Project Planning Phase
Technology Stack (Architecture & Stack)

Date	07 November 2023
Team ID	Team-593059
Project Name	The Sleep Oracle Anticipating Health and Lifestyle Through Data
Maximum Marks	4 Marks

Technical Architecture:

Guidelines:

1. Include all the processes (As an application logic / Technology Block)
2. Provide infrastructural demarcation (Local / Cloud)
3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable)

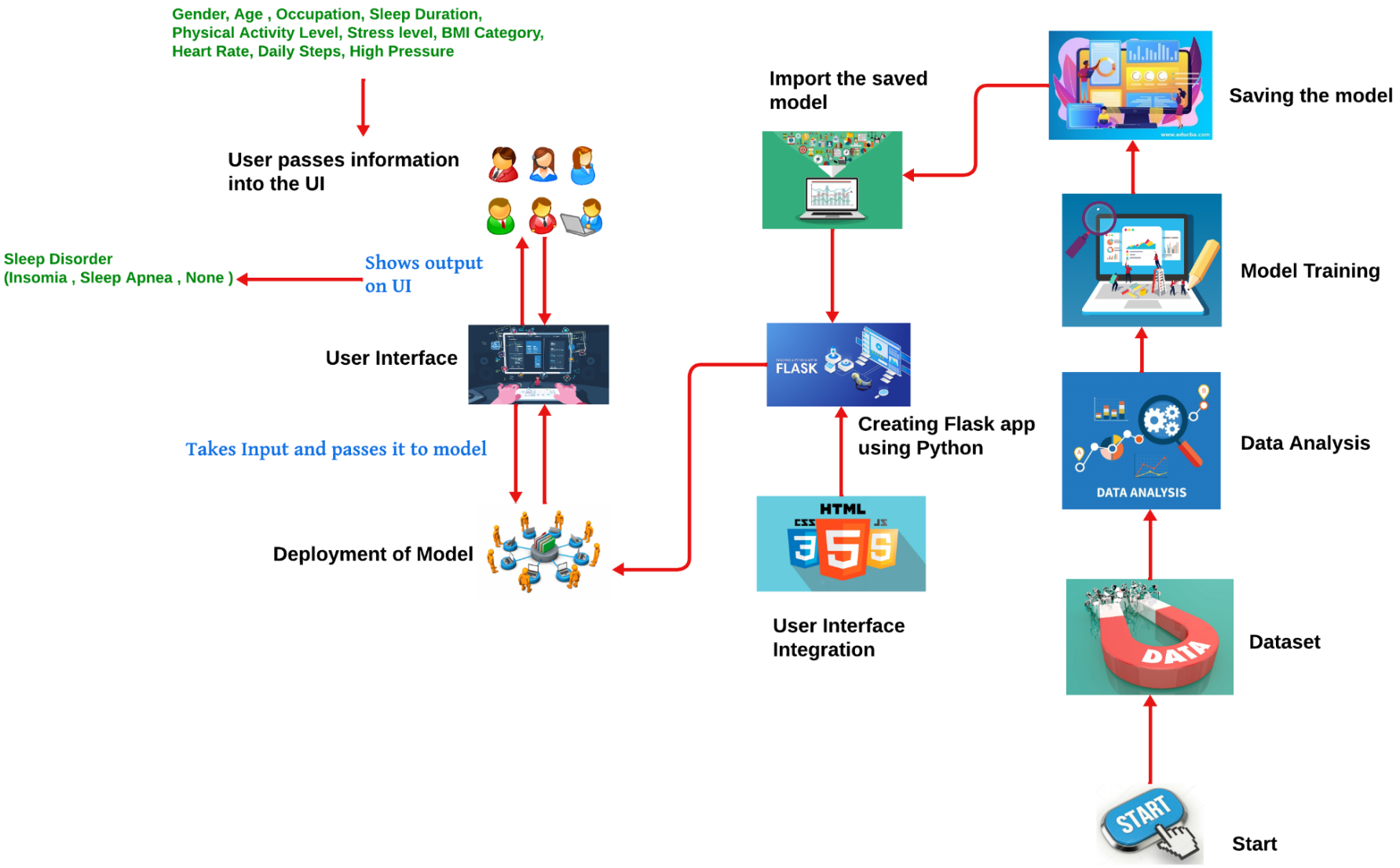
Gender, Age , Occupation, Sleep Duration,
Physical Activity Level, Stress level, BMI Category,
Heart Rate, Daily Steps, High Pressure
User passes information into the UI
Sleep Disorder
(Insomia , Sleep Apnea , None)
Shows output on UI
User Interface
Takes Input and passes it to model
Deployment of Model
Import the saved model
FLASK
Creating Flask app using Python
HTML
User Interface Integration
Saving the model
Model Training
DATA ANALYSIS
Data Analysis
DATA
Dataset
START
Start

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web Application for User interaction	HTML, CSS, JavaScript
2.	Application Logic-1	Data Preprocessing and feature engineering	Python , Pandas, Scikit-learn
3.	Application Logic-2	Sleep duration prediction using machine learning models	Scikit-learn , Statsmodels
4.	Application Logic-3	Model Training and evaluation	Confusion matrix, Classification Report , Accuracy, Statsmodels
5.	Database	Collect the Dataset Based on the Problem Statement	MySQL, NoSQL,File Manager etc.
6.	File Storage	File storage requirements for Storing the dataset requirements	Local System, Google Drive Etc
7.	Framework	Used to Create a web Application, Integrating Frontend and Back End	Python Flask, Django etc
8.	Machine Learning Model	Trained sleep duration prediction model	Logistic regression, Decision tree, Random forest and XGB boost etc.
11.	Infrastructure (Server / Cloud)	Web application deployment	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Flask web framework , Scikit-learn machine learning libraries , PAndas data manipulation library	Python , Flask
2.	Security Implementations	List security and access controls implemented in the project, including encryption and access management.	Depending on the specific requirements and risks, technologies like IAM (Identity and Access Management) controls, and OWASP (Open Web Application Security Project) guidelines can be used to enhance security.
3.	Scalable Architecture	Justify the scalability of the project's architecture. Discuss whether a 3-tier architecture or microservices architecture is used.	Flask web framework , depending on the chosen architecture, technologies for scaling can vary. For microservices, technologies like Docker and Kubernetes for container orchestration can be considered.
4.	Availability	Justify the availability of the application and mention the use of load balancers or distributed servers	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

References:

https://lucid.app/lucidspark/3284edf6-5023-4dc9-9d7b-c256166466ee/edit?beaconFlowId=2D27658AE303352E&invitationId=inv_88a50fd7-ec06-4c22-b15d-d7b893181bf7&page=0_0#

https://lucid.app/lucidchart/749f6021-5a62-411c-a06e-8719ddae6377/edit?viewport_loc=-705%2C-897%2C4487%2C2131%2C0_0&invitationId=inv_6f878b3b-b0c9-4388-997c-d43e79c4cafc

https://app.mural.co/t/niyatimittal2335/m/niyatimittal2335/1698687378352/6f07d31c7efc9947491916443344e5ba48862ee3?sender=u2991f828c79d85cb04e15195