UNIVERSITY OF PLYMOUTH

PUSL2021 - Computing Group Project

Project proposal

Automated Classroom Attendance System

Group: A 32

Members:

Index	Name	Position
• **10898490**	Hewawitharanage Jayanga	Programming leader
• **10898453**	Dakshitha Epasinghe	Technical leader
• **10898618**	Madurapperuma Premachandra	Project & Group leader
• **10898431**	Unawatuna Binisuru	Testing & Maintenance leader
• **10898687**	Deerasinghe Arachchige Irosh	Quality leader
• **10898554**	VD Mapalagamage	Planning leader

Contents

Automated Classroom Attendance System using OpenCV.

In today's digital age, technological advancements are rapidly transforming the landscape of education. Educational institutions are seeking innovative solutions to enhance the efficiency of their administrative processes. One of the critical administrative tasks that schools and universities often grapple with is attendance monitoring. The traditional methods of taking attendance manually can be time-consuming, prone to errors, and often lead to ineffective use of faculty's valuable time. To address these challenges, we propose the development of an automated classroom attendance system that utilizes OpenCV, a powerful computer vision library, to detect and mark the attendance of students using facial recognition technology.

Problem Statement

The current attendance tracking systems employed by educational institutions are not only cumbersome but also limited in their accuracy. Manual attendance taking, while time-consuming, can also be manipulated by students through various methods. Moreover, it often results in inaccurate records due to human error. Our proposed system aims to address these issues by providing a seamless, efficient, and tamper-proof solution for monitoring attendance.

Methodology

We intend to employ OpenCV, an open-source computer vision library, to develop the core functionality of our system. OpenCV's facial recognition capabilities, combined with machine learning algorithms, will enable the system to identify and record the presence of students in real-time. The proposed system will utilize a camera installed in the lecture hall to capture students' faces as they enter the room. These images will then be processed to recognize individual students, and their attendance will be marked accordingly.

Benefits

Implementing an automated classroom attendance system using OpenCV offers several advantages, including:

Time Efficiency: The system will significantly reduce the time spent on attendance taking, allowing educators to focus on teaching.

Accuracy: By eliminating manual data entry, the system ensures precise attendance records.

Security: The facial recognition technology employed in the system enhances security and reduces the risk of attendance fraud.

Data Insights: The system can generate valuable attendance data that can be used for future analysis and decision-making.

In conclusion, our proposal to develop an automated classroom attendance system using OpenCV addresses a pressing need within educational institutions. By leveraging cutting-edge technology, we aim to create a solution that streamlines attendance monitoring, enhances

accuracy, and frees up educators' time for more productive tasks. The subsequent sections of this proposal will delve into the technical details, project timeline, and the expected outcomes of this innovative system. We believe that this project holds the potential to revolutionize attendance tracking in educational institutions and contribute to a more efficient and secure learning environment.

Objectives

The primary goal of this project is to create an automated classroom attendance system that leverages the capabilities of OpenCV to detect and recognize the faces of students attending a lecture. The system will be designed to:

- Automatically identify students within the lecture hall using facial recognition technology.
- Generate real-time attendance reports for instructors to access.
- Provide a secure and tamper-proof solution to prevent attendance fraud.
- Enhance the overall efficiency of the attendance-taking process.
- Provide a straightforward, intuitive experience for both administrators and end-users.
- There is an app for instructors and students to know the attendance and percentage of attendance. After the attendance is marked for the students, the app gives a notification to the students.
- Provide immediate, up-to-date attendance information for instructors and administrators.

Target Users

1.Institutions of Education: -

- It is easy to monitor the attendance of students in schools and universities as well as the attendance of employees in institutions.
- Avoid mistakes and monitor systematic attendance.

2.Fitness Facilities and Gym: -

- To be able to monitor memberships participating in physical fitness exercises upon entry and to control overcrowding in access to the gymnasium.

3.Organizations of Government: -

- Being able to avoid the inconvenience of noting his presence even when he arrives at the institution where he works and to control the congestion among employees.

4. Public Transportation: -

- To manage driver and conductor attendance on public transport and ensure that the right person is driving the vehicle.

5.Corporations and Businesses: -

- Help to track working hours, manage, and ensure correct payment of wages as well as track entrants to the premises.

6.Healthcare Facilities: -

- Can be used to track staff attendance as well as ensure the right person is entering the right areas and monitor access controls.

Application Features and Description

1.Admin Login: -

- Admin will login with his admin ID & password.

2.View person and Time: -

- Admin can view person & time.

