

# Project Plan

## Product-based Capstone Project

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**Team Member** :

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# Project Plan

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### Final Selected Themes:

Post-Pandemic & Emergency Responses ▾

### Title of the Project:

Online Ambulance Booking Application to Improve Emergency Medical Response

### Executive Summary/Abstract:

Ambulance is one of the important things when emergency situations occur, especially in medical services to ensure that patients receive timely and appropriate treatment during critical situations. The current ambulance call systems still rely on the conventional method, which involves making emergency phone calls. However, this approach has several drawbacks. Firstly, there is a lack of accessibility since patients have to access conventional phone calls to contact emergency operators. Secondly, there is a lack of visibility as emergency operators may not address accurate information about the patient's location. Lastly, there is a lack of convenience because patients have to explain their condition to emergency operators, which can lead to potential time-consuming and mistranslation.

The effective and quick process of handling an emergency incident is crucial for patients' survival and recovery. Delay in ambulance calls can threaten the patients' life. Therefore, our team wants to develop an online ambulance booking application in order to improve emergency medical response. With this plan, we hope to shorten ambulance response time, provide faster medical assistance, and ultimately, save patients' lives in urgent medical emergencies. By leveraging technology, we can create a platform that allows patients to easily make ambulance online calls through mobile applications

### How did your team come up with this project?

First, it is crucial to establish a clear and shared vision among team members. Make sure everyone understands the goals, objectives, collaboration and desired outcomes of the project. Effective communication plays a very important role to encourage open and transparent discussions, so that team members can share ideas and concerns freely. In addition, defining roles and responsibilities within the team is essential to avoid confusion and encourage accountability. A detailed project plan is paramount. Break the project into manageable tasks, set realistic deadlines, and consider potential dependencies between tasks. Monitor progress regularly and address any challenges promptly.

### Project Scope & Deliverables:

#### Project Objective

developing an ambulance booking application to improve emergency medical response based on android.

- Mobile Development

Build an android application with the following features:

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- RBAC on Android  
Role-Based access control for user and ambulance driver
- Geolocation Tracking  
Track driver location using android gps system
- Simple Image Processing  
Image processing and camera access for capture user face and upload it to server

Task :

1. Designing mobile application
2. Integration with API
3. Testing

- Cloud Computing

Deploy the apps on the cloud

Task:

1. Designing microservices for the application and designing REST API's
2. Defining storage characteristics and choosing Google Cloud Storage and manage, log, monitoring dan alerting data services
3. Continuously deliver application updates by automating reliably builds, tests, and updates through the pipeline

- Machine Learning

Face recognition using tensorflow to verified user request on ambulance

Task:

1. Collecting and researching the datasets
2. Preprocessing the datasets
3. Training and testing the dataset using a deep learning model
4. Optimize models and minimize loss
5. Deploy to the cloud

### Project Constraint

- High Cost for Geolocation Tracking
- Create face recognition model that have fast performance and high accuracy

### Deliverables

- Mobile Development - develop mobile applications that are easy to use for users, learn the features in the application. and implement certain features like geolocation, image processing, RBAC and data sync between devices on android.
- Machine Learning - It is hoped that each task from Machine Learning can create a face recognition model with good and precise accuracy so that it makes it easier to recognize someone's face so that our ambulance application can run smoothly.

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- Cloud Computing - Cloud computing develops a backend system for machine learning model, also geolocation service and database system for android apps.

