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

Date	06 May 2023
Team ID	NM2023TMID18041
Project Name	Project - Garbage classification using deep learning

Technical Architecture:

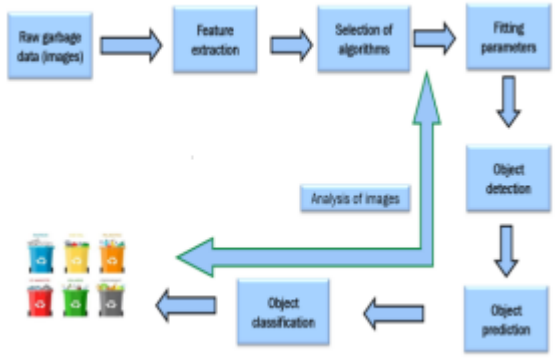

Table-1 : Components & Technologies:

S.No	Component	Description	Technology

1.	Image recognition component	This component is responsible for identifying the garbage from the image. It may use machine learning algorithms such as convolutional neural networks (CNNs) to analyze and classify the image.	TensorFlow,PyTorch,KerasOpenCV,Amazon ReKognition,Google Cloud Vision
2.	Database	The system may require a database to store information about the garbage categories, user data, and other relevant data.	MySQL,PostgreSQL, MongoDB, or Cassandra
3.	User interface	The user interface is the front-end of the system that allows users to interact with the system. It may be a web or mobile application.	HTML,CSS,JavaScript,React, Angular, and Vue.js React Native, Xamarin, or Flutter
4.	Cloud infrastructure	The system may use cloud infrastructure to host and manage the various components. This includes services such as Amazon Web Services (AWS) or Microsoft Azure.	Amazon Web Services (AWS) or Microsoft Azure.
5.	APIs	APIs can be used to connect the different components of the system and allow them to communicate with each other. This includes APIs for image recognition, database access, and user authentication.	By defining clear and well-structured APIs, different components of the system can work together seamlessly, improving the overall functionality and user experience of the system.
6.	Development frameworks	Development frameworks such as Django or Flask can be used to build the system's back-end.	Django or Flask
7.	Containerization	Containerization technologies such as Docker can be used to package and deploy the system's components in a standardized and efficient way.	Docker and Kubernetes.
8.	Performance Monitoring	Tools such as New Relic or AppDynamics can be used to monitor the system's performance and detect any issues that may affect its scalability or reliability	Tools such as New Relic or AppDynamics can be used to monitor the system's performance and detect any issues that may affect its scalability or reliability.Nagios, Zabbix, Prometheus, and Grafana.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Image recognition	The system uses image recognition technology to classify garbage based on the images provided by the user.	The technology may use machine learning algorithms such as convolutional neural networks (CNNs) to analyze and classify the image
2.	User-friendly interface	The application must have a user-friendly interface that makes it easy for users to interact with the system.	React, Angular, or Vue.js
3.	Accuracy	The system must have high accuracy in identifying and classifying different types of garbage.	In terms of technology, accuracy in garbage classification can be improved through the use of machine learning algorithms such as convolutional neural networks (CNNs).
4.	Multi-language support	The application should support multiple languages to cater to users from different regions.	popular web development frameworks such as React and Angular have built-in support for localization, making it easier to implement multi-language support in the user interface
5.	Real-time feedback	The system must provide real-time feedback to users to ensure that they receive prompt assistance.	WebSockets or server-sent events