Project Design Phase-I
Solution Architecture

Date	23 October 2023
Team ID	Team-592806
Project Name	Early Diagnosis Of Diseases Using Nail Image Processing Of Human Nails
Maximum Marks	4 Marks

Solution Architecture:

- **Data Collection and Preprocessing:**
  Collecting a large and diverse dataset of eye images, including images of healthy eyes and those with various eye diseases. Annotate the dataset to label each image with the corresponding disease or health status. Preprocess the images, including resizing, normalization, and data augmentation to improve model generalization.

- **Data Splitting:**
  Splitting the dataset into training, validation, and testing sets to assess the model's performance accurately.

- **Deep Learning Model Selection:**
  Using the Pre-trained models like VGG, ResNet, Inception, or EfficientNet that can provide a good starting point for feature extraction.

- **Training:**
  Training the model using the training dataset. Optimizing hyperparameters, like learning rate and batch size, during training. Using a suitable loss function for multi-class classification problems, such as cross-entropy loss. Monitoring the model's performance on the validation set and employ early stopping to prevent overfitting.

- **Model Evaluation:**
  Evaluating the trained model's performance on the test dataset using metrics like accuracy, precision, recall, F1-score, and ROC AUC, depending on the specific problem.

- **Deployment:**
  Once the model is trained and validated, deploy it in a production environment, which could be a web application, a mobile app, or a telemedicine system using platforms like Flask, Django, or FastAPI for web application development.

- **User Interface:**
  Designing a user-friendly interface for inputting nail images and displaying prediction results. Integrating features for uploading, capturing, or importing nail images.

Solution Architecture Diagram: