# Document Control

## Document Information

| | Information |
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| Document Id | *#0001* |
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| File Name | *Complete Project Plan* |

## Document History

| Version | Issue Date | Changes |
|---|---|---|
| *1.0* | *2/4/2025* | *Added document information, document approvals, project team* |
| 1.1 | 4/19/2025 | Ensured document was ready for Sprint 2 Deliverables, updated a few statements with current project direction |
| 1.2 | 8/31/2025 | Updated document to reflect new features; geofencing, AI notification |
| 1.3 | 12/4/2025 | Final Additions |

## Document Approvals

| Role | Name | Signature | Date |
|---|---|---|---|
| Project Sponsor *(faculty or external sponsor)* | Diana Rabah | | |
| Project Review Group *(team members)* | CSCE 4905 Group 3 | CSCE 4905 Group 3 | 2/4/2025 |
| Project Manager | Brendon Stepanek | Brendon Stepanek | 2/4/2025 |
| Quality Manager *(if applicable)* | N/A | | |
| Procurement Manager *(if applicable)* | N/A | | |
| Communications Manager *(if applicable)* | N/A | | |
| Project Office Manager *(if applicable)* | N/A | | |

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## 1.1 Project Purpose, Goals and Objectives

| Project Purpose | |
|---|---|
| The purpose of this project is to create a face recognition system that will automate the attendance taking process in classrooms. | |
| **Project Goal** | **Project Objectives** |
| Implement facial recognition/detection | Create a function and efficient backend that uses OpenCV for facial detection and DeepFace for facial recognition |
| Design and develop an intuitive UI | Build a user-friendly frontend for teachers and administrators to interact with the system |
| Ensure data security | Utilize encryption, authentication, and secure data storage |
| AI notification | Implement an AI-based notification system that pushes notifications within the web app |
| Geofencing | Implement IP-based geofencing as another verification method for better accuracy |

## 1.2 Project Success Criteria

Determine what will make this project successful. These standards vary based on the project, but they typically include considerations like time, cost and scope. Additional criteria considerations include quality, risk management, stakeholder satisfaction, business value, regulatory compliance and customer satisfaction, to name a few.

| Category | Success Metric | Measurement Method | Target | Assigned to |
|---|---|---|---|---|
| Scope | A facial recognition attendance system with built | Thorough testing for functionality and user feedback | Completely satisfies stakeholders requirements | Team |
| Schedule | System deployed on time | Set and meet milestones | Delivered by total project deadline | Team |
| Budget | N/A | N/A | N/A | N/A |
| Quality | Facial recognition accuracy, good system performance, easy to use UI | Test different conditions for facial recognition, stress test system to ensure efficiency under load, stakeholder feedback | 95% facial recognition accuracy, low system response times, 80% positive feedback from users | Max |
| Stakeholder satisfaction | Users/stakeholders approve of usability | User feedback and surveys | Majority positive responses | Team |
| Risk management | Address risks proactively | Risk mitigation plans | Minimal risks at launch | Brendon |

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| | | | | |
|---|---|---|---|---|
| Resource utilization | Efficient use of team members and tools | Task tracking and even work distribution | Limit overallocation and under utilization | Team |
| Compliance | Ensure data security and privacy | Conduct security testing | Fully compliant with current standards and policies | Josh |

## 1.3 Project Team

*List the members of the project team who will be involved in this project, including their name, role and responsibilities to better understand what's expected of them.*

| Name | Role | Responsibilities |
|---|---|---|
| Brendon Stepanek | Project Manager/Developer | Manages overall project, ensuring project deadlines are met, develop backend and assist in system deployment, AI notification |
| Zain Jamal | Developer | Implement authentication for OAuth and Firebase, create user manuals, technical documentation |
| Joshua Odegai | Developer | Create database structure, API handling, and connection of backend with frontend, AI notification |
| Maximiliano Hernandez | Developer | Implements OpenCV and DeepFace, design the UI, assists in development of React components, geofencing |
| Neel Patel | Developer | Assists in API performance and UI development, API integration and frontend interactions, geofencing |