3.Registration: -

- Admin will register the person by entering person details.

4.User Login: -

- Users can login with User ID & password.

5.Person tracking: -

- System will track the person's arrival time & departure time.

6.Send attendance: -

- The system will send attendance details to admin & user.

7.Attendance Entry: -

- This provides an attendance report every month.

8.Report: -

- Attendance, non-attendance & percentage of attendance.

Gantt chart

For better resolution pdf:

[Gantt chart.pdf]

SMART ATTENDENCE SYSTEM

Read-only view, generated on 24 Oct 2023

	ACTIVITIES	ASSIGNEE	EH	START	DUE	%
	:		-	10/Oct	25/Apr	9%
1	Project Initiation		-	10/Oct	18/Oct	100%
2	Requirement Analysis		-	19/Oct	04/Nov	47%
3	Research and Selection of Hardware		-	05/Nov	18/Nov	0%
4	Camera Installation and Setup		-	19/Nov	13/Dec	0%
5	Facial Recognition Algorithm Development		-	14/Dec	20/Jan	0%
6	Database Setup and Integration		-	21/Jan	10/Feb	0%
7	Time Recording System Implementation		-	11/Feb	26/Feb	0%
8	Mobile App Development		-	27/Feb	06/Mar	0%
9	User Interface Design for Mobile App		-	07/Mar	13/Mar	0%
10	System Testing and Quality Assurance		-	14/Mar	21/Mar	0%
11	Documentation and User Training		-	22/Mar	25/Mar	0%
12	User Acceptance Testing		-	26/Mar	30/Mar	0%
13	Final Adjustments and Bug Fixes		-	31/Mar	08/Apr	0%
14	Deployment and Go-Live		-	09/Apr	14/Apr	0%
15	Post-Deployment Monitoring		-	15/Apr	25/Apr	0%

ASSIGNEE	EH	START	DUE	%
	-	10/Oct	25/Apr	9%
	-	10/Oct	18/Oct	100%
	-	19/Oct	04/Nov	47%
	-	05/Nov	18/Nov	0%
	-	19/Nov	13/Dec	0%
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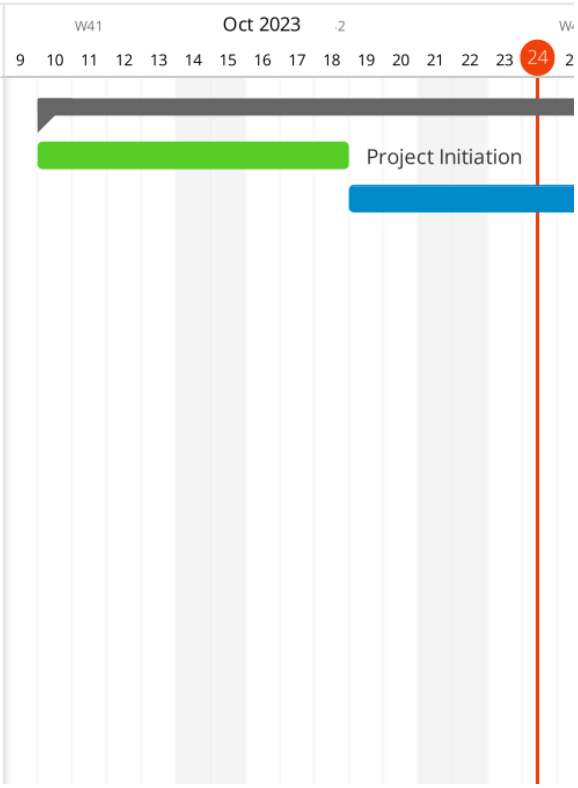

