# **Project Management Plan**

## **1. Project Overview**

**Project Name:** **MediScan AI – Smart Pneumonia Diagnosis System**

**Project Manager:** **Ahmed Gamal Abdelfatah**

**Start Date / End Date:** Start: 1 November 2025  
 End: 25 April 2026 (Estimated total duration: 25 weeks)

**Purpose & Objectives:** MediScan AI is an intelligent diagnostic system designed to assist healthcare professionals in detecting pneumonia from chest X-ray images using deep learning. The project’s main goals are to:

* Develop an accurate AI-based diagnostic tool for pneumonia detection.
* Automate X-ray analysis and provide explainable results via heatmaps.
* Support early and reliable diagnosis, especially in resource-limited settings.
* Reduce radiologists’ workload and improve patient outcomes.

## **2. Scope Statement**

**Inclusions:**

* AI-based pneumonia classification using CNN architectures (DenseNet121, ResNet50, EfficientNet).
* Doctor authentication and role-based access.
* Patient record management and report generation.
* Dashboard with real-time performance metrics (accuracy, cases analyzed).
* Comparison of patient scans over time.
* PDF report generation.

**Exclusions:**

* Multi-disease detection beyond pneumonia.
* Integration with hospital Electronic Health Record (EHR) systems.
* Real-time image capture from medical equipment.
* Offline inference or edge device support.
* Chatbot assistant (future enhancement).

**Major Deliverables:**

* Trained deep learning model achieving ≥94% accuracy.
* Web and mobile application interfaces.
* REST API backend with authentication and secure data storage.
* Patient dashboard and diagnostic report generator.
* Final project documentation and presentation.

## **3. Stakeholder Management**

**Stakeholder Register:**

| **Stakeholder** | **Role** | **Interest** | **Impact** |
| --- | --- | --- | --- |
| Dr. Khaled Mostafa Elsayed | Project Advisor | High | High |
| Ahmed Gamal Abdelfatah | Project Manager / Software Developer | High | High |
| Habiba Ayman Amin | Data Analyst / Ai Developer | Medium | Medium |
| Momen Elsayed | Data Analyst / Ai Developer | High | High |
| Sara Mostafa Ali | Software Developer | Medium | High |
| Hospitals and Doctors | End Users | High | High |

**Engagement Strategy:**

* Weekly progress meetings via Google meet or Discord.
* Biweekly advisor updates and review sessions.
* Shared communication via Slack and Google Drive.
* Regular demonstrations and feedback sessions for stakeholders.

## **4. Project Organization**

**Project Team and Roles:**

* **Ahmed Gamal Abdelfatah** – Team Lead, Software Developer, and Project Manager.
* **Habiba Ayman Amin** – Data Scientist and AI Model Developer (React.js/Flutter).
* **Momen Elsayed** – Data Scientist and AI Model Developer.
* **Sara Mostafa Ali** – UX / UI , Software Developer.

**Responsibilities:**

* **Project Manager:** Overall coordination, scheduling, documentation.
* **Frontend Developer:** Build user interfaces, dashboards, visualization.
* **Backend Developer:** Implement APIs, database, authentication.
* **Data Analyst:** Prepare datasets, monitor model training, evaluate performance.
* **Advisor:** Provide technical guidance and project oversight.

**5. Schedule Management**

**Milestones:**

| **Phase** | **Description** | **Duration** |
| --- | --- | --- |
| Research & Dataset Preparation | Data collection, cleaning, augmentation | 5 weeks |
| Model Design & Development | Build, tune, and evaluate CNN models | 5 weeks |
| Backend Development | Build REST APIs, authentication, and database | 4 weeks |
| Frontend Development | Develop responsive web/mobile interfaces | 4 weeks |
| System Integration & Testing | Full system testing and validation | 3 weeks |
| Deployment & Optimization | Dockerization, CI/CD, cloud deployment | 3 weeks |
| Documentation & Final Reporting | Write reports, user manual, and presentation | — |

**Timeline Summary:**

Total estimated project duration: **25 weeks**.

A Gantt chart will outline the above phases sequentially.

## **6. Budget and Resource Management**

**Budget Summary:**

| **Category** | **Description** | **Estimated Cost (USD)** |
| --- | --- | --- |
| Cloud Services (AWS/GCP) | Model hosting, storage, and API deployment | $200 |
| Development Tools | IDEs, design software (Figma, Visily) | $100 |
| Dataset Storage | Kaggle datasets and backup | $50 |
| Miscellaneous | Testing, presentation, documentation | $50 |
| Total Estimated Budget |  | $400 |

**Resource Plan:**

* **Hardware:** High-performance GPUs for model training.
* **Software:** Python (TensorFlow/PyTorch), Flask/FastAPI, React.js, PostgreSQL.
* **Human Resources:** 4 student developers + 1 advisor.
* **Cloud Infrastructure:** AWS EC2, S3, Docker containers.

## **7. Quality Management**

**Quality Standards:**

* Model accuracy ≥94% on validation set.
* System uptime ≥99%.
* Report generation accuracy ≥95%.
* User satisfaction ≥4.5/5 on surveys.

**Quality Control Methods:**

* Cross-validation and performance metrics (accuracy, F1-score, ROC-AUC).
* Code reviews and testing (unit, integration, system).
* Regular peer and advisor evaluations.
* Continuous monitoring post-deployment.

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## **8. Risk Management**

**Risk Register:**

| **Risk** | **Impact** | **Probability** | **Mitigation Strategy** |
| --- | --- | --- | --- |
| Insufficient model accuracy | High | Medium | Tune hyperparameters, expand dataset |
| Cloud cost overruns | Medium | Low | Use free-tier or educational credits |
| API performance issues | Medium | Medium | Optimize model and API latency |
| Data privacy concerns | High | Low | Use anonymized datasets, encrypt storage |
| Schedule delays | Medium | Medium | Weekly progress tracking and task reviews |

**Contingency Plans:**

* Use pre-trained models if training time exceeds estimates.
* Shift to local deployment temporarily if cloud access fails.
* Adjust timeline and allocate extra development hours if needed.

## **9. Communication Plan**

**Internal Communication:**

* Weekly virtual meetings and daily team chat via Slack.
* Shared workspace (Google Drive, GitHub).

**External Communication:**

* Biweekly reports and demos to advisor.
* Final presentation and feedback from stakeholders.

**Reporting Schedule:**

* Weekly progress reports.
* Mid-term progress presentation.
* Final project presentation and report.

## **10. Change Management**

**Change Control Process:**

* All changes to scope, schedule, or budget must be proposed via a Change Request Form.
* Requests reviewed by the project manager and advisor.
* Approved changes are documented in the Change Log and updated in the schedule.

## **11. Monitoring and Evaluation**

**Performance Metrics:**

* Model accuracy, precision, recall, and F1-score.
* Processing time per image (≤10 seconds).
* System uptime and user adoption metrics.

**Review Process:**

* Weekly progress reviews with advisor.
* Biweekly milestone evaluations.
* Final performance evaluation after deployment.

## **12. Project Closure**

**Closure Criteria:**

* Completion of all deliverables and documentation.
* Deployed and functioning AI system on the cloud.
* Presentation and acceptance by advisor.
* Approval of final report and demonstration.

**Post-Project Review:**

* Conduct a lessons-learned meeting.
* Document strengths, challenges, and improvement recommendations.
* Archive project files and final reports for future reference.