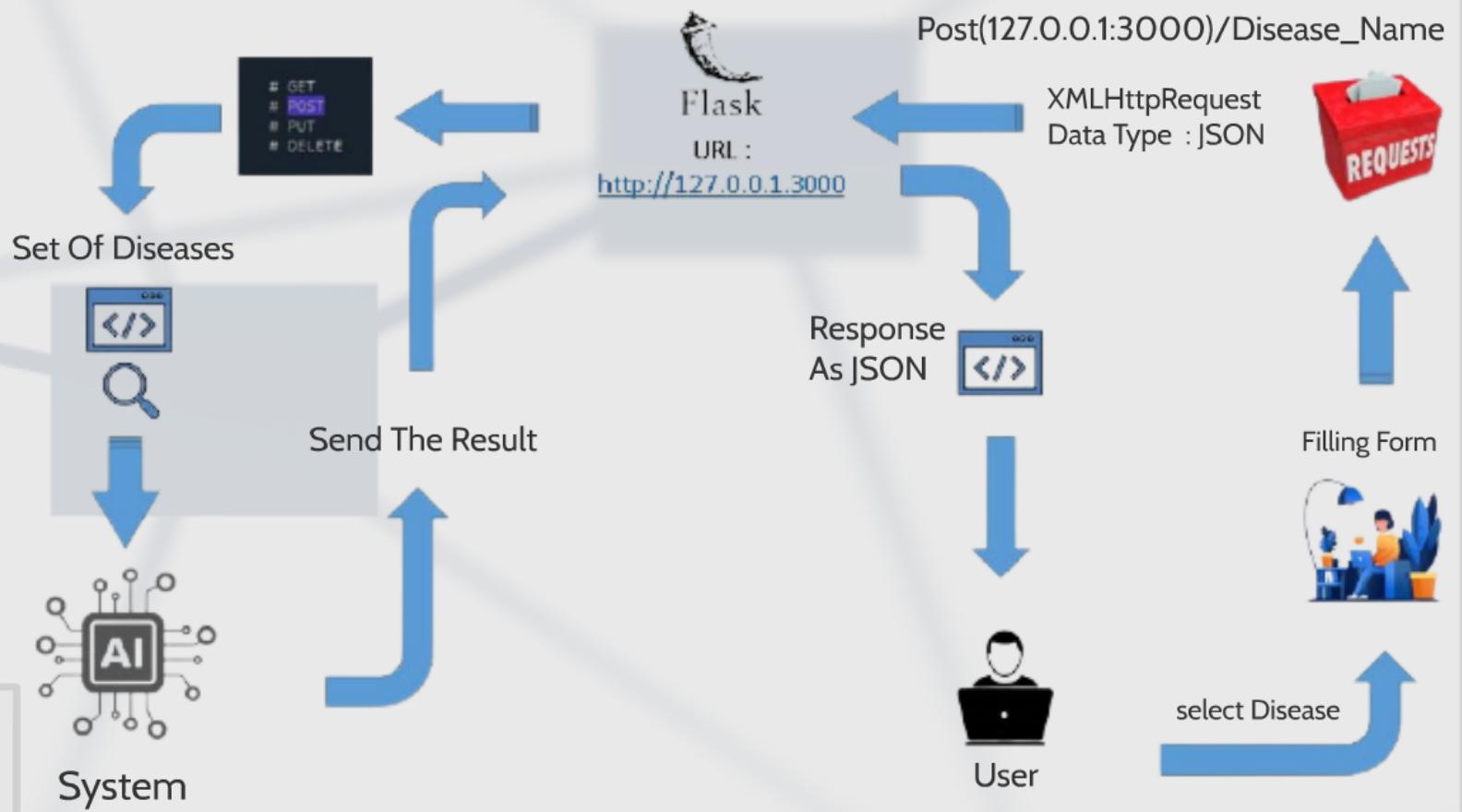
Main Target



Make a Medical Diagnostic

- stroke
- diabetes