## 1.4 Project Governance *(use N/A where not applicable to you)*

*Here, outline the framework, processes and mechanisms for accountability and decision-making throughout the project. This helps the project align with the organization's strategic goals so that it's managed effectively.*

| Area | Description | Responsible Party/Role |
|---|---|---|
| Steering Committee | N/A | N/A |
| Change Control Board | Reviews and approves of any project scope, timeline, or budget changes | Team |
| Compliance Auditing | N/A | N/A |
| Stakeholder Communication | Provide updates to project sponsor and other stakeholders | Team |
| Performance Reviews | Evaluate teams' progress and individual team member contributions | Team |
| Project Closure Review | Evaluate the final product to ensure that all deliverables meet the project requirements/goals | Team |

## 1.5 Stakeholder Management Plan

A stakeholder management plan helps manage stakeholder expectations and address any concerns they may have. It includes the following sections.

- **Stakeholder Register:**

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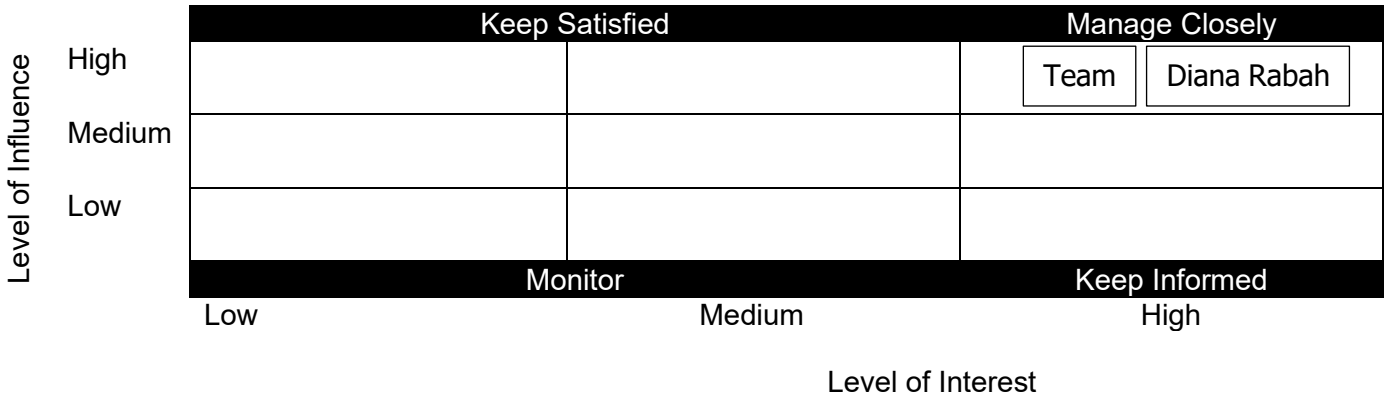
| Name | Role | Power | Interest | Contact information |
|---|---|---|---|---|
| **Diana Rabah** | **Project Sponsor** | **High** | **High** | **diana.rabah@unt.edu** |
| **Group 3** | **Project Team** | **High** | **High** | |

- **Stakeholder Map:** This visually represents the groups or individuals with a vested interest in the project and helps develop a strategy for stakeholder management.




- **Stakeholder Engagement Strategies:**
    - Regular Project Status Updates
    - Weekly Team Meetings
    - Bi-Weekly Feedback Meetings

## 1.6 Scope Management Plan

*Begin with the project scope. What activities and tasks as defined in your project must be completed to make the project a success? Use the project charter as a springboard. You can also use a work breakdown structure to identify all the activities, tasks, deliverables and milestones of your project.*

'Dependencies' are logical relationships between phases, activities or tasks which influence the way that the project must be undertaken. Dependencies may be either internal to the project (e.g. between project activities) or external to the project (e.g. a dependency between a project activity and a business activity).

