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

Date	27 October 2023
Team ID	Team-592607
Project Name	Diabetes Prediction Using Machine Learning
Maximum Marks	4 Marks

Team Leader: L.Mohith
Team Member: AS. Vikram Aditya
Team Member: K. Rami Reddy
Team Member: PVS. Uday Kiran
Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table

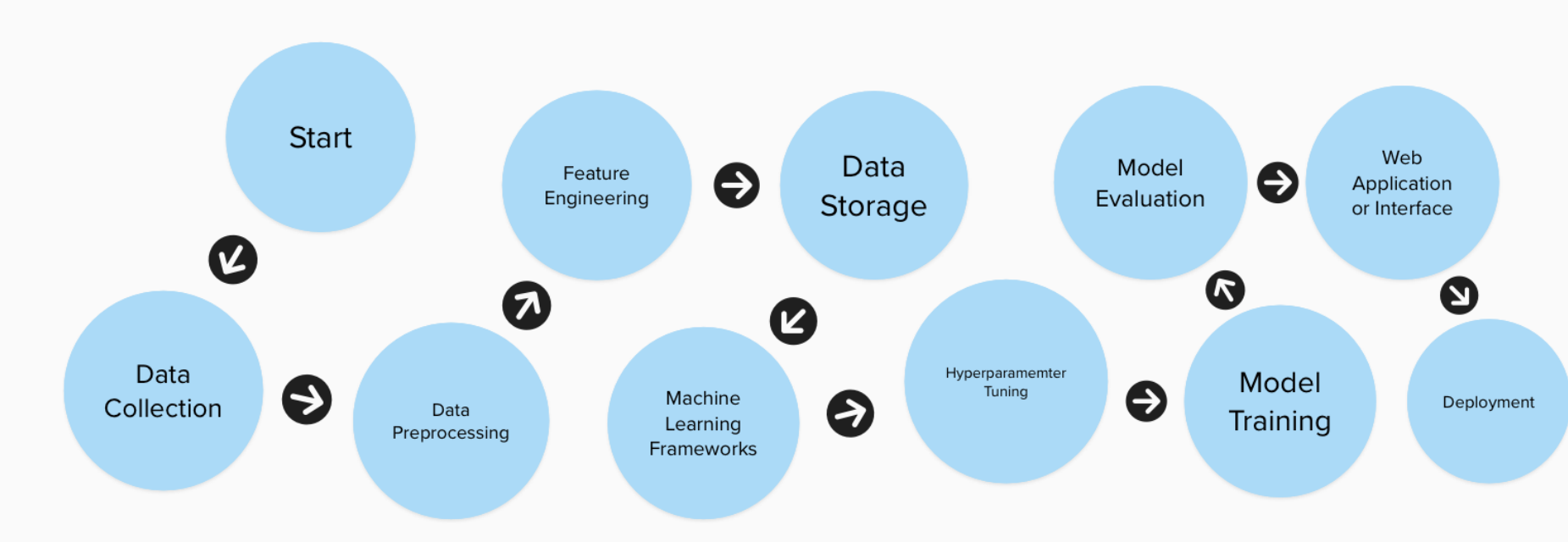

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI.	HTML, CSS, JavaScript
2.	Data Collection	Gathering patient information and medical data from electronic health records (EHR) and wearable devices.	Electronic Health Records, Wearable Devices.
3.	Data Preprocessing	Cleaning and preparing the data using Python libraries and Scikit-Learn for machine learning.	Python, Scikit-Learn
4.	Feature Engineering	Creating and transforming relevant features,	Python, Domain Knowledge

		sometimes in collaboration with medical experts.	
5.	Data Storage	Storing structured and unstructured data in relational or NoSQL databases.	MySQL, NoSQL, etc.
6.	Machine Learning Frameworks	Building and training machine learning and deep learning models using TensorFlow and Scikit-Learn.	Tensor Flow, Scikit-Learn
7.	Hyperparameter Tuning	Optimizing model hyperparameters with techniques like GridSearchCV or Keras Tuner.	GridSearchCV or RandomizedSearchCV, Keras Tuner
8.	Model Training	Training machine learning models using Python and potentially accelerating deep learning with GPUs.	Python, GPUs
9.	Model Evaluation	Assessing model performance with Scikit-Learn metrics and ROC AUC analysis.	Scikit-Learn Metrics, ROC AUC Analysis
10.	Web Application or Interface	Developing user-friendly web applications with Django or Flask for input and output.	Django or Flask, Javascript
11.	Deployment	Deploying the model on cloud services, containerized platforms, and creating APIs for integration.	Cloud Services, Containerization, API Development

Table-2: Application Characteristics:

S.No	**Characteristics**	**Description**	**Technology**
1.	Open-Source Frameworks	Scikit-Learn, Tensor Flow, Python, Keras, etc.	Python, Jupyter Notebooks, NumPy and Pandas, etc.

2.	Security Implementations	Data Encryption, Access Control, Authentication	SSL/TSL, JWT(JSON Web Tokens), etc.
3.	Scalable Architecture	Presentation Tier, Application Tier, Data Tier	Web Server, Application Servers, Data Warehouse, etc.
4.	Availability	Load Balancers, Disturbed Servers, Cloud Services and Visualisation, etc.	NGINX, HAProxy, AWS, CDNs, etc.
5.	Performance	Scalable Architecture, Caching, etc.	Microservices, In-Memory Caches, etc.