

Project Design Phase-II

Solution Requirements (Functional & Non-functional)

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

Solution Requirements

1. Introduction

Solution requirements define what the system must accomplish to meet user needs and project objectives. These requirements act as prerequisites for successful system development.

The Diabetic Retinopathy Classification System requires both functional and non-functional requirements to ensure accuracy, security, and usability.

2. Functional Requirements

The system must be able to:

1. Allow users to register with unique credentials.
2. Authenticate registered users securely.
3. Accept retinal image uploads.
4. Preprocess uploaded images automatically.
5. Classify images into DR severity levels.
6. Display prediction results clearly.
7. Maintain user sessions.
8. Allow users to logout securely.

3. Non-Functional Requirements

Performance Requirements:

- Fast image processing
- Minimal response time

Security Requirements:

- Secure user authentication
- Session-based access control

Usability Requirements:

- Simple and intuitive interface
- Easy navigation

Reliability Requirements:

- Consistent prediction results
- Stable database connectivity



4. Hardware Requirements

- Minimum 8 GB RAM
- Processor: Intel i5 or above
- GPU (optional but recommended)
- Internet connection

5. Software Requirements

- Operating System: Windows / Linux
- Python 3.8+
- Flask Framework
- TensorFlow
- Cloudant Database
- Web Browser

6. Constraints

- Image quality affects prediction accuracy
- Requires internet for database access
- High computational cost for training

7. Assumptions

- Users upload valid retinal images
- Database is available during runtime
- Model is pre-trained before deployment

Conclusion

The solution requirements ensure that the system performs accurately, securely, and efficiently. Meeting these requirements enables reliable disease classification and user satisfaction.