There are four types of dependencies:

1. Finish-to-start *(the item this activity depends on must finish before this activity can start)*
2. Finish-to-finish *(the item this activity depends on must finish before this activity can finish)*
3. Start-to-start *(the item this activity depends on must start before this activity can start)*
4. Start-to-finish *(the item this activity depends on must start before this activity can finish).*

| Scope Baseline | | | |
|---|---|---|---|
| **Task** | **Dependencies** | **Deliverables** | **Acceptance Criteria** |
| Project Planning & Requirements | N/A | Complete Project Charter, WBS, SRS | Team and Project Sponsor approval |
| Backend Development | Finished project plan | Functional backend with endpoints for API | Deployed API |
| Facial Recognition Implementation | Backend API | Facial Detection/Recognition using OpenCV/DeepFace | Working recognition with 95% accuracy in acceptable conditions |

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| | | | |
|---|---|---|---|
| Frontend Development | Backend API | UI for teachers and administrators | Responsive, easy to use UI |
| Database Development | Backend | Database for attendance records | Data stored and retrievable |
| AI Notification System | Backend | Accurate notifications based on student attendance | Timely, appropriate notifications are sent to users |
| Backend/Frontend Integration | Frontend and API | Proper communication between frontend and backend | API functions with no issues |
| Geofencing | Frontend and backend | Geofencing verification | Ensure students cannot take attendance off campus |
| Testing | Functional system | Fully tested, functional system | All testing passes with little error |
| Deployment | Finalized product | System hosted/launched | System is accessible to end users |
| Documentation | Complete system | User manual, developer documentation | Approved documentation |

| Exclusions, Assumptions and Constraints | |
|---|---|
| **Exclusions** | • We do not have the intention of developing a new AI model for facial recognition.<br>• Our system will not be designed to work with other LMS systems like Blackboard, Canvas etc.<br>• Any further AI features beyond notifications and facial recognition |
| **Assumptions** | • We assume that the existing AI facial recognition models will offer the accuracy and performance we expect without the need for any additional development.<br>• It will be assumed that students are to have valid, clear profile photos or can provide photo IDs that can be scanned for use in the system.<br>• It is assumed that classrooms will be equipped with cameras and proper lighting for our system to work properly |
| **Constraints** | • All team members are students with school and work schedules. Any collaboration will be limited to available hours outside of those responsibilities.<br>• Our system will rely on classrooms already being equipped with hardware and proper lighting.<br>• Our team only has access to existing, free and open-source, online resources like AI models, development tools. There is currently no budget for any software or hardware that may be needed. |

| Milestone | Description | Delivery Date |
|---|---|---|
| Project Planning & Requirements | Determine project requirements, scope, and set project milestones | 2/9/2025 |
| System Design | Complete backend, frontend, and database design | 2/24/2025 |
| Backend Development | Implement Flask backend, Firebase database | 3/10/2025 |
| Frontend Development | Implement React frontend | 3/23/2025 |
| Testing & QA | Conduct unit tests and fix any existing bugs | 3/25/2025 |
| Deployment | Deploy system | 3/30/2025 |
| Training Documentation | Create user documentation | 4/20/2025 |

## 1.7 Resource Requirements

For each task identified, list the resources allocated to complete the task.

| Task | Resource requirements | *Members* |
|---|---|---|
| Project Planning | Trello, MS Word, GitHub | |
| Backend Development | Python, Flask, Firebase Firestore | |

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| | |
|---|---|
| API integration | OAuth2 Authentication |
| Facial Recognition | Python, OpenCV, DeepFace, Camera |
| Frontend Development | React, JavaScript,HTML/CSS, Firebase Authentication |
| Database Development | Firebase Firestore |
| Backend/Frontend Integration | API Gateway, JSON Handling, Firebase Firestore, Backend IP Checks |
| Testing | Pytest for backend, Manual Test, Test Cases, UAT |
| Deployment | Local Backend Host, Firebase Hosting |
| User Documentation | MS Word |