- heart attack

Diagnosis Mechanism



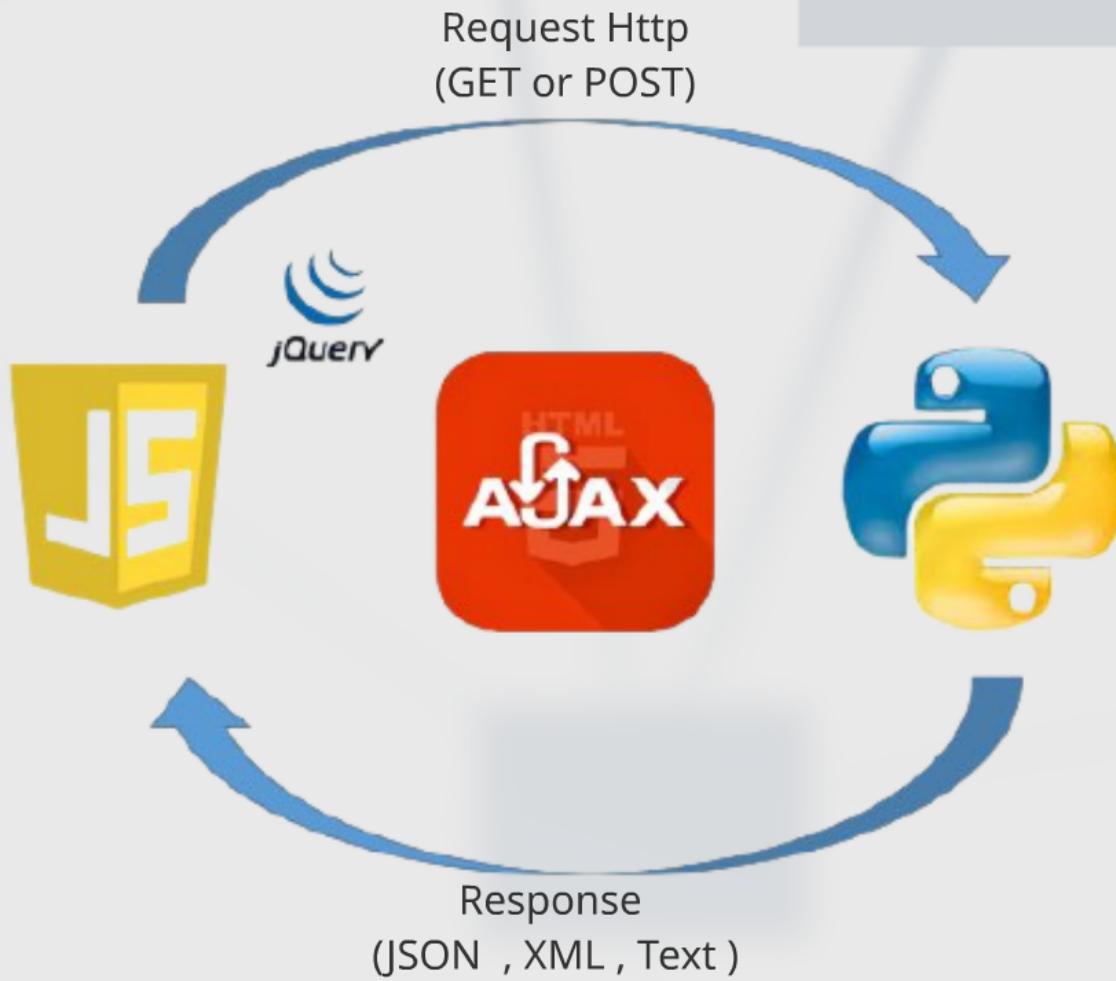
The Result



Contain :