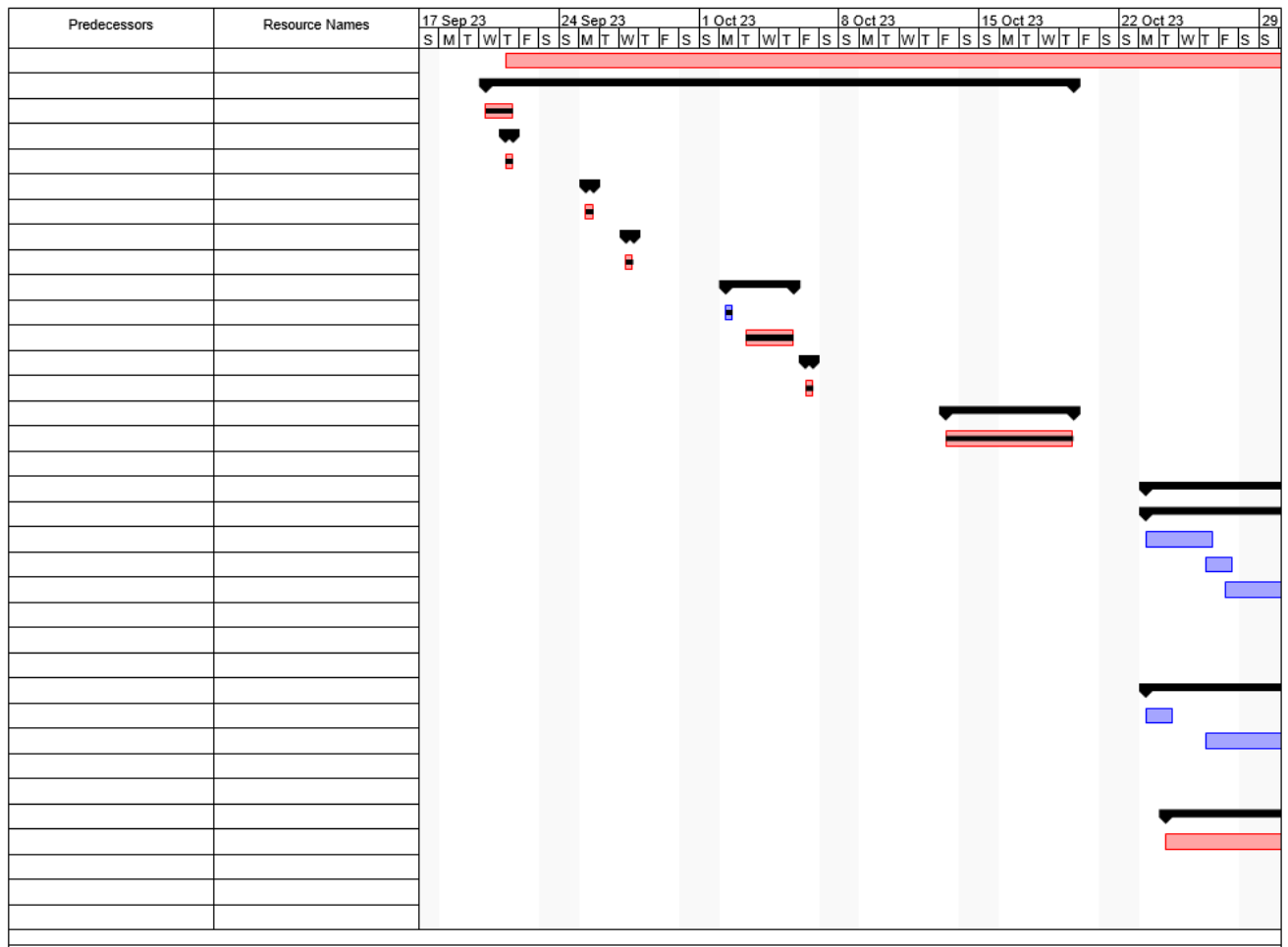
### Project Schedule:

		Name	Duration	Start	Finish
1		AMBULANCE	66 days?	9/21/23 8:00 AM	12/21/23 5:00 PM
2		Preparing Sprint	22 days?	9/20/23 8:00 AM	10/19/23 5:00 PM
3		Requitment team and valid team	2 days?	9/20/23 8:00 AM	9/21/23 5:00 PM
4		The First Meeting our Team	1 day?	9/21/23 8:00 AM	9/21/23 5:00 PM
5		Chit-Chat and Gathering	1 day?	9/21/23 8:00 AM	9/21/23 5:00 PM
6		The Second Meeting out Team	1 day?	9/25/23 8:00 AM	9/25/23 5:00 PM
7		Discussing project ideas from our group	1 day?	9/25/23 8:00 AM	9/25/23 5:00 PM
8		The Third Meeting our Team	1 day?	9/27/23 8:00 AM	9/27/23 5:00 PM
9		Discussing creating Trello, LinkTree and UI/UX	1 day?	9/27/23 8:00 AM	9/27/23 5:00 PM
10		The Fourth Meeting our Team	4 days?	10/2/23 8:00 AM	10/5/23 5:00 PM
11		Discussing the Fix idea from our group	1 day?	10/2/23 8:00 AM	10/2/23 5:00 PM
12		Creating trello, LinkTree, Drive and UI/UX from our group's F..	3 days?	10/3/23 8:00 AM	10/5/23 5:00 PM
13		The Fifth Meeting our Team	1 day?	10/6/23 8:00 AM	10/6/23 5:00 PM
14		Discussed our group's project plan	1 day?	10/6/23 8:00 AM	10/6/23 5:00 PM
15		The Sixth Meeting our Team	5 days?	10/13/23 8:00 AM	10/19/23 5:00 PM
16		Working on the Project Plan	5 days?	10/13/23 8:00 AM	10/19/23 5:00 PM
17		Sprint 1	23 days?	10/23/23 8:00 AM	11/22/23 5:00 PM
18		Machine Learning	10 days?	10/23/23 8:00 AM	11/3/23 5:00 PM
19		Collecting and Researching the dataset	4 days?	10/23/23 8:00 AM	10/26/23 5:00 PM
20		Preprocessing the datasets	2 days?	10/26/23 8:00 AM	10/27/23 5:00 PM
21		Making Model Architecture	2 days?	10/27/23 8:00 AM	10/30/23 5:00 PM
22		Training and Testing Dataset	2 days?	10/30/23 8:00 AM	10/31/23 5:00 PM
23		Deploy to Built Postman	3 days?	11/1/23 8:00 AM	11/3/23 5:00 PM
24		Finishing and Check Revision	1 day?	11/3/23 8:00 AM	11/3/23 5:00 PM
25		Cloud Computing	23 days?	10/23/23 8:00 AM	11/22/23 5:00 PM
26		Create design microservices for application and API	2 days?	10/23/23 8:00 AM	10/24/23 5:00 PM
27		Configuring Server Firebase(Google Cloud)	5 days?	10/26/23 8:00 AM	11/1/23 5:00 PM
28		Create Microservices and API	11 days?	11/1/23 8:00 AM	11/15/23 5:00 PM
29		Testing API with Machine Learning Model	5 days?	11/15/23 8:00 AM	11/21/23 5:00 PM
30		Mobile Development	22 days?	10/24/23 8:00 AM	11/22/23 5:00 PM
31		Designing Mobile Application	22 days?	10/24/23 8:00 AM	11/22/23 5:00 PM
32		Sprint 2	21 days?	11/22/23 8:00 AM	12/20/23 5:00 PM
33		Cloud Computing	13 days?	11/22/23 8:00 AM	12/8/23 5:00 PM