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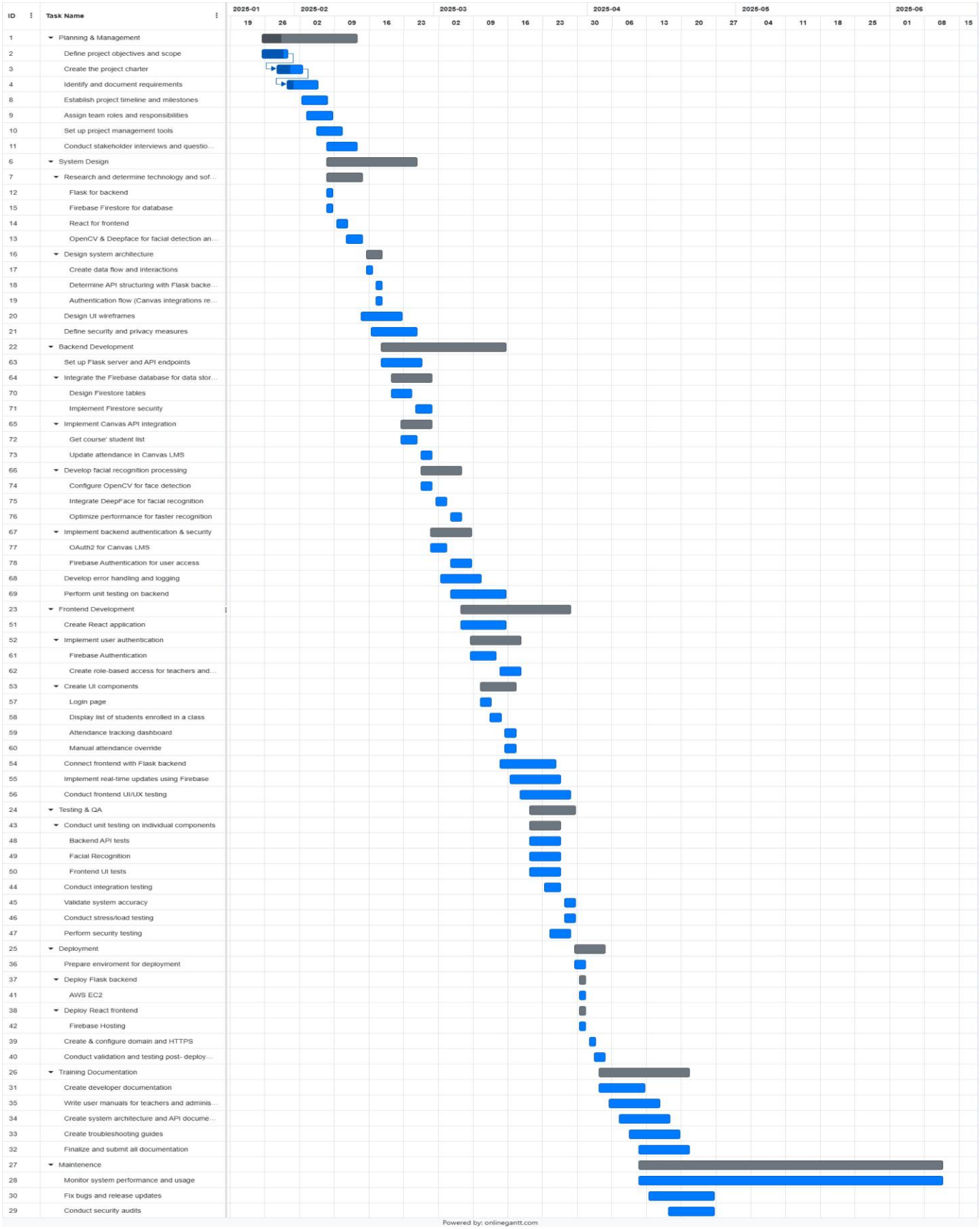
## 1.8 Project Schedule