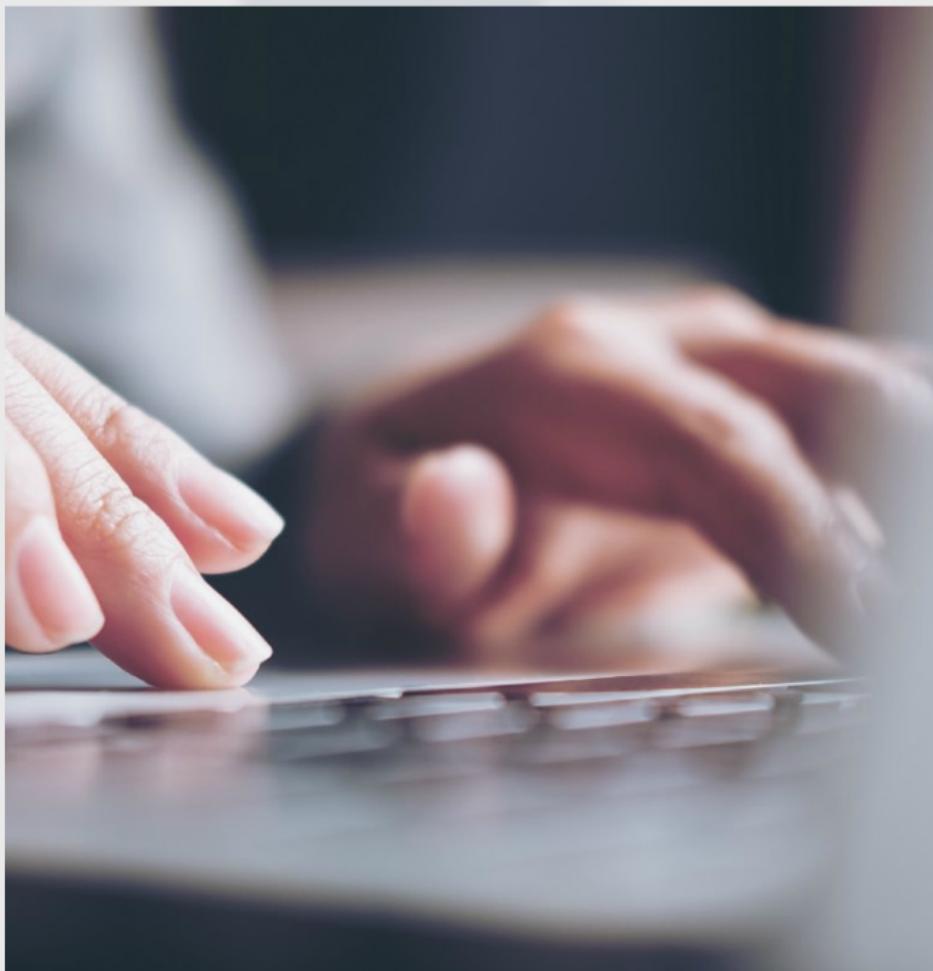
- text sentence
- Addresses of the most important doctors

AJAX



- 1) : Asynchronous JavaScript And XML
- 2): AJAX Is Not A Programming Language , It's Technique Contain Many Technologies :
 - DOM
 - XML / JSON
 - XMLHttpRequest
 - JavaScript : Connect All Technologies Together .

