

Project Design Phase-II

Solution Requirements (Functional & Non-functional)

Date	13 February 2026
Team ID	LTVIP2026TMIDS88398
Project Name	Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy
Maximum Marks	4 marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form (Name, Email, Password)
		Secure password storage using hashing
FR-2	User Login & Authentication	Login using registered Email and Password
		Session Management and Logout functionality
FR-3	Fundus Image Upload	Upload retinal image through prediction page
		Validate image format (JPG/PNG)
		Display uploaded image preview
FR-4	Image Preprocessing	Resize image to required input dimensions
		Normalize pixel values
FR-5	DR Classification	Process image using trained Xception model
		Classify into 5 DR stages (No DR, Mild, Moderate, Severe, Proliferative)
FR-6	Result Display	Display predicted DR stage on web interface
		Show prediction confidence score

FR-7	Data Storage	Store prediction result in database
		Maintain user records securely
FR-8	Model Integration	Load saved .h5 model at application startup
		Generate real-time prediction on image submission

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	System provides simple and user-friendly interface.
NFR-2	Security	Passwords stored securely using hashing; authentication required.
NFR-3	Reliability	System consistently provides accurate predictions without crashing.
NFR-4	Performance	Prediction results generated within a few seconds.
NFR-5	Availability	Web application accessible whenever server is running.
NFR-6	Scalability	System supports increasing users and images efficiently.