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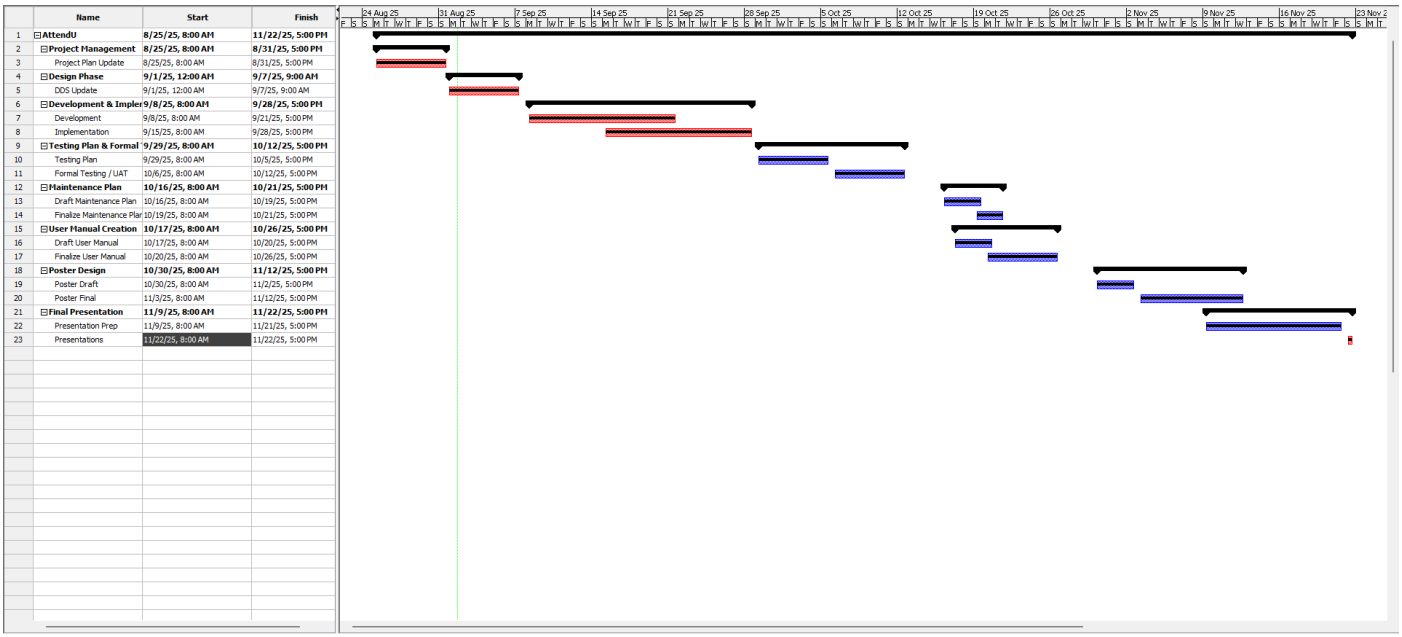
### Capstone II Gantt Chart



| | Name | Start | Finish |
|---|---|---|---|
| 1 | AttendU | 8/25/25, 8:00 AM | 11/22/25, 5:00 PM |
| 2 | Project Management | 8/25/25, 8:00 AM | 8/31/25, 5:00 PM |
| 3 | Project Plan Update | 8/25/25, 8:00 AM | 8/31/25, 5:00 PM |
| 4 | Design Phase | 9/1/25, 12:00 AM | 9/7/25, 9:00 AM |
| 5 | DDS Update | 9/1/25, 12:00 AM | 9/7/25, 9:00 AM |
| 6 | Development & Implen | 9/8/25, 8:00 AM | 9/28/25, 5:00 PM |
| 7 | Development | 9/8/25, 8:00 AM | 9/21/25, 5:00 PM |
| 8 | Implementation | 9/15/25, 8:00 AM | 9/28/25, 5:00 PM |
| 9 | Testing Plan & Formal | 9/29/25, 8:00 AM | 10/12/25, 5:00 PM |
| 10 | Testing Plan | 9/29/25, 8:00 AM | 10/5/25, 5:00 PM |
| 11 | Formal Testing / UAT | 10/6/25, 8:00 AM | 10/12/25, 5:00 PM |
| 12 | Maintenance Plan | 10/16/25, 8:00 AM | 10/21/25, 5:00 PM |
| 13 | Draft Maintenance Plan | 10/16/25, 8:00 AM | 10/19/25, 5:00 PM |
| 14 | Finalize Maintenance Plar | 10/19/25, 8:00 AM | 10/21/25, 5:00 PM |
| 15 | User Manual Creation | 10/17/25, 8:00 AM | 10/26/25, 5:00 PM |
| 16 | Draft User Manual | 10/17/25, 8:00 AM | 10/20/25, 5:00 PM |
| 17 | Finalize User Manual | 10/20/25, 8:00 AM | 10/26/25, 5:00 PM |
| 18 | Poster Design | 10/30/25, 8:00 AM | 11/12/25, 5:00 PM |
| 19 | Poster Draft | 10/30/25, 8:00 AM | 11/2/25, 5:00 PM |
| 20 | Poster Final | 11/3/25, 8:00 AM | 11/12/25, 5:00 PM |
| 21 | Final Presentation | 11/9/25, 8:00 AM | 11/22/25, 5:00 PM |
| 22 | Presentation Prep | 11/9/25, 8:00 AM | 11/21/25, 5:00 PM |
| 23 | Presentations | 11/22/25, 8:00 AM | 11/22/25, 5:00 PM |