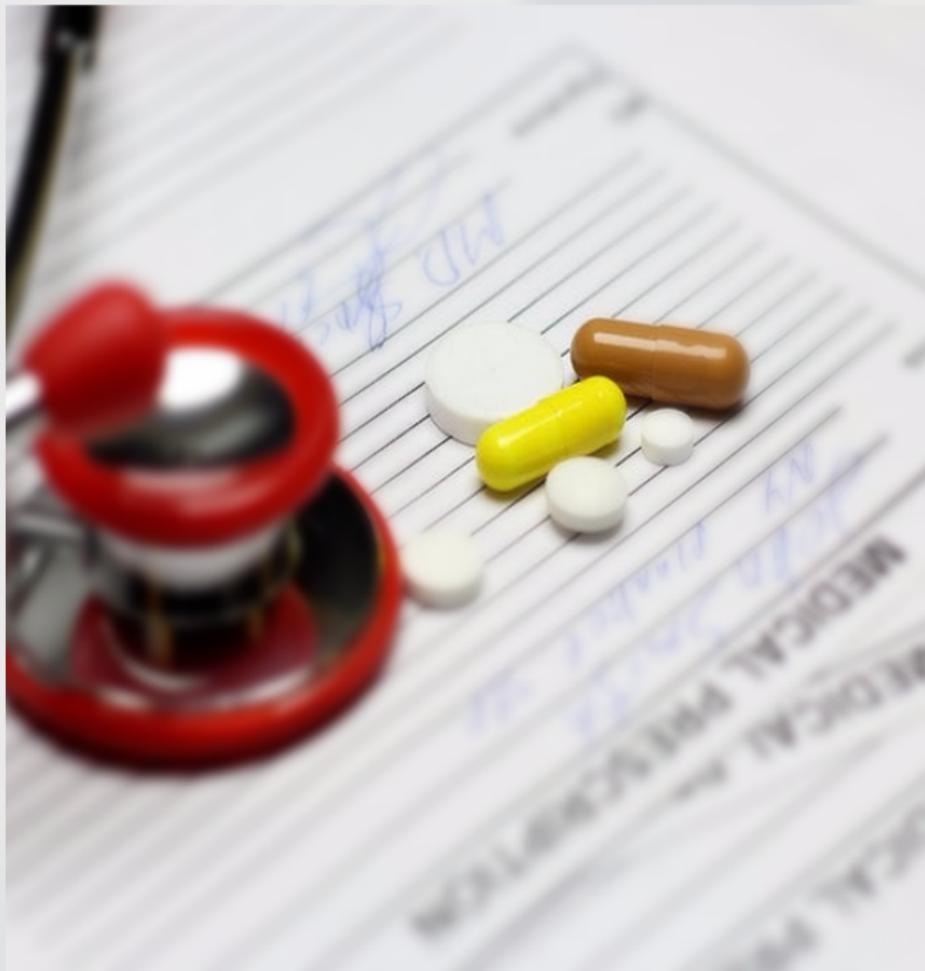
Add Experience



The Guidelines :

- What Are The Symptoms ?
- What Is The Time Period?
- What are the things that contributed to the improvement of your health?

Add Medicine



- 1) : Name
- 2) : Manufactory Company
- 3) : Description
- 4) : Status
- 5) : Disease Name
- 6) : Attached

Pharmacy



- Choosing the disease to display the medicine
- It contains medicines that have a positive effect on users

Pharmacy



- Choosing the disease to display the medicine
- It contains medicines that have a positive effect on users

User Experiences



It's An Interactive Platform
Between Users By :

