Project Design Phase-II
Data Flow Diagram

Date	31 January 2026
Team ID	LTVIP2026TMIDS81330
Project Name	Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy
Maximum Marks	4 Marks

Requirement Analysis

Data Flow Diagram

1. Introduction

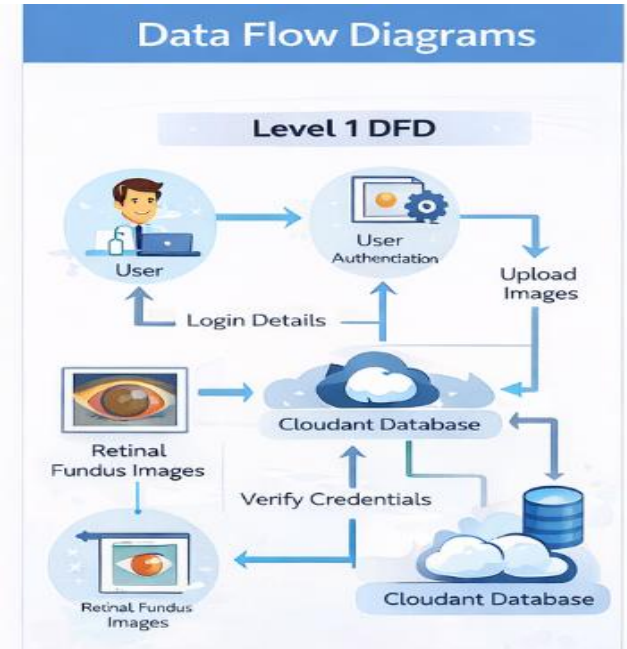
A Data Flow Diagram (DFD) is a graphical representation that illustrates the flow of data within a system. It helps in understanding how data enters the system, how it is processed, stored, and finally delivered as output.

In the Diabetic Retinopathy Classification System, the DFD represents the interaction between users, the web application, the deep learning model, and the database.

2. Purpose of Data Flow Diagram

The main objectives of the Data Flow Diagram are:

- To visualize data movement within the system
- To identify system inputs and outputs
- To understand processing steps
- To represent database interactions
- To improve clarity in system design



3. DFD Components

The system consists of the following components:

• External Entities

- User (Patient/Doctor)

• Processes

- User Registration
- User Authentication
- Image Upload
- Image Preprocessing
- Disease Classification
- Result Display

• Data Stores

- Cloudant Database
- Trained Deep Learning Model

• Data Flows

- User credentials
- Retinal image data
- Prediction results

4. DFD Level 0

The Level 0 DFD shows the entire system as a single process.

Description:

- The user provides login details and retinal images.
- The system processes the image using a deep learning model.
- The system returns the disease classification result to the user.

5. DFD Level 1

Data Flow Description:

1. The user registers or logs into the system.
2. Login credentials are verified using Cloudant DB.
3. Authenticated user uploads retinal image.
4. Image is preprocessed (resize, normalization).
5. Processed image is passed to the trained Xception model.
6. Model predicts disease severity.
7. Result is displayed on the UI.

6. Advantages of DFD

- Simplifies system understanding
- Helps in system debugging
- Improves system documentation
- Useful for future enhancements

Conclusion

The Data Flow Diagram clearly represents how data moves through the Diabetic Retinopathy Classification System. It ensures smooth interaction between users, backend logic, deep learning model, and database.