

**Project Design Phase-I  
Solution Architecture**

Date	12 September 2023
Team ID	EXT2023TMID592333
Project Name	Microbe Mapper: Visual Recognition Of Micro-Organisms
Maximum Marks	4 Marks

**Solution Architecture:**

Microbe Mapper is a solution designed to accelerate the process of microorganism classification, thus, overcoming the limitations of traditional methods. By harnessing the power of deep learning via the Inception V3 model, our system integrates machine vision, pattern recognition, and advanced AI algorithms for efficient and accurate categorization of microorganisms based on images. It optimizes that the system has a high classification accuracy.

**Data Collection:** Microbe Mapper begins by gathering a diverse dataset of microorganism images across 8 classes. This dataset forms the foundation for training the Inception V3 model, ensuring a robust system.

**Image Preprocessing:** Before entering the classification pipeline, the collected images undergo preprocessing to enhance quality and standardize features such as image size. This step optimizes the input data, improving the overall performance of the deep learning model.

**Model Training:** At the core of Microbe Mapper lies the training of the Inception V3 model. This process involves feeding the preprocessed images into the model, allowing it to learn and extract relevant features for accurate microorganism classification.

**Microorganism Classification:** Once trained, the model can accurately categorize microorganisms based on their visual features. Since the classification is automated, the time and effort traditionally required for such analyses is reduced.

**User-Friendly Interface:** The a user-friendly interface of Microbe Mapper facilitates easy image uploads. This feature ensures that researchers, biologists, and scientists can interact seamlessly with the system, enhancing user satisfaction and adoption.

**Social Impact and Customer Satisfaction:**

Microbe Mapper contributes significantly to the pace and accuracy of microorganism classification, thereby advancing biological studies. By automating the classification process, it empowers researchers with a rapid tool that expedites research and discovery in various fields reliant on microorganism functions and characteristics.

## Solution Architecture Diagram