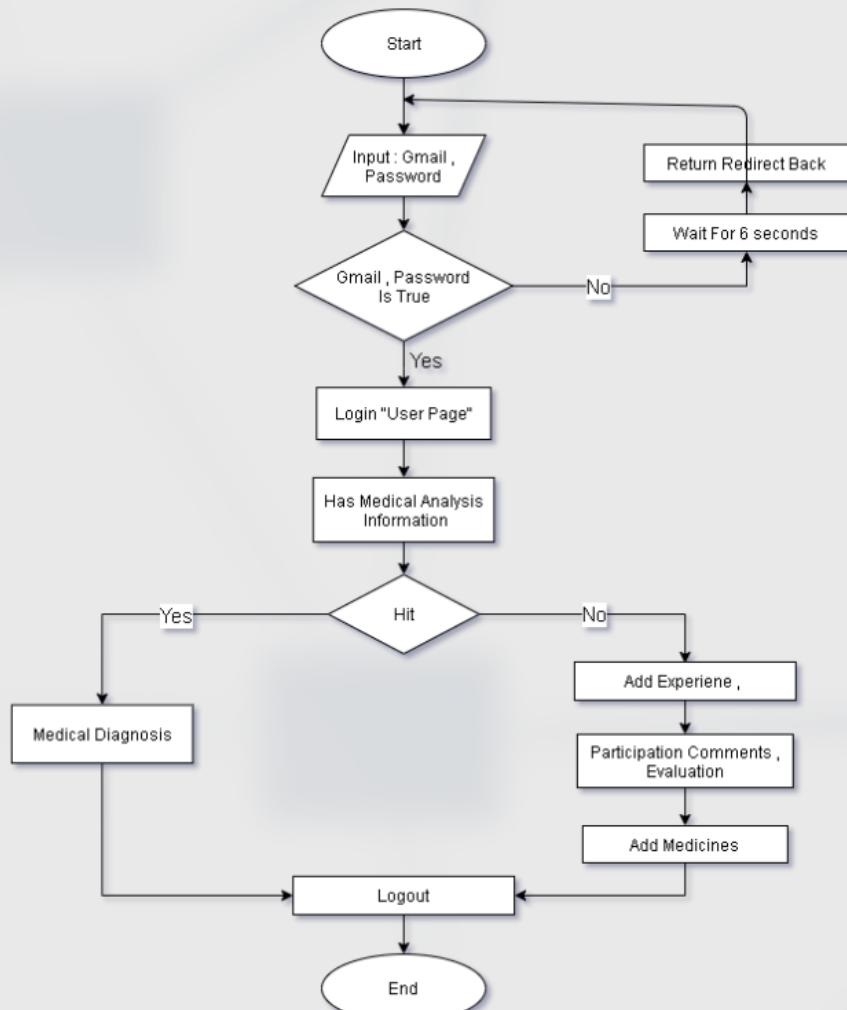
- Evaluation
- Add Comments

Doctor Guidelines



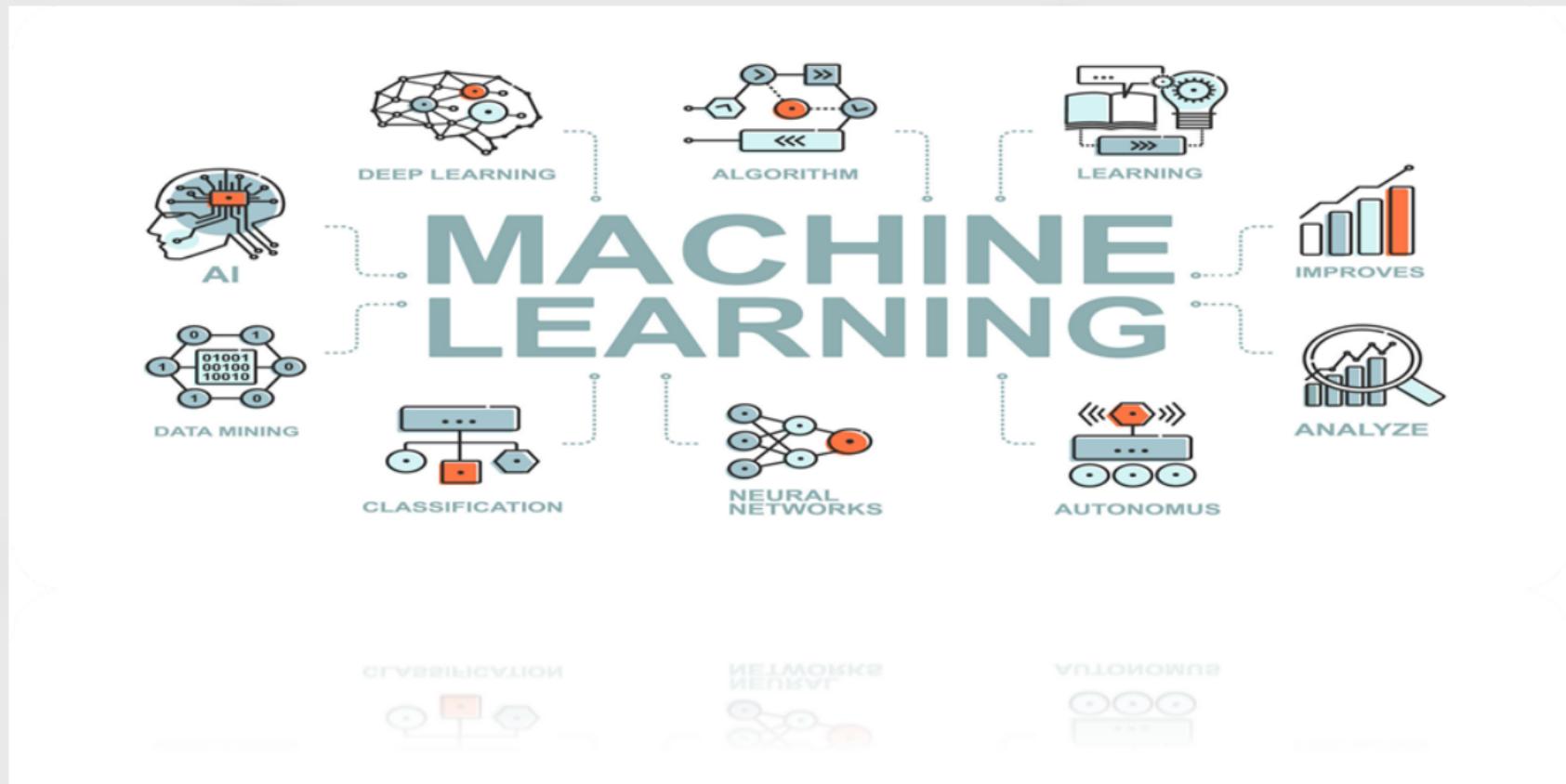
General Tips For Users

User FlowChart Diagram

