

Updated RBS, WBS and time estimating

Project name: Diagnosis of diabetes retinopathy

Updated RBS

1 Data Input and Enhancement Processing

1.1Image Standardization: Normalize input images to ensure data consistency.

1.2Noise Removal: Apply image processing techniques to reduce noise and improve image quality.

1.3Pixel-level Annotation: Perform fine-grained annotation of lesion areas to facilitate model training.

1.4Brightness Adjustment: Optimize image brightness to enhance feature discernibility.

2 Deep Learning-Based Lesion Grading Detection Algorithm

2.1Model Selection and Training: Select appropriate deep learning models (e.g., ResNet) and train them for retinal lesion identification.

2.2Lesion Grading Algorithm: Develop a lesion grading algorithm with $\geq 85\%$ accuracy and $\geq 80\%$ recall rate.

3 Automated Detection Report Generation

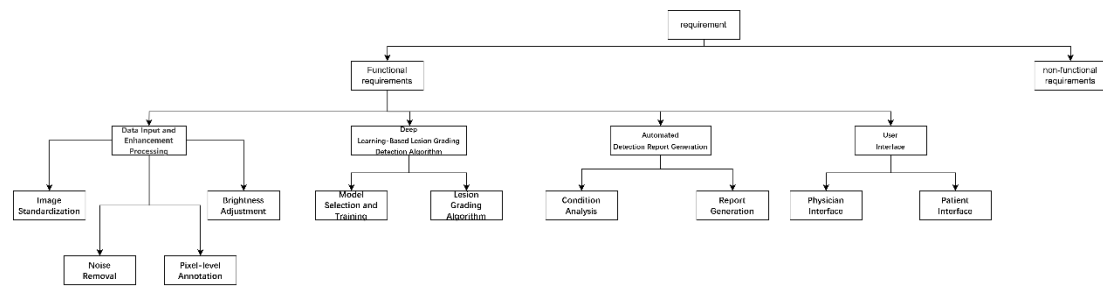
3.1Condition Analysis: Analyze test results to provide health guidance and recommendations.

3.2Report Generation: Generate diagnostic reports including lesion location, severity, and treatment suggestions for physician review.

4 User Interface

4.1Physician Interface: View patient test results, lesion grading, and treatment recommendations. Support image upload, result visualization, and report export functions.

4.2Patient Interface: Provide test result queries, treatment suggestion display, and health management features.



Updated WBS

Part I Overall project task

1. Project Management

1.1 Project Initiation & Planning

- Develop project charter
- Requirements analysis & scope definition
- Create project plan (timeline, budget, resources)

1.2 Progress & Quality Control

- Milestone setting & tracking
- Quality assurance & testing plan

2. Data Preparation

2.1 Data Collection

- Acquire retinal image datasets (public/hospital partnerships)
- Data anonymization & privacy processing

2.2 Data Preprocessing

3. Algorithm Development

3.1 Model Design & Training

Model selection (comparative testing of ResNet, EfficientNet, etc.)

Model training (GPU cluster deployment, hyperparameter tuning)

3.2 Lesion Grading Algorithm

- Grading criteria definition
- Multiclass model development (accuracy $\geq 85\%$)

3.3 Performance Optimization

Inference speed optimization (model pruning/quantization)

Recall rate improvement (data augmentation/loss function refinement)

4. System Development

4.1 Core Modules

Image analysis engine (integrated trained model)

Report generation module (automated PDF templates)

4.2 User Interfaces

Physician Portal

Patient management dashboard

Image upload & result visualization

Report editing/export

Patient Portal

Test result queries

Personalized health recommendations

4.3 System Integration

Frontend-backend API development

Database design (patient information storage)

5. Testing & Deployment

5.1 Validation

Unit testing (algorithm module verification)

Clinical trials (pilot testing at partner hospitals)

5.2 Deployment

Server configuration (high-concurrency support)

Security implementation (data encryption/access control)

Part II Time estimating (Refer to the previous assignment)

Task	Start Date	End Date	Duration (Days)	Workload (Hours)
1. Develop a project plan	3.24	3.28	5	5
2.1 Collecting retinal image data	3.29	4.2	5	5
2.2 Data cleaning and preprocessing	4.3	4.9	7	15
2.3 Data augmentation	4.10	4.15	6	20
3.1.1 Choose a deep learning model	4.3	4.15	13	15
3.1.2 Model Training and Validation	4.16	5.16	31	30
4. Front-end & Report Integration	5.2	5.16	15	20
5.1 Unit Testing	5.17	5.26	10	20
5.2 System Integration Testing	5.27	6.5	10	20
5.3 User Acceptance Testing	6.6	6.10	5	20
6. Overall project management	3.24	6.15	84	10
Total estimate	\	\	84	180