## 1.9 Project Budget *Hypothetical*

| Task | Labor Costs | Material Costs | Other Costs | Budget | Actual |
|---|---|---|---|---|---|
| Hosting | - | $150 | - | $150 | - |
| API Usage | - | $20 | - | $20 | - |
| Data Storage | - | $50 | - | $50 | - |
| Testing | - | $0 | - | $0 | - |
| Deployment | - | $20 | - | $20 | - |
| Total | - | $240 | - | $240 | - |

## 1.10 Change Management Plan

When a change request is made, use this log to track its impact, response and whether the change control board has approved it or not.

**Change Control Board**

| Name | Role | Responsibilities |
|---|---|---|
| Diana Rabah | Project Sponsor | Ensures alignment with project objectives, provides project oversight, and approves any major scope changes |
| Team | Manager & Developers | Reviews and approves/rejects change requests, assesses technical feasibility, and implements approved changes |
| | | |

**Change Log**

| Date Identified | Request | Impact | Approval | Date Started | Date Completed |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

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## 1.11 Risk Management Plan

- **Risk Matrix:**

| Risk Matrix | | Severity | | | | |
|---|---|---|---|---|---|---|
| | | Insignificant | Minor | Moderate | Major | Severe |
| Likelihood | Almost Certain | Medium | High | Very High | Very High | Very High |
| | Likely | Medium | High | High | Very High | Very High |
| | Possible | Low | Medium | High | High | Very High |
| | Unlikely | Low | Low | Medium | Medium | High |
| | Rare | Low | Low | Low | Low | Medium |

- **Risk Log:**

| Risk | Likelihood | Impact | Response | Risk Level |
|---|---|---|---|---|
| Facial Recognition accuracy | Possible | Major | Attempt to optimize/improve model | High |
| Data security | Likely | Severe | Encrypt all student data and ensure compliance with standards and policies | Very High |
| Deployment failures | Unlikely | Major | Have backup hosting services | Medium |
| Poor classroom environments | Likely | Major | Require adequate environments for recognition | Very High |

- **Risk Mitigation Strategies:**
  - Risk Avoidance:
    - Minimize API dependency
    - Implement role-based access control
  - Risk Reduction:
    - Encrypt sensitive data
    - Optimize system performance
  - Risk Transfer:
    - Use third party services

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        - Hosting
        - Storage
    - Use existing facial recognition models
        - OpenCV
        - DeepFace
- Risk Acceptance:
    - Allow manual attendance recording
    - Plan for API downtime
    - Provide user documentation for system adoption
    - Allow for teacher override if geofencing fails
    - Occasional notification delays may happen

## 1.12 Quality Management Plan

| Task or Deliverable | Quality Standards | Quality Assurance Guidelines | Quality Control Procedures |
|---|---|---|---|
| Facial Recognition System | Achieve at least 95% accuracy | Test models in varied lighting conditions | Confirm recognition on multiple devices and room settings. |
| Frontend UI | UI must be intuitive and accessible | Gather feedback through initial testing with teachers and administrators | Ensure 80%+ positive feedback |
| Security | Most comply with current data privacy policies | Encrypt all stored data | Conduct pen testing |
| System Performance | Page load time must be < 2 seconds | Optimize API requests | Perform stress tests |
| AI Notifications | Notifications should be delivered in < 5 seconds | Ensure efficient API requests | Confirm quick notifications under load |
| Geofencing | < 5% of false positives | Adjust tolerances as needed | Confirm proper geofencing implementation |

## 1.13 Project Communication Plan

Last but certainly not least in the project planning template is the project communication plan. This is an opportunity to outline key communication facets that will be present throughout the project.

- **Project Meetings:**
    - Weekly Team Meetings
    - Bi-Weekly Progress Reports

- **Project Documentation:**
    - Project Charter
    - Work Breakdown Structure
    - Software Requirements Specification
    - Gantt Chart

## 1.14 Appendix

Project Charter
Member & Project List
SRS
WBS

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