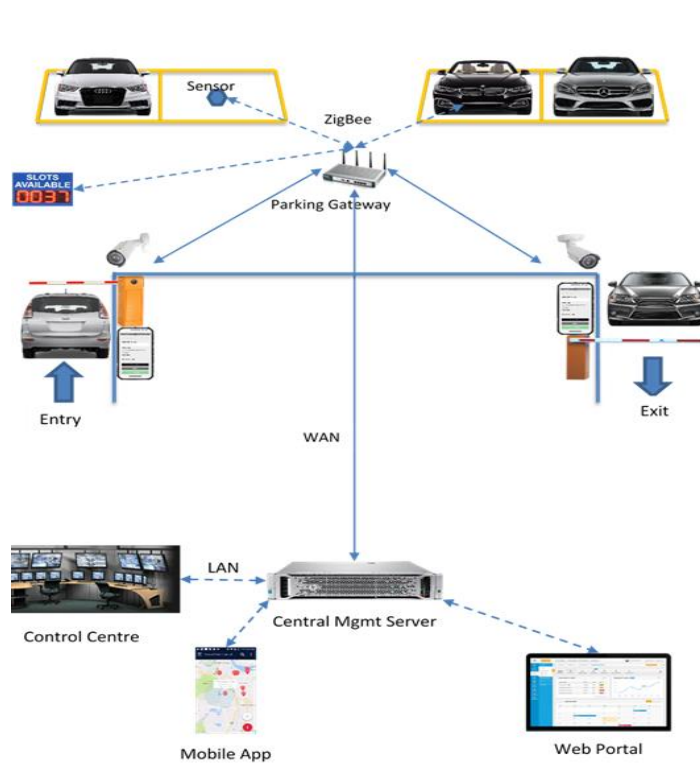


Project Design Phase-II Technology Stack (Architecture & Stack)

| | |
|--------------|---------------------------------|
| Date | 13 May 2023 |
| Team ID | NM2023TMID21776 |
| Project Name | AI Enabled Car Parking using CV |

Technical Architecture:



Guidelines:

1. Follow the Direction of Traffic Flow.
2. Park within Marked Spaces.
3. Queries is Sent to Watson Assistant.
4. Watson Assistant accepts the Query.
5. Watson using finds the relevant response from cloud using Watson .
6. The Queries are stored in Database
7. Secure your vehicle

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 / Angular Js / React Js etc. |
| 2. | Application Logic-1 | Logic for a process in the application | Python |
| 3. | Application Logic-2 | Logic for a process in the application | IBM Watson STT service |
| 4. | Application Logic-3 | Logic for a process in the application | IBM Watson Assistant |
| 5. | Database | Data Type, Configurations etc. | MySQL |
| 6. | Cloud Database | Database Service on Cloud | IBM DB2, IBM Cloud etc. |
| 7. | File Storage | File storage requirements | IBM Block Storage or Local Filesystem |
| 8. | External API-1 | Purpose of External API used in the application | IBM Weather API, etc. |
| 9. | External API-2 | Purpose of External API used in the application | Aadhar API, etc. |
| 10. | OpenCV Algorithm | Purpose of Machine Learning Model | Object detection, video processing etc. |
| 11. | 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 |
|-------------|--------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 1. | Open-Source Frameworks | List the open-source frameworks used | Python Flask, Tensor flow |
| 2. | Security Implementations | List all the security / access controls implemented, use of firewalls etc. | IBM Watson Assistant, IBM Cloud DB |
| 3. | Scalable Architecture | Justify the scalability of architecture (3 – tier, Micro-services) | Client side: Flask (python) Web Server: IBM Watson Assistant Cloud Server : IBM Cloud |
| 4. | Availability | Detect the cars in the image using object detection algorithms such as YOLO (You Only Look Once) | IBM Cloud, Flask(python), CNN |
| 5. | Performance | Responds to Several number of Queries at the same time. | IBM Load Balancer, IBM cloud |