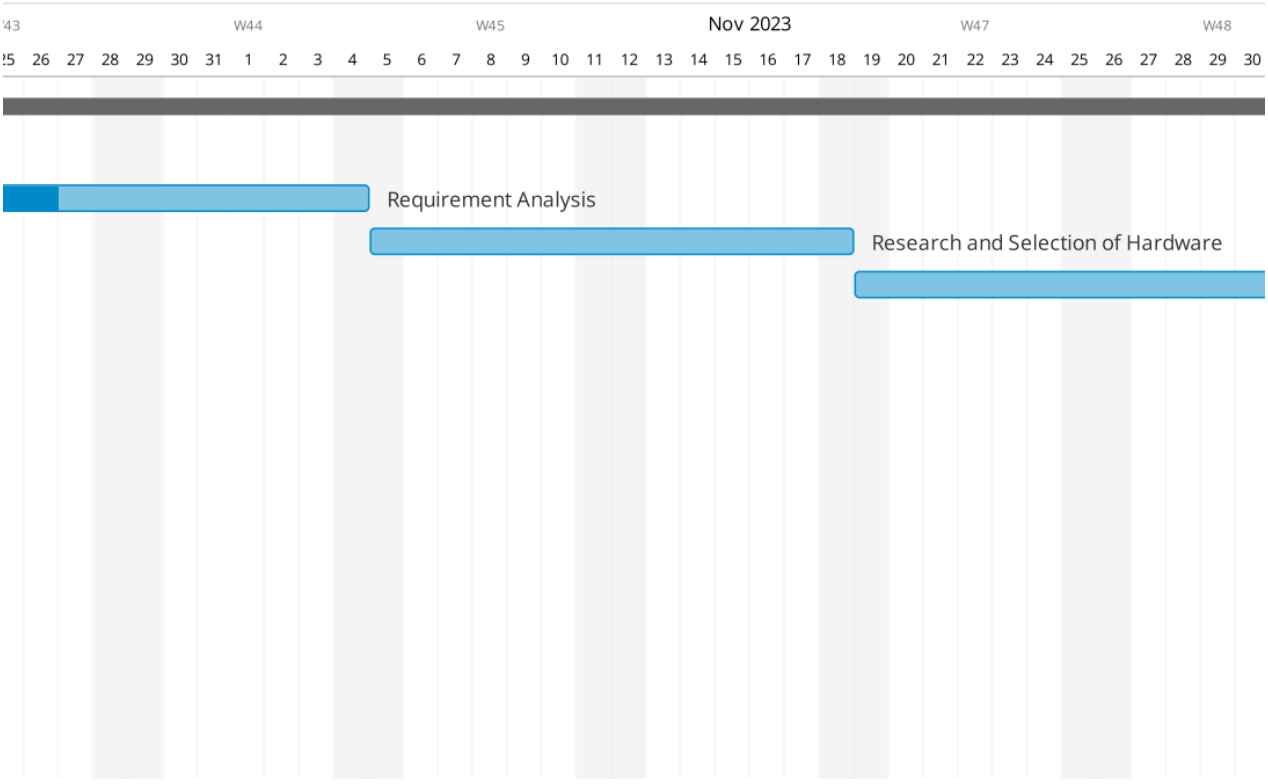
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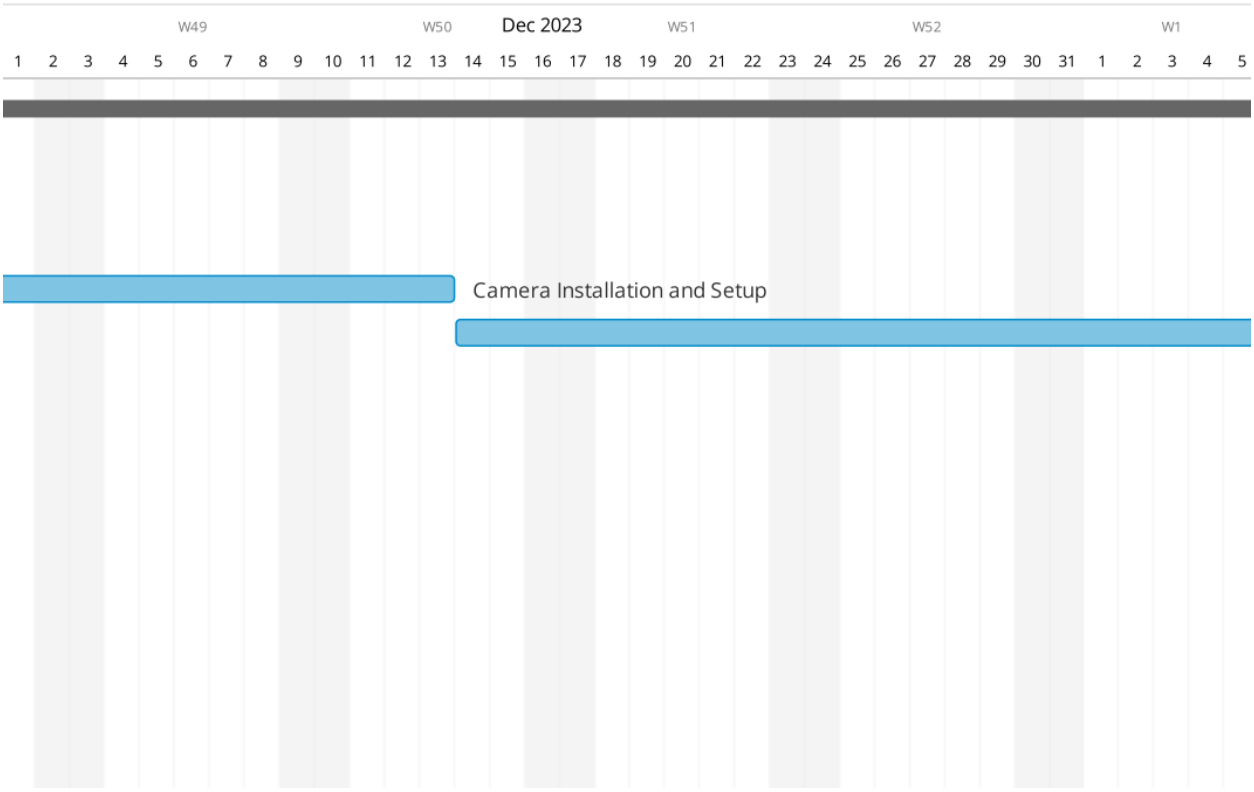
Requirement Analysis
Research and Selection of Hardware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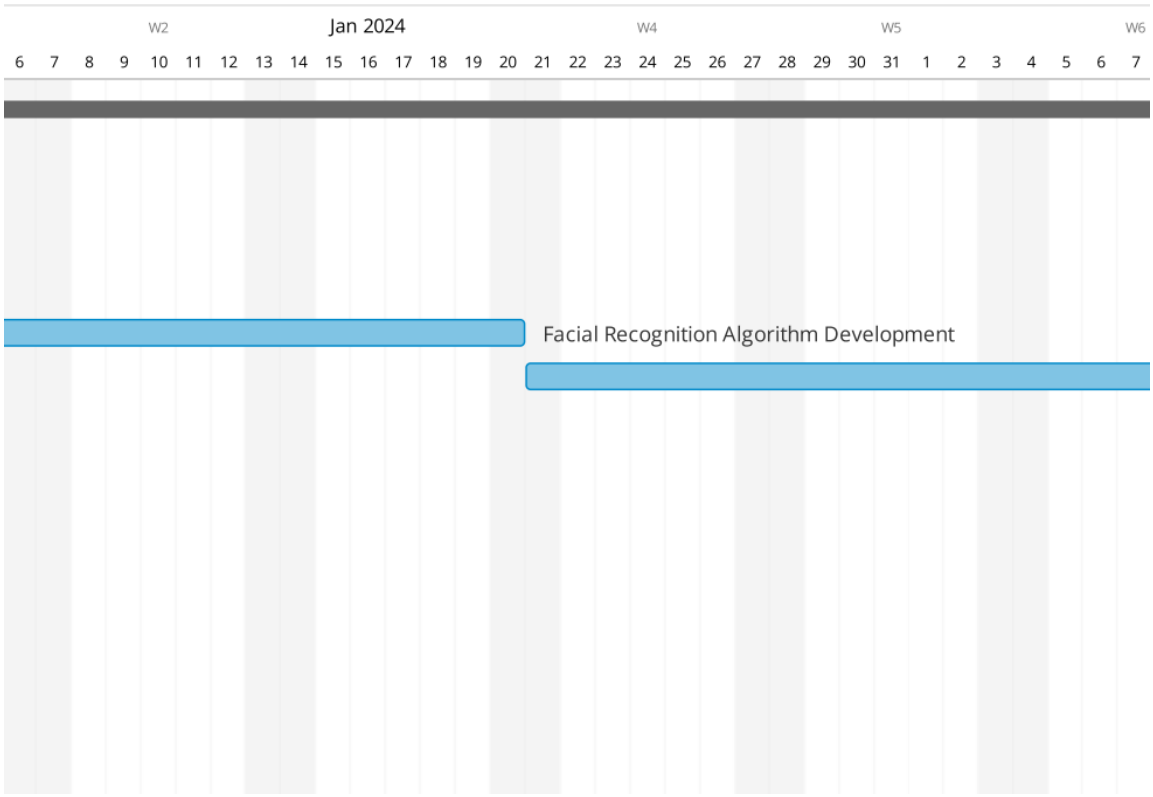
