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Deployment

Introduction

1- Deploying machine learning models is crucial for putting them into real-world applications.

In this presentation, we'll explore the deployment process using three popular Python frameworks: FastAPI, Flask, and Django.

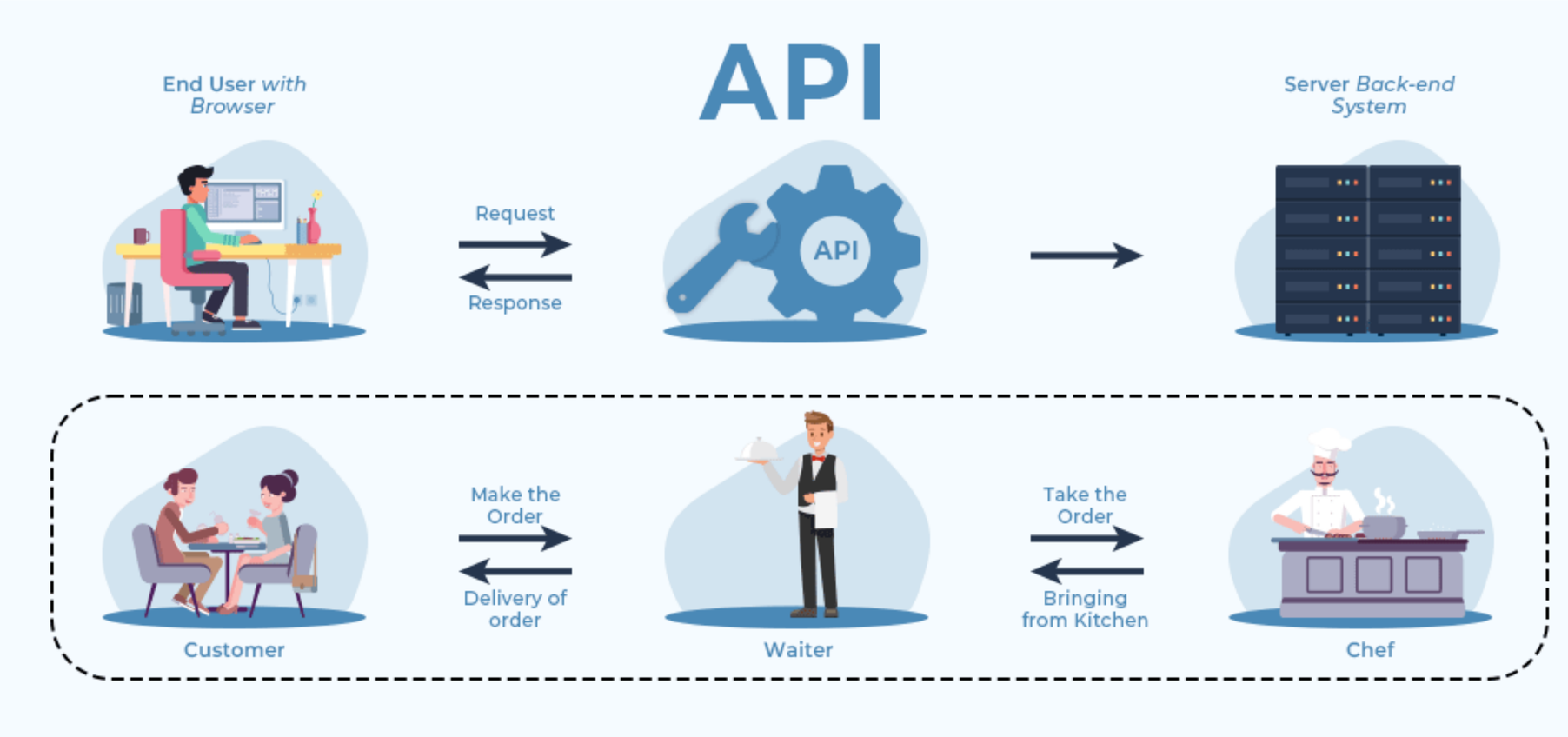
What is API?

- **Definition:** A set of rules and protocols facilitating communication between software applications.

- **Purpose:**
  - Enables seamless interaction between different systems.
  - Allows developers to access the functionality of a service without understanding its internal workings.

