Project Design Phase - Ⅳ
Technology Stack (Architecture & Stack)

Date	04 November 2023
Team ID	592203
Project Name	AI-Driven Optimization Of 5G Resource Allocation For Network Efficiency
Maximum Marks	4 Marks

Technical Architecture:

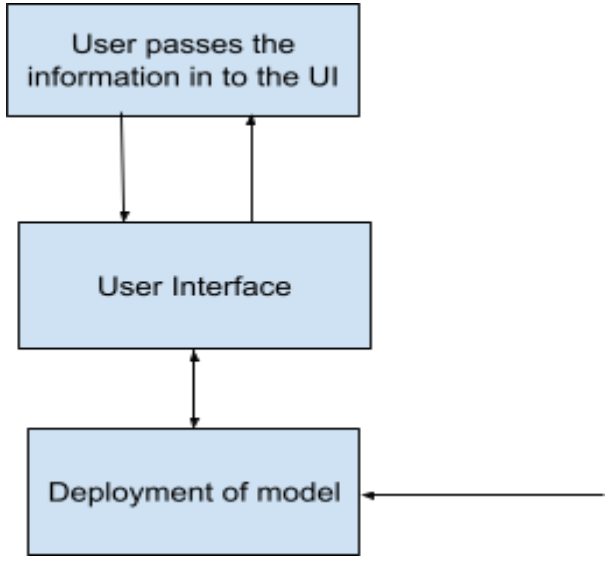
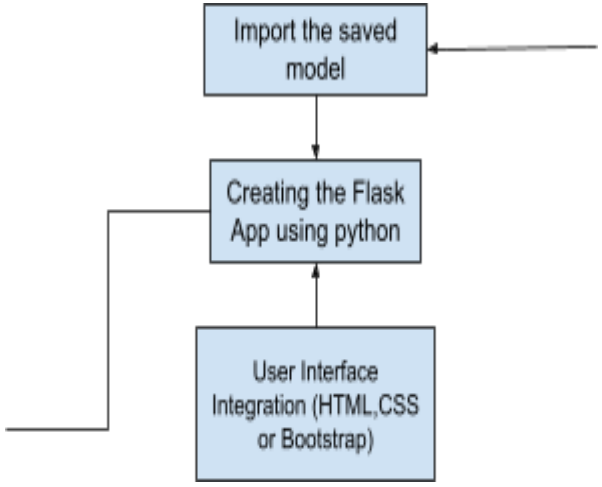
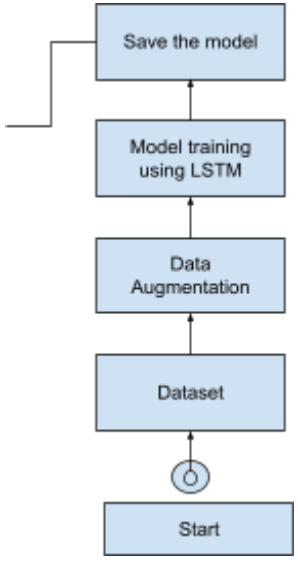
User Interface	Integration	Back End
		

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript.
2.	Application Logic-1	To clean data	Python
3.	Application Logic-2	To contact the data	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	connect easily to the website and extract the data.	MySQL, NoSQL, etc.
6.	File Storage	To store the previous recorded data	Other Storage Service or Local Filesystem
7	Framework	FLASK - PYTHON	To connect To web
8.	External API-1	Spectrum API helps to find the 5G band frequencies So quick	5G Spectrum API, etc.
9.	External API-2	For authentication uniqueness	Aadhar API, etc.
10.	Deep Learning Model	Here we predict the 5G spectrum bands	LSTM Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: FLASK	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Utilizing open-source frameworks for efficient 5G resource optimization.	TensorFlow, PyTorch, Scikit-Learn, Flask
2.	Security Implementations	Enhancing 5G network efficiency with robust security measures.	Keras Secure, Homomorphic Encryption,SHA-256, Encryptions, IAM Controls.
3.	Scalable Architecture	A 2-tier architecture consists of three distinct layers - the presentation layer, application layer.	Presentation Layer: HTML, CSS, JavaScript for web interfaces. Application Layer: Python with Flask for the web server, and LSTM models for AI optimization.
4.	Availability	Ensuring 5G network efficiency through reliable AI optimization.	High Availability Clusters,Data Replication, Cloud Services
5.	Performance	Enhancing 5G network efficiency through AI-driven resource optimization.	GPU Acceleration, Distributed Computing, Caching, Content Delivery Networks (CDNs), Optimization Algorithms