Camera Installation and Setup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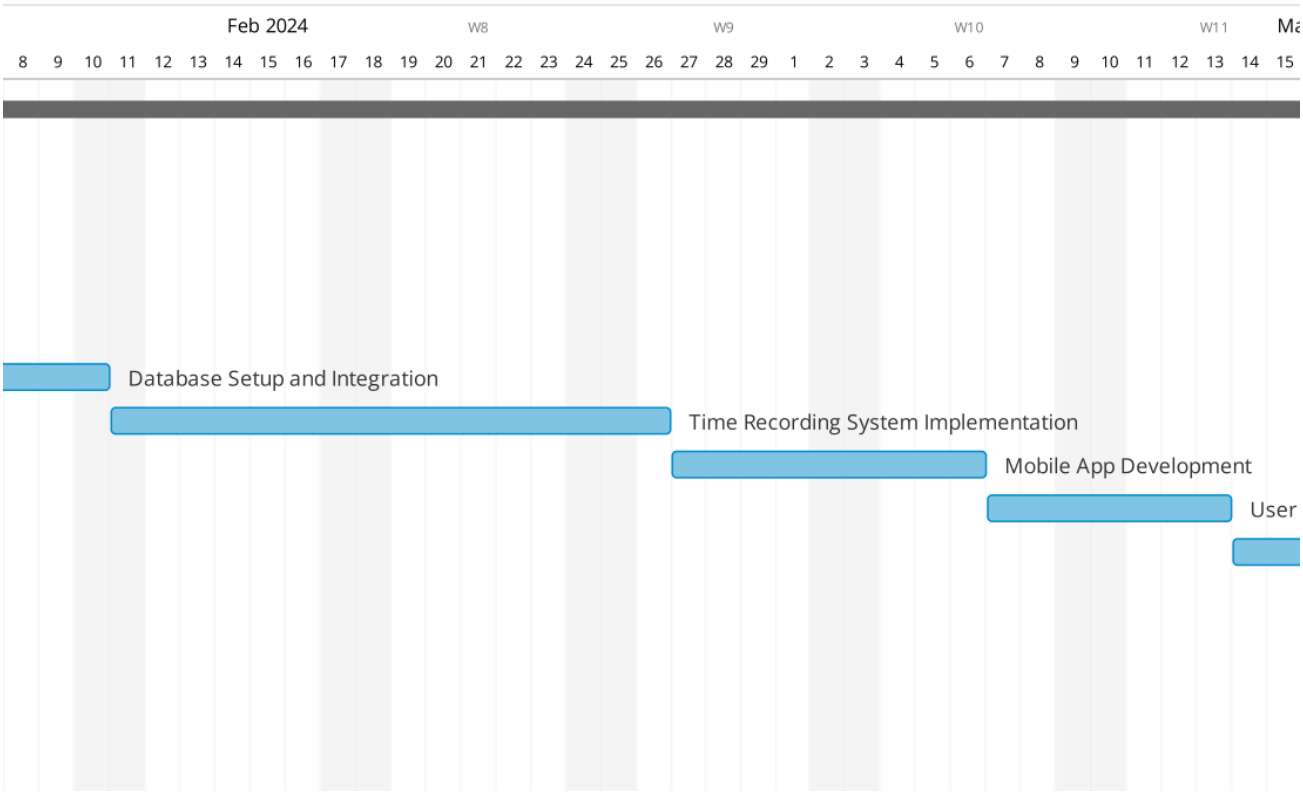
Facial Recognition Algorithm Development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