Project Design Phase-I
Solution Architecture

Date	07 November 2023
Team ID	Team-591789
Project Name	PoxVisio: A Deep Learning Expedition into Monkeypox Skin Lesions.
Maximum Marks	4 Marks

Solution Architecture:

- **Data Ingestion:** Image Data is taken from the Kaggle as provided and its structure is analyzed.
- **Data Preprocessing:** Involves cleaning and normalization to ensure consistent pixel values and handle outliers. Techniques like rescaling and augmentation are applied for numerical stability and improved model generalization. Missing or corrupted images are addressed to maintain dataset integrity. Labeling is performed based on directory structure or external files. The dataset is often split for effective model evaluation.
- **CNN:** CNNs consist of convolutional layers that learn spatial hierarchies of features, pooling layers for dimensionality reduction, and fully connected layers for classification or regression tasks.
- **ResNet50:** ResNet-50 has an architecture based on the model depicted above, but with one important difference. The 50-layer ResNet uses a bottleneck design for the building block. A bottleneck residual block uses 1×1 convolutions, known as a "bottleneck", which reduces the number of parameters and matrix multiplications. This enables much faster training of each layer. It uses a stack of three layers rather than two layers.
- **Model Evaluation:** Evaluate different model classification performance based on their accuracy score.
- **Saving the Model**: Select the most optimal classification technique among the four based on the evaluation metrics, and save the model that demonstrates the most favorable results.
- **User Interface:** Create an intuitive user interface for the web application ensuring a user-friendly experience.

Solution Architecture Diagram: