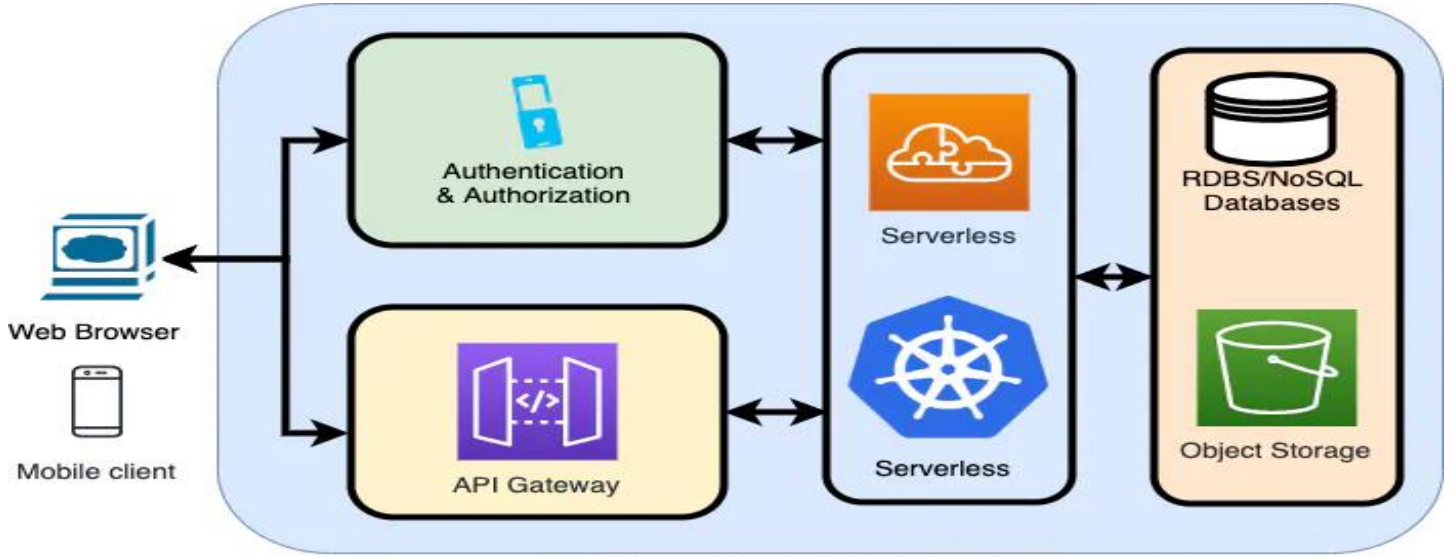
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	08 May 2023
Team ID	NM2023TMID16146
Project Name	Pixel Perfection: Transforming your photos with our cutting-edge image editing platform

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



Sample Cloud-Based Architecture

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web UI and Mobile App for users to interact with the application	HTML, CSS, JavaScript, ReactJS
2.	Application Logic-1	Logic for image editing processes	Python, OpenCV
3.	Application Logic-2	Integration with IBM Watson Speech-to-Text service for audio input processing	IBM Watson Speech-to-Text
4.	Application Logic-3	Integration with IBM Watson Assistant for chat-based user interaction	IBM Watson Assistant
5.	Database	Data storage for user accounts, image metadata, and user preferences	MySQL, MongoDB
6.	Cloud Database	Cloud-based database service for scalability and data management	Amazon DynamoDB, Google Cloud Firestore
7.	File Storage	Storage of user-uploaded images and temporary files	Amazon S3, Google Cloud Storage
8.	External API-1	Integration with third-party weather API for weather-related image enhancements	OpenWeatherMap API
9.	External API-2	Integration with Aadhar API for user identity verification	Aadhar API
10.	Machine Learning Model	Integration of object recognition model for automated image tagging	TensorFlow, PyTorch
11.	Infrastructure (Server / Cloud)	Application deployment on cloud platforms	AWS EC2, Google Cloud Compute Engine

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Utilization of open-source frameworks in the development of Pixel Perfection	ReactJS, Node.js, Express.js, TensorFlow

S.No	Characteristics	Description	Technology
2.	Security Implementations	Implementation of security measures and access controls	Encryption using AES-256, HTTPS protocol, Role-based access control (RBAC), OWASP Top 10 security practices
3.	Scalable Architecture	Justification of the architecture's scalability	Microservices architecture using Docker and Kubernetes, Horizontal scaling, Cloud-based auto-scaling (AWS Elastic Beanstalk, Google Kubernetes Engine)
4.	Availability	Ensuring high availability of the application	Load balancers for distributing traffic, Multiple server instances, Failover mechanisms, Disaster recovery strategies
5.	Performance	Design considerations for optimizing application performance	Caching with Redis, CDN integration for image delivery, Asynchronous processing, Database optimization techniques, Performance monitoring tools (e.g., New Relic, Datadog)