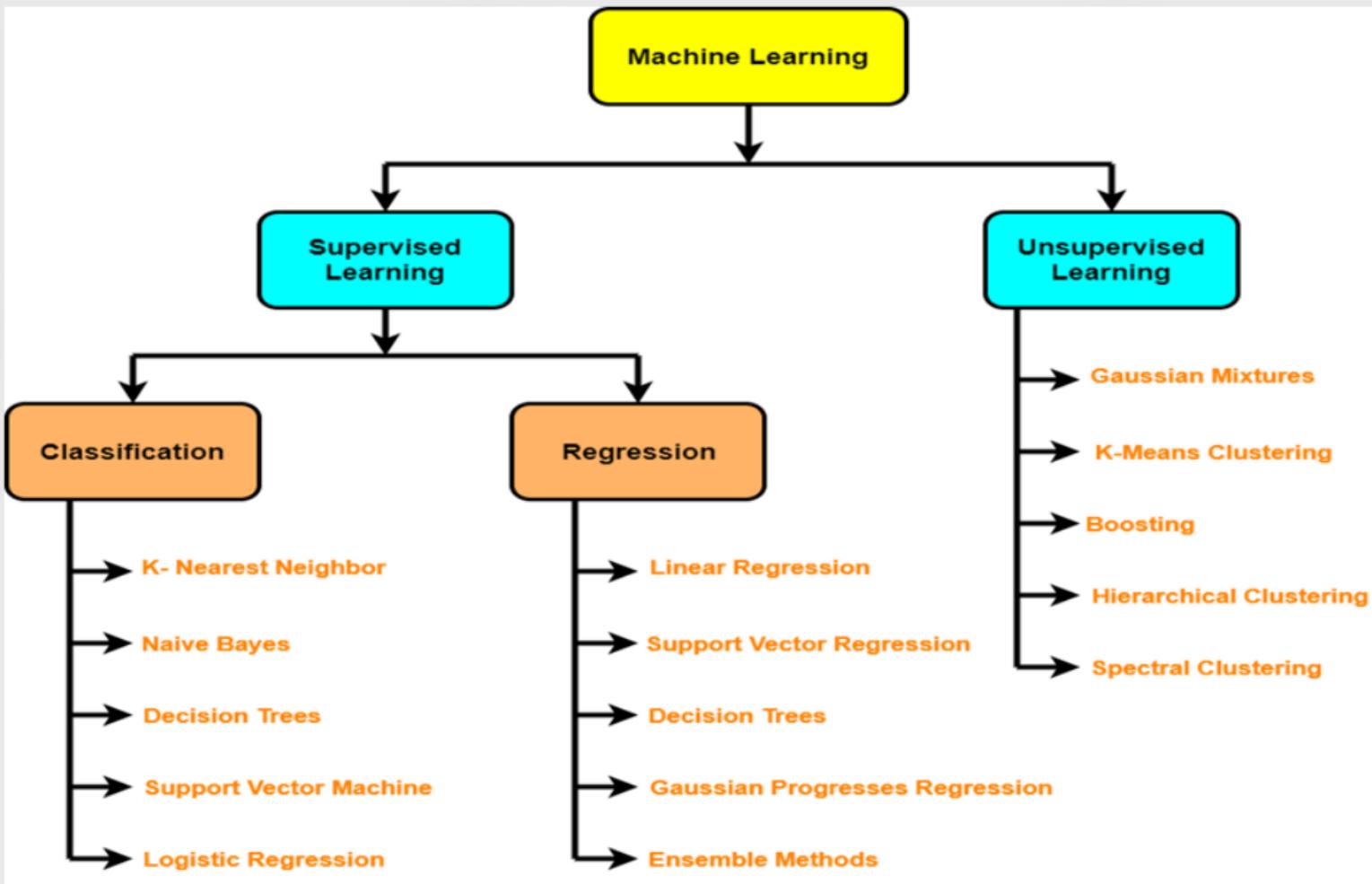


- 1) : Log in
- 2) : Make a diagnosis if medical data is available
- 3) : else
 - Add EXP
 - Sharing & Evaluation
 - Add Medicine