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		Name	Duration	Start	Finish
34		Testing and Tracking Geo Location API	13 days?	11/22/23 8:00 AM	12/8/23 5:00 PM
35		Mobile Development	21 days?	11/22/23 8:00 AM	12/20/23 5:00 PM
36		Integration with API	19 days?	11/22/23 8:00 AM	12/18/23 5:00 PM
37		Testing	3 days?	12/18/23 8:00 AM	12/20/23 5:00 PM



- Google Colab - used to develop machine learning system and classification model on cloud
- VS Code - used to develop machine learning system and classification model
- Tensorflow - used to make embedding model
- OpenCV - used to preprocess raw image for dataset

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- SKlearn - used to make Outlier model for single class classification
- Dlib - used to make CNN model for image processing and face recognition
- Matplotlib - used to display graphic plot for model development in python
- Inception pre-trained model - used as embedding model to extract feature from face
- Trello - used to communicate between Machine Learning members and team groups
- Github - used to update and save the final project to github

#### Mobile Development

- Android Studio - used to make mobile application
- Kotlin - for programming language
- Figma - used to create a UI/UX design overview of our ambulance application
- Trello - used to communicate between Machine Learning members and team groups
- CameraX - used to implement machine learning into application
- Github - used to update and save the final project to github

#### Cloud Computing

- Google Cloud Platform - used to build, deploy, and manage mobile apps services and infrastructure
- Postman - used to build, test, and document API
- Trello - used to communicate between Machine Learning members and team groups
- Github - used to update and save the final project to github
- Firebase - cloud database for backend
- GeoLocation API - used to track and trace the position of the user and ambulance in real time

#### **Based on your knowledge and explorations, what will your team need support for?**

- Business/Commerce/Startup Advisor
- Cloud Computing Advisor
- Face Image Dataset
- GCP Credit

#### **Based on your knowledge and explorations, tell us the Machine Learning Part of your Capstone!**

Integrates face recognition for user registration and face detection during emergency calls. Implemented TensorFlow as the main framework and trained the facial recognition model used to achieve a high level of accuracy. Using Postman to build an API that connects face detection with the user application front-end.

#### **Based on your knowledge and explorations, tell us the Mobile Development Part of your capstone?**

Mobile Development takes part in designing UI for application front-end and slicing available mock-ups into code. Integrate API from Cloud Computing into apps for storing and retrieving

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data. To implement ML for detecting faces, cameraX will be used. geolocation is implemented to get the user's real-time location.

#### Based on your knowledge and explorations, tell us the Cloud/Web/Frontend/Backend Part of your capstone?

Cloud computing part of our capstone is designing an API endpoint that stores all of the destination data and microservices for the application, managing, tracking, monitoring, and alerting. This project also requires an authentication API and real-time user tracking with geolocation API.

#### Based on your team's planning, is there any identifiable potential Risk or Issue related to your project?

When implementing this application, we believe that we will give a direct impact to help users/patients who need fast help and fast ambulances during urgent situations and we believe that the application we created can help local government, local health offices, hospitals and local users/patients by implementing and introducing our application. Our idea is very unique because in addition to the emergency feature we also have an ambulance booking feature to help users/patients who have to go to the hospital every week for treatment. We believe our idea can work together with local government agencies, health offices and local hospitals by creating a smart city in the area because our idea can help the progress in the area. Our initial idea is to create a special application to help users/patients who need emergency care in an area and make the area a smart city and minimize the death rate due to lack of emergency assistance due to the length of emergency assistance or ambulance. We believe our application can help areas or cities that are still difficult to get emergency care using an ambulance.

#### Any other notes/remarks we should consider on your team's application

#### This is our Business Model Canvas For my Project Plan

