# Machine Learning Model Deployment

- There are many ways to deploy an ML model in real-time.  
- Once we prepare the ML model, deployment will be handled by a Senior Data Scientist or a Lead from the team.  
  
 - We should not deliver the code directly to the client.  
 - We should share a URL with the client to access the ML model.

## What is Deployment?

### Gmail Application

- Gmail is a kind of web application.  
  
What do you mean by web application?  
- A web application is a type of software that can be accessed over the internet.  
- A web application is a combination of different components:  
 - HTML files  
 - Images  
 - CSS files  
 - JavaScript files  
 - Python files  
 - Some folders  
 - Etc.  
  
Purpose of Gmail Application:  
- It is a domain providing email services to users.

### Assuming that the Creator of Gmail is Daniel

- Daniel wants to provide Gmail IDs to everyone using this application.  
- What does Daniel need to do?  
  
 - He needs to deploy or host the Gmail application on a server.  
 - Once deployed, he must share a common URL with users.  
 - Everyone can then access the application via: www.gmail.com  
  
- Example:  
 - ✅ http://www.gmail.com/ — Deployed by Daniel on a server  
 - ❌ http://www.asldfhasdjffhaskd.com/ — Invalid app / not deployed

## What is a Server?

- A server is a program (or system) that runs 24/7.  
- All web applications are deployed on servers to be globally accessible.

Conversation Sample:  
You: Hey Nireekshan, I have a dataset. I’ve implemented a machine learning model. Can I deploy it to a server?  
Nireekshan: Yes, we can do that. Today, we are going to learn how.

## Problem Statement:

Let’s work on a scenario:  
Salary = Experience + Test\_Score + Interview\_Performance (/10)  
  
print(regressor.predict([[2, 9, 6]])) # Output: [52062.76112208]  
  
Experience: 2  
Test Score: 9  
Interview Score: 6  
Predicted Salary: 52062.76

## Steps to Deploy ML Model Using Flask

1. Unzip the file  
2. Open the folder  
3. Install the web application framework:  
 pip install flask  
4. Run the app.py file:  
 py app.py  
5. Open the browser and access:  
 http://127.0.0.1:5000/  
 http://localhost:5000/

## How Did We Deploy Our ML Model?

### Teams in a Software Company:

1. UI Team – User interface development using HTML, JavaScript, jQuery, CSS, AngularJS  
2. Middleware Team – Handles backend with Java, .NET, PHP, etc.  
3. Database Team – Manages data storage and retrieval  
4. Big Data Team – Data Engineers using Python + Pandas  
5. ML Team – Machine Learning Engineers who build the model  
6. Data Science Team – Analysts who verify and approve the model