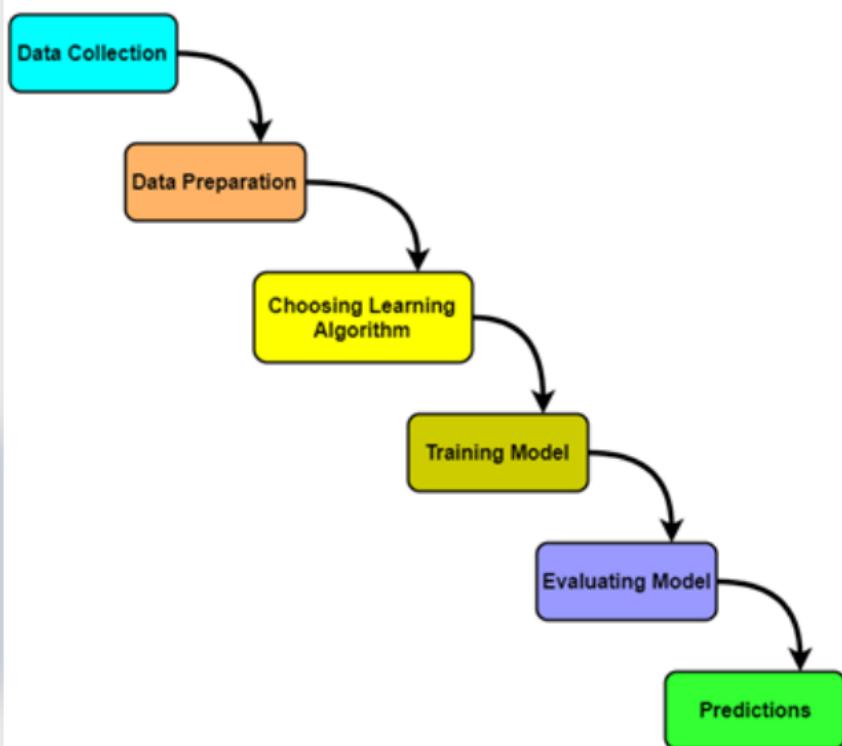
Back End



Model Of ML



Sections Of ML



- 1) : Data Collection
- 2) : Data Preparation
- 3) : Choosing Learning Algorithm
- 4) : Training Model
- 5) : Evaluating Model
- 6) : Predictions

Evaluating Model is the most important

| | | Actual class | |
|-----------------|---|----------------|----------------|
| | | 1 | 0 |
| Predicted class | 1 | True Positive | False Positive |
| | 0 | False Negative | True Negative |

- True Positive : People who Predict sick and they are actually sick
- True Positive : People who Predict sick and they are actually sick
- False Positive : People who Predict sick and they are actually not sick
- False Negative : People who Predict not sick and they are actually sick

| | | Real Label | |
|-----------------|----------|---------------------|---------------------|
| | | Positive | Negative |
| Predicted Label | Positive | True Positive (TP) | False Positive (FP) |
| | Negative | False Negative (FN) | True Negative (TN) |

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

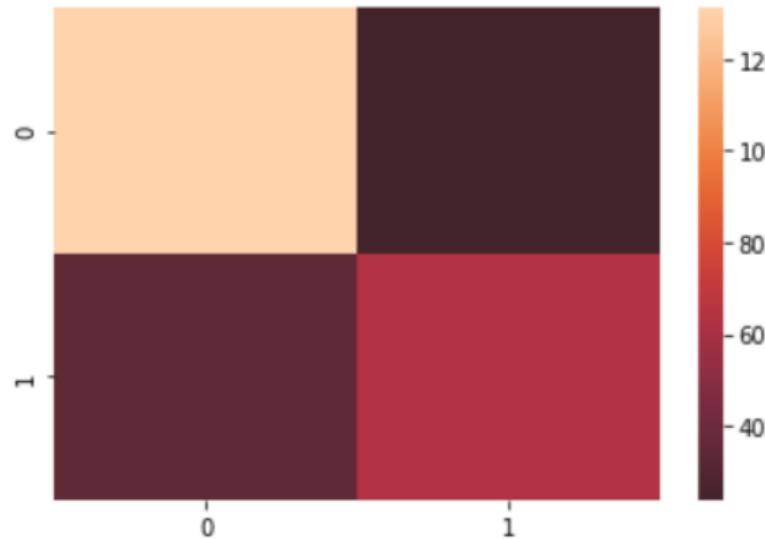
$\text{Recall} = \frac{\sum \text{TP}}{\sum \text{TP} + \text{FN}}$

$$\text{F1 Score} = \frac{2 \times (\text{Precision} \times \text{Recall})}{\text{Precision} + \text{Recall}}$$

