Project Design Phase-I
Solution Architecture

Date	5 October 2022
Team ID	PNT2022TMID03873
Project Name	Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy
Maximum Marks	4 Marks

Solution Architecture:

A complicated process with numerous sub-processes, solution architecture connects business issues with technological solutions. Its objectives are :

• Track down the most effective technological remedy for current business issues.

• Explain to project stakeholders the structure, traits, behaviour, and other features of the software.

• Specify the features, stages of development, and requirements for the solution.

• Offer guidelines for how the solution is created, handled,.

Technologies needed for Minimum Viable Product deployment

The software technologies needed for the project's systematic development and implementation include:

● HTML/CSS/JavaScript/bootstrap-Front End Development

● Python

● TensorFlow

● Image processing Basics

● Flask-Backend Development

● Git & GitHub-project Management

● IBM Cloud-Hosting

● IBM Watson-Training the Deep Learning Model

SOLUTION- ARCHITECTURE DIAGRAM:

TRAINING IMAGES

PREPROCESSING

GREY SCALE CONVERSION,NORMALIZATION CONTRAST LIMITED ADAPTIVE HISTOGRAM EQUALIZATION,GAMMA

CONTRAST ENHANCEMENT

(E-GIF)

User Interface

FEATURE EXTRACTION

DATA AUGMENTATION

TRAINING SAMPLES

TESTING SAMPLES

NETWORK TRAINING

(DRU NET)

DIMENSION REDUCTION

(PCA)

CNN ARCHITECTURE

CLASSIFICATION
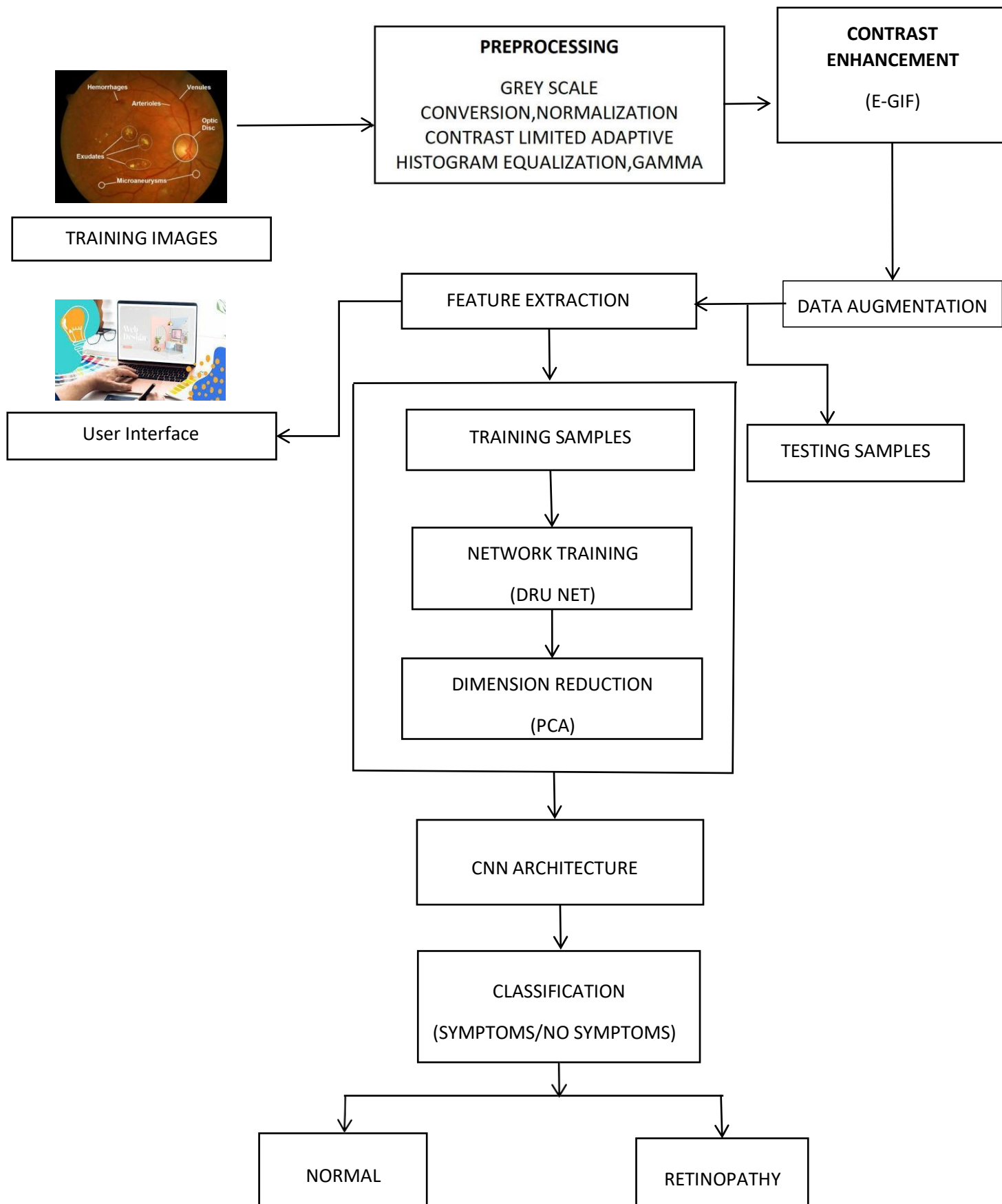
(SYMPTOMS/NO SYMPTOMS)

NORMAL

RETINOPATHY

Figure 1: Architecture and data flow of the voice patient diary sample application

Reference: https://aws.amazon.com/blogs/industries/voice-applications-in-clinical-research-powered-by-ai-on-aws-part-1-architecture-and-design-considerations/