Project Planning

Diabetic Retinopathy Detection System

PROJECT OVERVIEW

Project Name: Diabetic Retinopathy Detection System using Deep Learning
Duration: 6 Weeks (February 10 - March 23, 2026)
Team Size: 1-3 members
Objective: Develop AI-powered web application for automated DR classification from retinal images

---

PROJECT SCOPE

In Scope: ✅ User authentication system
✅ Web-based image upload interface
✅ 5-class DR classification model
✅ Real-time prediction with confidence scores
✅ Cloud database integration
✅ Responsive UI design

Out of Scope: ❌ Mobile app, EHR integration, batch processing, PDF reports, email notifications

---

PROJECT PHASES & TIMELINE

Phase 1: Ideation & Planning (Week 1: Feb 10-16)

Activities: Problem definition, empathy mapping, brainstorming, technology selection
Deliverables: Problem statement, empathy map, brainstorming report, technology stack, project plan
Milestones: ✅ Problem validated, solution finalized, tech stack approved

Phase 2: Design (Week 2: Feb 17-23)

Activities: System architecture, database schema, UI wireframing, data flow diagrams
Deliverables: Architecture diagram, database schema, wireframes, user stories
Milestones: ✅ Architecture approved, design review complete

Phase 3: Data & Model Development (Week 3: Feb 24 - Mar 2)

Activities: Dataset organization, preprocessing, model training, hyperparameter tuning
Deliverables: Organized dataset (3,662 images), training script, trained model (.h5)
Milestones: ✅ Dataset prepared, model trained, accuracy ≥85% achieved

Phase 4: Backend Development (Week 4: Mar 3-9)

Activities: Flask setup, route handlers, authentication, database integration, ML integration
Deliverables: Flask app (app.py), Cloudant config, API endpoints, authentication module
Milestones: ✅ Backend functional, database connected, model inference working

Phase 5: Frontend Development (Week 5: Mar 10-16)

Activities: HTML templates, CSS styling, Bootstrap integration, JavaScript functionality
Deliverables: HTML templates, CSS stylesheets, JavaScript files, responsive layouts
Milestones: ✅ All pages functional, responsive design complete

Phase 6: Testing & Deployment (Week 6: Mar 17-23)

Activities: Testing (unit, integration, UAT), bug fixes, documentation, deployment
Deliverables: Test reports, complete documentation, deployed system
Milestones: ✅ All tests passed, documentation complete, system deployed

---

RESOURCE ALLOCATION

Role	Responsibilities	Time %
ML Engineer	Model development, training	40%
Backend Developer	Flask app, API, database	30%
Frontend Developer	UI/UX, HTML/CSS/JS	20%
Project Manager	Planning, coordination	10%

RISK MANAGEMENT

Risk	Probability	Impact	Mitigation
Model accuracy below target	Medium	High	Use proven architecture, adequate data
Training time exceeds estimate	Medium	Medium	Use pre-trained models, cloud GPU

Risk	Probability	Impact	Mitigation
Cloudant service issues	Low	Medium	Implement fallback, local testing
Scope creep	High	Medium	Strict scope management
Timeline delays	Medium	Medium	Buffer time, parallel tasks

QUALITY METRICS

Metric	Target	Status
Model Accuracy	≥ 85%	✅ 88.12%
Prediction Time	≤ 5 seconds	✅ 2.34s
Page Load Time	≤ 3 seconds	✅ Pass
Code Coverage	≥ 70%	✅ Pass
User Satisfaction	≥ 4/5	✅ Pass

DEPENDENCIES

External: - IBM Cloud Cloudant service - TensorFlow/Keras library - Dataset availability - Internet connectivity

Internal: - Model training before backend integration - Backend API before frontend development - Database schema before CRUD operations

---

SUCCESS CRITERIA

Technical: ✅ Model achieves ≥85% accuracy
✅ System classifies in ≤5 seconds
✅ All functional requirements implemented
✅ No critical bugs
✅ Responsive design works on all devices

Business: ✅ Project delivered on time
✅ Within budget
✅ Meets user requirements
✅ Positive user feedback
✅ Complete documentation

MILESTONE SCHEDULE

Milestone	Date	Status
M1: Project Kickoff	Feb 10	✅ Complete
M2: Requirements Complete	Feb 16	✅ Complete
M3: Design Approved	Feb 23	✅ Complete
M4: Model Trained	Mar 2	✅ Complete
M5: Backend Complete	Mar 9	✅ Complete
M6: Frontend Complete	Mar 16	✅ Complete
M7: Testing Complete	Mar 20	✅ Complete
M8: Project Delivery	Mar 23	✅ Complete

BUDGET ESTIMATION

Item	Cost
Development Tools	$0 (Open source)
Cloud Services	$0 (Free tier)
GPU Training	$0-100 (Optional)
Domain Name	$15 (Optional)
Total	**$15-115**

Time Investment: 240 hours (30 person-days)

PROJECT CLOSURE

Deliverables Checklist: ✅ Working application
✅ Source code repository
✅ Trained ML model
✅ Technical documentation
✅ User documentation
✅ Test reports
✅ Deployment guide
✅ Final presentation

Project Status: ✅ COMPLETED
Final Delivery: March 23, 2026
Overall Success: All objectives achieved