- **Types:**
  - **Web APIs:** Use HTTP for communication (e.g., RESTful APIs).
  - **Library-based APIs:** Provide functions for specific tasks.
  - **Operating System APIs:** Enable interaction with the underlying OS.

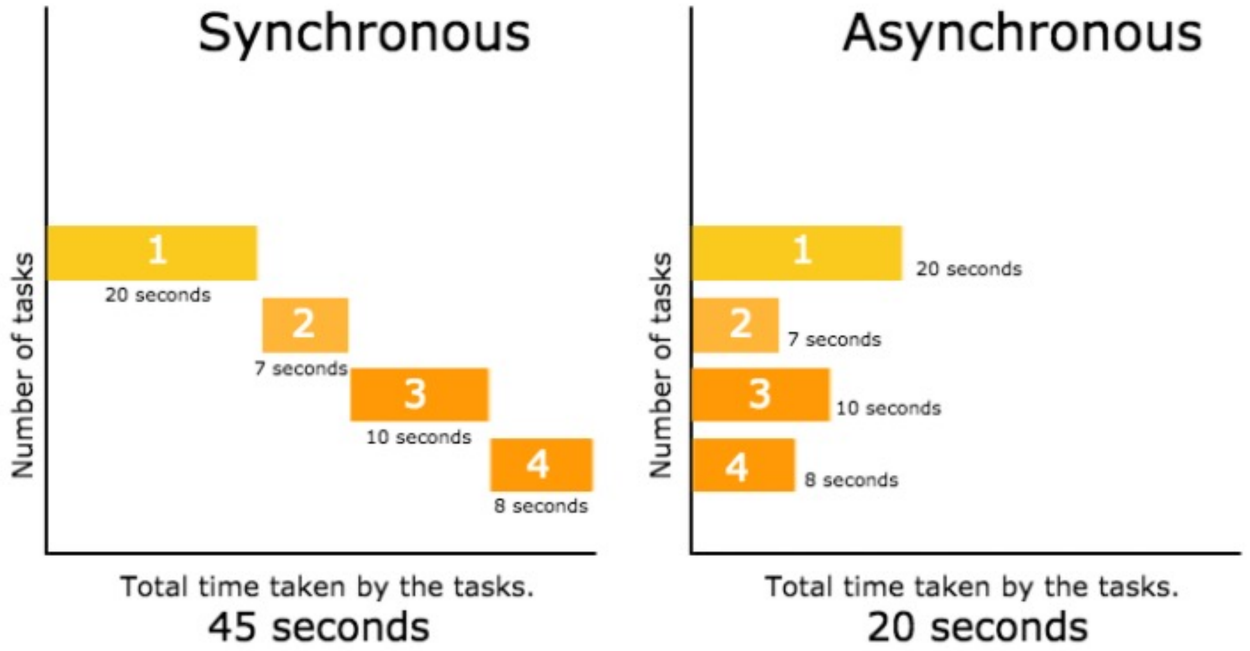
What is API?


End User with Browser
API
Server Back-end System
Request
Response
API
Make the Order
Delivery of order
Take the Order
Bringing from Kitchen
Customer
Waiter
Chef

Which Better? FastAPI, Flask, Django

Aspect	FastAPI	Flask	Django
Framework	Asynchronous	Asynchronous	Asynchronous
Preformance	Fast	Lightweight	Moderate
Documentation	Automatic OpenAPI	Well-documented	Comprehensive
Flexibility	High	High	Moderate
Ease of Use	Easy	Easy	Moderate
Community	Growing	Large	Very Large

Synchronous Vs Asynchronous



What would we choose?

Required Libraries

- FastAPI
- Uvicorn

Required Environment

- Model file (e.g., .h5 for Keras, .pkl for scikit-learn ..etc), the file contains the weights and parameters of your trained model.
- Preprocessing Script (If Applied)

Publishing on a Server

- Deploying your machine learning model onto a server is crucial for making it accessible over the internet.

- This section covers the process of publishing your model, enabling users or applications to interact with it remotely.

Hosting Services

- Alibaba cloud (SCCC)
- Amazon Web Services (AWS)
- Google Cloud
- Azure
- Heroku
- Render
- Digital Ocean

Resources

- How to Deploy FastAPI on AWS EC2: Quick and Easy Steps!
- Deploy Fast API to Azure App Service under 4min [Easy]

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Thank You