Result on Diabetes

Confusion Matrix is :

```
[[131  24]
 [ 35  64]]
```



→

| | Model | Score |
|---|-------------------------|--------|
| 3 | Random Forest | 100.00 |
| 8 | Decision Tree | 100.00 |
| 1 | KNN | 83.55 |
| 0 | Support Vector Machines | 81.92 |
| 2 | Logistic Regression | 77.04 |



Scikit-learn is probably the most useful library for machine learning in Python.

We used it for Data Preparation and Training & Evaluating Model



pandas

We used pandas for read data & manipulation and analysis.

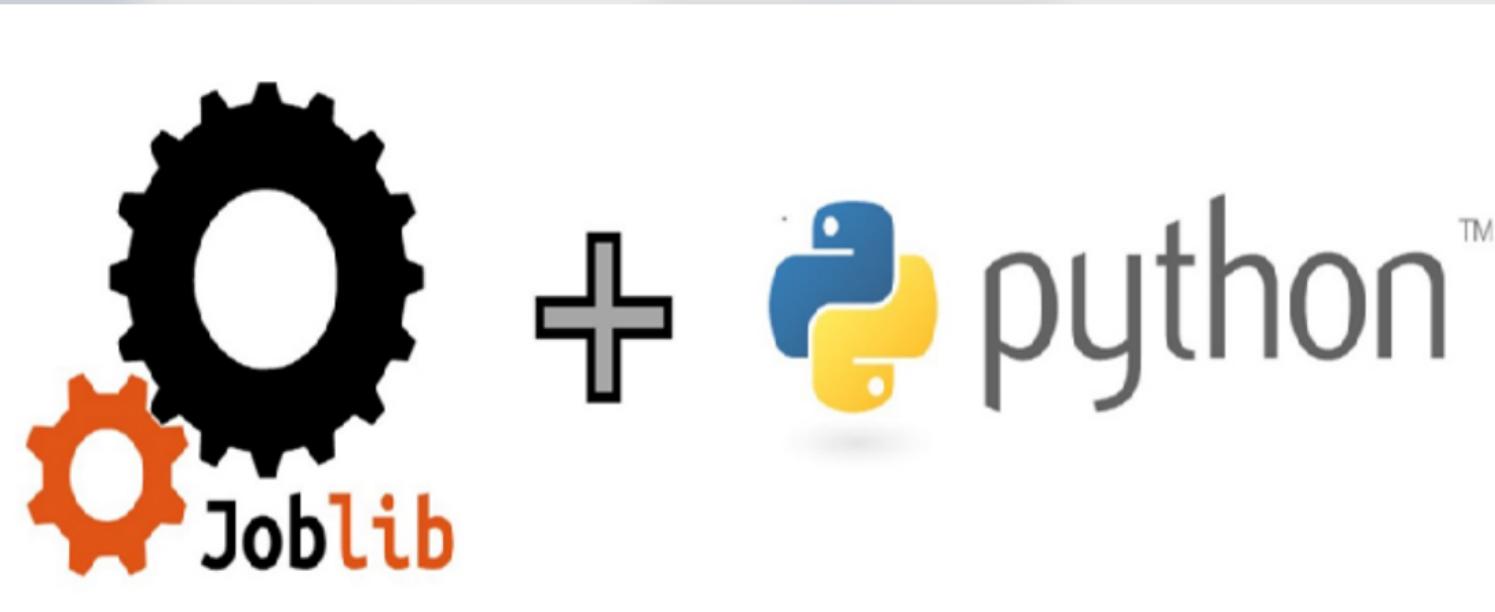


The OS module in Python provides functions for creating and removing a model of ML.



Python OS Module

The OS module in Python provides functions for creating and removing a model of ML .



We used Jleeb to save the training model sequence

Future Developments



- Dailing With Radiographics
- Increase The Number Of Diseases