**Project Design Phase-II**

**Technology Stack (Architecture & Stack)**

|  |  |
| --- | --- |
| Date | 22 October 2022 |
| Team ID | PNT2022TMID43225 |
| Project Name | Deep learning fundus image analysis for early detection of diabetic retinopathy. |
| Maximum Marks | 4 Marks |

**Technical Architecture:**

TRAIN A DATA

PREDICTION

IMAGE OUTPUT

DETECTOR

**IMAGE PREPROCESING**

ALGORITHM

(DL)

MODEL

UI

INPUT

TEST A DATA

**Table-1 : Components & Technologies:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Component** | **Description** | **Technology** |
|  | User Interface | The user interface must be user friendly | HTML, CSS, JavaScript / Angular Js / python ,React Js etc. |
|  | Application Logic-1 | So the logic governing is about the detection of DR. | Java / Python |
|  | Application Logic-2 | The custom rules or algorithms that handle the exchange of information between a database and a user interface. | IBM Watson STT service |
|  | Application Logic-3 | Computer program that contains the information (in the form of business rules) that defines or constrains how a business operates . | IBM Watson Assistant |
|  | Database | Proliferation of retina, retinal damage images, size of the proliferation ,etc | MySQL, NoSQL, NLP etc. |
|  | Cloud Database | Plenty of datasets based on proliferation of retina has been stored in the cloud. | IBM DB2, IBM Cloudant etc. |
|  | File Storage | The datasets are stored in the cloud in the form of database the may be used at UI session. | IBM Block Storage or Other Storage Service or Local Filesystem |
|  | External API-1 | To build machines that understand and respond to text or voice data and respond with text or speech of their own in much the same way humans do. | Natural language programming, etc. |
|  | External API-2 | Neural networks reflect the behavior of the human brain, allowing computer programs to recognize patterns and solve common problems in the fields of AI, machine learning, and deep learning. | CNN , etc. |
|  | Machine Learning Model | Those models are used for the image pre processing purpose. | Xception v3 , Inception,Resnet etc. |
|  | Infrastructure (Server / Cloud) | Application Deployment on Local System / Cloud  Local Server Configuration:  Cloud Server Configuration : | Local, Cloud Foundry, Kubernetes, etc. |

**Table-2: Application Characteristics:**

| **S.No** | **Characteristics** | **Description** | **Technology** |
| --- | --- | --- | --- |
|  | Open-Source Frameworks | Python compiler , Ploting the graphs , image processing etc | Numpy , pandas, seaborn, matplotolio,tenserflow and keras etc |
|  | Security Implementations | User interface collecting informations about the user comes under the web development process. | HTM, CSS, JAVAscript,SQLetc |
|  | Scalable Architecture | The number datasets stored an be scaled upto an end of the progress , it can be timely updated. | IBM cloud |
|  | Availability | To build your own branded live chatbot into any device, application, or channel. | IBM watson |
|  | Performance | Neural networks reflect the behavior of the human brain, allowing computer programs to recognize patterns and solve common problems in the fields of AI, machine learning, and deep learning. | Natural language program |