Project Plan for Bangkit 2023 Product-based Capstone

Team ID : C23-PS262

Active Team Member :

1. **(ML) M222DSX0219** – William Hong – Universitas Kristen Duta Wacana
2. **(ML) M222DSX3118** – Gian Nathan Christyo Nugroho – Universitas Kristen Duta Wacana
3. **(CC) C226DSX0853** – Alvon Jovanus Chandra – Universitas Kristen Maranatha
4. **(CC) C226DSX0859** – Immanuel Kurniawan David Airlambang – Universitas Kristen Maranatha
5. **(MD) A222DSY1133**– Sabrina – Universitas Kristen Duta Wacana
6. **(MD) A139DSX1702** – Henry – Universitas Atma Jaya Yogyakarta

Final Selected Themes:
Human Healthcare and Living Wellbeings

Title of the Project:
SkinCareku

Executive Summary/Abstract:
We are developing an application that can detect facial skin health and provide suitable treatment or skincare recommendations. This is because many people, not only women but also men, are becoming more aware of the importance of skin health. The weather conditions in Indonesia require us to take care of our facial skin to maintain its brightness and health.
Often there is a mismatch between skincare and skin types, and many people spend a lot of money trying various skincare products. With our application, we hope to help users identify their skin issues and obtain suitable skincare recommendations.

How did your team come up with this project?
Many people experience skin problems such as acne, dullness, black spots, wrinkles, and so on. Skincare products are created to help solve these problems and provide solutions for healthy and beautiful skin. But, every person has different skin types, so the right solution for their skin care will also be different. Use of skincare products that are not quite right can have a negative impact on skin health, and can even exacerbate skin conditions that are already problematic. With the application of skincare recommendations, users will get product recommendations that are right and according to their skin needs, so that they can help maintain healthy skin and solve skin problems.

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Project Scope & Deliverables:

Project Scope:

1. Make a skincare recommendation mobile application called “Skincareku”.
2. The main target for this application is people who have facial problems and need to recommend skincare products.
3. We will use face recognition and content-based filters as machine learning, Mobile development and Cloud Computing.
4. The application will only be available for android.

Week	Task	Responsibility	Deliverable
1	Create a project plans	All team members	Project Plan Document
1-3	Create a machine learning to detect diseases on face and skincare recommendation	Machine learning members	Machine Learning Model
1-3	Create Authentication API and Preparing Google Cloud Platform Service	Cloud computing members	Authentication and authorization API, Documentation for API
1-3	Designing android application	Mobile Development members	Mobile application with interactive and responsive UI
4-5	Testing, revising, and making required deliverable documents	All team members	Integrated android application with machine learning and cloud computing. Also writing deliverable documents

Deliverables

- Project plan document (Done)
- Github repository and documentation
- “SkinCareku” application
- Presentation slide and video

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Project Schedule:

Task	Week 1 (16 - 22 Mei)	Week 2 (23 - 29 Mei)	Week 3 (30 Mei - 5 Juni)	Week 4 (6 juni - 12 juni)	Week 5 (13 juni - 16 juni)
MOBILE DEVELOPMENT					
Planning and Research					
Design UI/UX & Prototype					
UI/UX design to application (Coding & Testing)					
Integrate to ML model & API (Coding & Testing)					
Final Testing and Revision					
CLOUD COMPUTING					
Create Infrastructure Diagram					
Setting Up GCP					
Setting up Storage Bucket and NoSQL					
Create REST API using Node JS and Express					
Test API using Postman					
Create API Documentation					
Deploy application Back-End and ML in Google Cloud					
Calculate Resource Cost					
Make Sure infrastructure run					
MACHINE LEARNING					
Research Datasets					
Data Augmentation					
Training Face Detection Model					
Develop Skincare Recommendation					
Test and Validation					
Optimize and Fine-tune Model					
Building Final Program					
Revision					
All					
Attending team mentoring					

Mobile Development
Machine Learning
Cloud Computing
All

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

Android Studio, Visual Studio Code, Figma, Google Cloud Platform, Google Colab, Google Docs, Github, Tensorflow, Scikit-learn, Node.js, Express framework, Face Diseases (https://www.kaggle.com/datasets/amellia/face-skin-disease) and skincare dataset (https://www.kaggle.com/datasets/namantrisoliya/amazon-skincare-products).

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

We need a mentor with both knowledge of Cloud Computing and Machine Learning to support our development. We also need examples of Indonesian skincare products dataset.

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

Our team using a convolutional neural network (CNN) with TensorFlow is a great approach for image classification tasks like face recognition. We'll use Google Colab as a cloud based machine learning platform to train our machine learning model. We'll train a model to classify images of faces as having oily skin or pimples, and then use that information to recommend skincare products based on the user's specific needs.

For our recommendation system we'll use content-based filtering, which involves analyzing the features of the products themselves (such as their ingredients, formulation, or intended use) to generate recommendations that are likely to be a good match for the user's needs. Instead of using TensorFlow it will be simpler if we'll use scikit-learn which will use TF-IDF Vectorizer for features extraction and Cosine Similarity for compute similarity.

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

We choose Kotlin as the programming language that we will use to create Android applications, then use the Android Studio IDE. For android application development we will use Retrofit and REST API and make prototyping design interfaces with figma.

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

Cloud Computing members of our team will use Node.js and Express framework to create API for authentication and authorization. We'll also create API documentation using Postman. We will use Cloud Storage to store files such as photos and text. App Engine will be used to deploy back-end and machine learning applications. And we will use NoSQL cloud storage to store dataset.

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

1. One of the potential causes of our model is the number and quality of datasets used for model training and testing. Similiar to incomplete, biased or insufficient data could result in inaccurate or unreliable predictions. To increase the quantity and variety of data, data augmentation techniques may also be required.
2. Due to such a short time (1 month), it is possible that the application may not be fully finished. We will try our best to complete this application within 1 month. To minimize delays in working on this application, all team members must report to the group if there are personal problems (Sickness, Internet Problem, Personal issues, etc).

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

Due to limited resources and time, we need a mentor to guide us in developing the application that we make so that it can run smoothly according to the plans we have made.