Project Plan for Bangkit 2022 Product-based Capstone

Team ID : C22-PS099

Active Team Member:

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- **(ML) M7180F1752 - Gentur Rizky Arganta - Universitas Airlangga**
- **(MD) A2004F0299 - Junaedi Akbar - Institut Teknologi Sepuluh Nopember**
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- **(CC) C2010F1136 - Chandra Halim Nuruddin - Universitas Indonesia**

Inactive Team Member:

- **-**

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Final Selected Themes
Economic & Social Resilience (including **agricultural & food security and sustainability**, infrastructure, & regional development)

Title of the Project:
Relasia (Relawan Siap) - Application which helps you to find volunteers.

Executive Summary/Abstract:
Indonesia has many social foundations/institutions that operate in each sector that aims to help the local community in need. In DKI Jakarta alone there are 376 registered social foundations/institutions. There are many major cities in Indonesia, which means that there could be dozens of thousand social foundations/institutions which have many active members that are ready to help the society. In the current method, people use personal/group chat to contact the volunteer when they are needed. However, it is limited to the scope of their contact and also less effective. Therefore, how to connect those parties in a more effective way? Is there any specific platform that connects each other? Our project aims to solve the effectiveness problem by building an application that connects these parties where the help seekers can be recommended to volunteers who are trusted in their fields according to the area they need in an effective way.

How did your team come up with this project?
Inspired by the idea of e-commerce, help seekers are like sellers, donors are like buyers, organizations are like delivery services, and volunteers are like couriers. To find the real problem we interviewed several parties from social organizations. Inside the application, there are volunteer recommendations and location-based volunteers. Volunteer recommendation is built using Machine Learning, the volunteers will be ranked by parameters from their experiences and help seeker's needs. Location-based volunteers are built using mapping API.

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Project Scope & Deliverables:

Project Scope: Create an application that helps to find volunteers using volunteer recommendations and location-based volunteers. Help that needs volunteer services such as patient companions, mentors, etc. is in scope meanwhile the services that need donations, scholarships, etc. are out of scope.		
Week	**Task**	**Deliverables**
1	**Android**	
	Create User Flow and Create Design Guideline	User Flow and Identity Design For Application
	Design Mock Up and Analyze the Design	UI/UX Design and Requirement Analysis For Application
	Machine Learning	
	Decide what features to use for the recommendation system based on research	List of features that will be used as deciding variables
	Collecting data based on the decided feature	Dataset with the list of features that will be used
	Cloud Computing	
	Creating billing account for managing cost	Billing account in Google Cloud Platform and consider the resources to be used
2	**Android**	
	Translate the Design to Application	Application Design
	Machine Learning	
	Research for best recommendation algorithm for the problem case	Chosen recommendation algorithm
	Recommendation system algorithm	Plan for code implementation

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	code implementation planning	
	Cloud Computing	
	Create backend services and integrate with necessary API	REST API and Cloud API
	Configure Authentication and Databases	Cloud identity authentication and Create database
3	**Android**	
	Connect Application to Cloud	Android App Cloud-based
	Machine Learning	
	Planning realization / creating and training the recommendation system model and deployment	Recommendation system model ready to be deployed
	Recommendation system model testing and optimization	Optimized recommendation system model
	Cloud Computing	
	Integrate the application with Cloud Platform	Deploying application in GCP and Integrate each part of projects
4	Finishing Project	Perform testing and create documentation

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Project Schedule:

Agenda	Week 1	Week 2	Week 3	Week 4
Setup project on VCS (Git)				
Creating User Flow				
Prototyping The UI/UX of The App				
Collecting Dataset				
Managing Resources and Billing in GCP				
Implementing The Prototype into The App				
Creating Backend Services				
Configuring Database				
Integrating Application with API				
Configuring Authentication				
Model Building, Deployment, and Testing				
Creating Documentation				
Connecting The App to Cloud				
Apply instrumental and unit testing for the app				
Finishing Project				

Notes:

- Yellow : Machine Learning
- Blue : Cloud Computing
- Red : Mobile Development
- Green : All Team Members

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Based on your team's knowledge, what tools/IDE/Library and resources that your team will use to solve the problem?

1. **Personel:**
   - **Machine Learning** : Fransiskus Ricardo
     Gentur Rizky Arganta
   - **Mobile Development**: Junaedi Akbar
     Nur Ahmad Khatim
   - **Cloud Computing** : Fathurrahman Irwansa
     Chandra Halim Nuruddin
2. **Machine Learning:**
   - Spyder
   - Open Source Dataset (Kaggle.com, data.go.id, .etc)
   - Numpy
   - Tensorflow
   - Pandas
3. **Android Development:**
   - Android Studio Platform
   - Figma
   - Canva
   - Firebase
   - Google Fonts
   - material.io
4. **Cloud Computing:**
   - Pricing Calculator
   - Google Cloud Platform
   - Cloud SDKs
   - REST APIs
   - Cloud APIs
   - Cloud Data Storage

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

1. **GCP Budget**
2. **Mentor:**
   - Expertise especially in android development
   - Experienced especially on build e-commerce or similar applications
3. **Related Parties:**
   - Social Foundation Data (Volunteers including their expertise and experiences)

Based on your knowledge and explorations, tell us the Machine Learning Part of your capstone?

Collecting the dataset with the agreed features from the Internet. Decide which recommendation algorithm that suits best for the problem case then plan on how to implement it in code. Realizing the plan to build, test, and optimize the model.

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

Creating user flow and design in Figma. Making the Lo-Fi and Hi-Fi design into a prototype. Developing mobile app UI using design resources from material.io. Implementing logic based on user flow. Get datas from rest API. Using Google Maps API for user location. Integrating the app to cloud based.

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

Using Flask as Python Framework for building private API and backend services for Android. Using App Engine/Cloud Function/Cloud Run for deploying the services. Setup the authentication process for the application. Using Google Maps Platform APIs for supporting location-based services.

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

1. **Internal Factor**
   - Lack of communication between team members *(Solution: Get in touch with each other)*
   - Lack of experience *(Solution: Exploring existing tutorials and sharing knowledge)*
   - Delayed task *(Solution: Stick to the schedule plan)*
   - Incompatibility between app's requirements and the resource *(Solution: Consult with the mentor, simplify the requirements)*
2. **External Factor**
   - Lack of dataset *(Solution: Find related dataset)*
   - University Activity (*Solution: Ask permission if it's possible*)
   - Gadget troubles (*Solution: Find replacement gadget by asking family or friends*)
   - Resource limitation (*Solution: Doing the work as soon as possible*)
   - Lack of platform budget *(Solution: Using pricing calculator and managing resources)*

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

We already discussed with volunteers from Social Foundations to gather current methods in their work. We find that they have some problems in communication. They just use personal/group chat for coordination. Another consideration is about the personal security of volunteers. Bad things might happen when irresponsible parties abuse their personal contact. Our application could be a sandbox to avoid this potential risk.