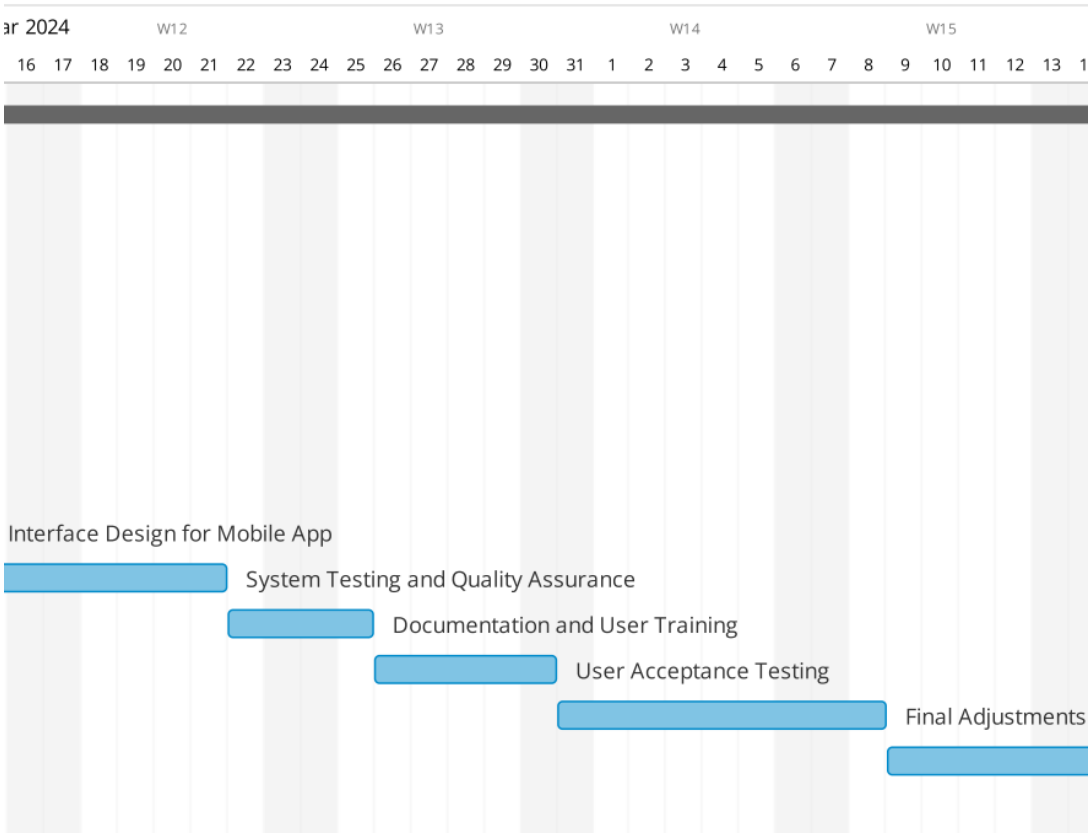
Database Setup and Integration
Time Recording System Implementation
Mobile App Development
User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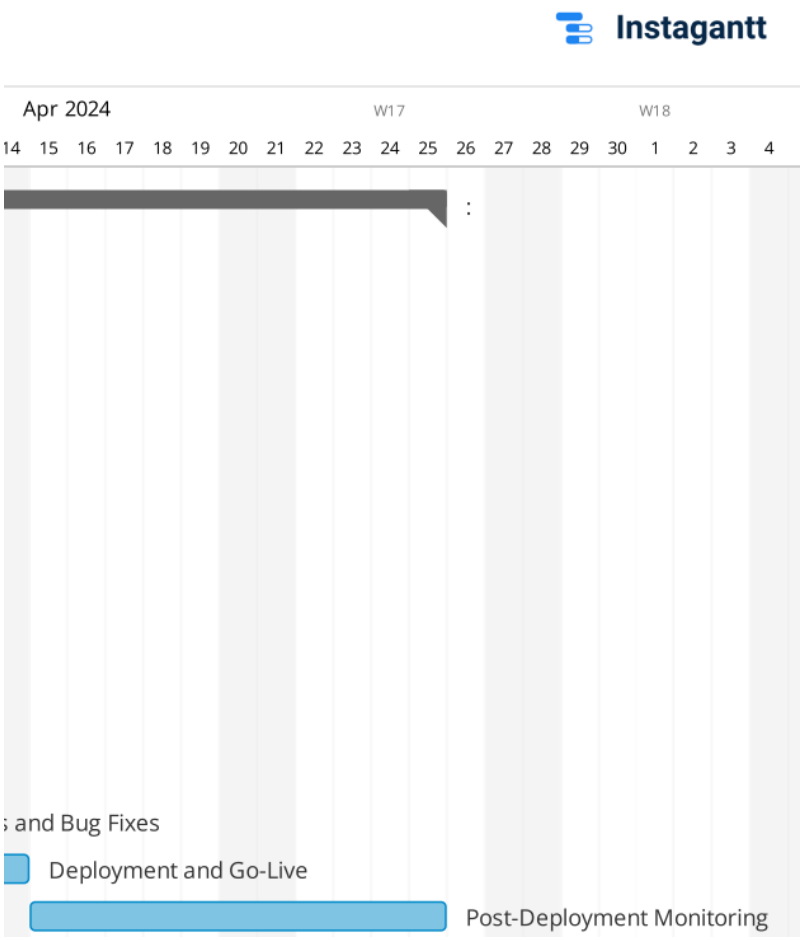
Interface Design for Mobile App
System Testing and Quality Assurance
Documentation and User Training
User Acceptance Testing
Final Adjustments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and Bug Fixes
Deployment and Go-Live
Post-Deployment Monitoring