



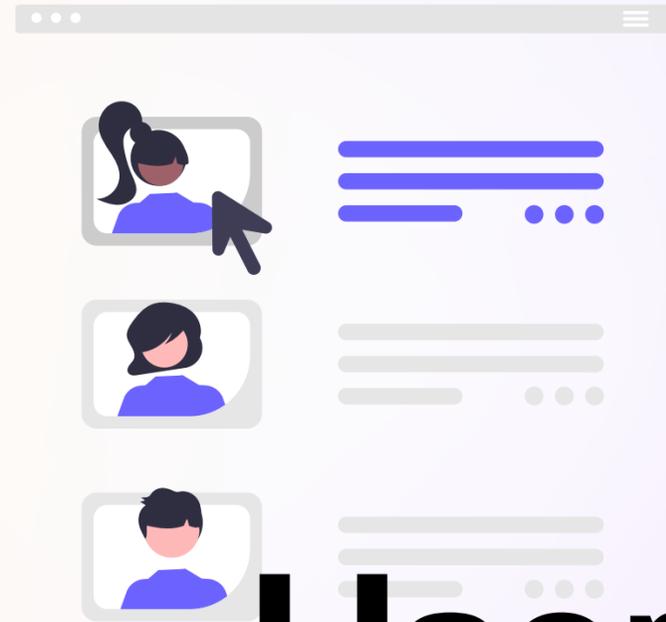
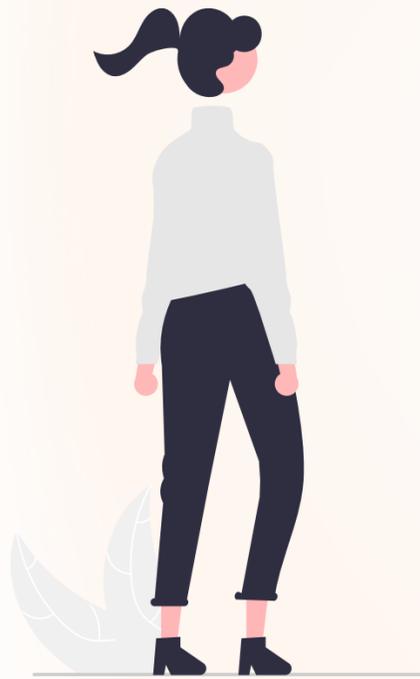
ElderEase

KELOMPOK 3

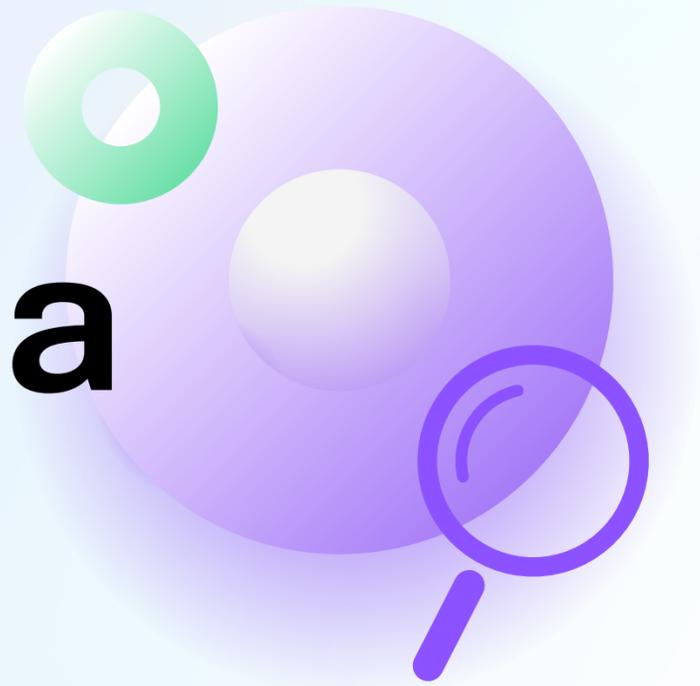
Anggota :

1. Alika Kaylanisha (2602146626)
2. Carissa Fabellina (2602071120)
3. Karen Regina Susanto (2602073403)
4. Marvella Shera Devi (2602091040)
5. Verren Angelina Saputra (2602093600)





User Persona



User Persona - Lansia



Sumiyarti

-  **Usia** : 78 Tahun
-  **Pekerjaan** : Pensiun
-  **Domisili** : Jakarta

Sumiyarti adalah seorang nenek yang tinggal bersama anaknya, namun anaknya memiliki kesibukan sehingga Sumiyarti harus diurus oleh asisten rumah tangga. Mata Sumiyarti sudah rabun dan tubuhnya sudah lemah, sehingga dia merasa kesulitan untuk membaca dan mengkomunikasikan kebutuhannya kepada orang lain.

Frustrations / Pain Points

- Mata Rabun
- Kesulitan Berbicara
- Tidak memiliki dana untuk operasi

Goals

- Dapat menyampaikan keinginan kepada orang lain
- Dapat memahami suatu teks tanpa adanya bantuan orang lain

Personality

Pemalu

Sungkan Meminta bantuan



User Persona - Anggota Keluarga



Cynthia

-  **Usia** : 20 Tahun
-  **Pekerjaan** : Mahasiswa
-  **Domisili** : Jakarta

Cynthia adalah seorang mahasiswa yang memiliki banyak kesibukan di luar rumah. Cynthia tinggal dengan neneknya, namun kesibukannya membuat dia kesulitan untuk merawat neneknya. Saat merawat atau berbicara dengan neneknya, Cynthia merasa kesulitan memahami jawaban atau keinginan neneknya karena neneknya sudah mengalami kesulitan berbicara.

Frustrations / Pain Points

- Kebingungan memahami permintaan nenek
- Frustrasi karena sulit membantu nenek
- Kesulitan berkomunikasi

Goals

- Dapat lebih mudah berkomunikasi dengan neneknya
- Dapat membantu neneknya dengan nyaman

Personality

Suka Membantu

Ceria



Permasalahan yang Dihadapi User Persona

Lansia

Terkendala dalam Penglihatan sehingga kesulitan beraktivitas, misalnya dalam membaca

Kesulitan Bicara Karena Faktor Usia, artikulasi kurang jelas sehingga sulit mengungkapkan keinginan

Pengurus Lansia

Merasa kesulitan untuk memahami keinginan para lansia karena ucapan yang kurang jelas

Merasa kesulitan dalam berkomunikasi dengan nenek

Tidak Punya Cukup Biaya Untuk Berobat / Operasi (bagi lansia penderita stroke, katarak, dan lainnya)





Solusi



ElderEase App : Your Elder Assistant

Membuat aplikasi bernama ElderEase yang dapat membantu lansia dan orang di sekitarnya berkomunikasi satu sama lain.

Fitur-fitur yang diperlukan pada aplikasi :

- 1.Masalah :** Kesulitan membaca karena keterbatasan penglihatan
 - **Solusi :** **Fitur membaca teks (menggunakan kamera) (Artificial Intelligence)**
- 2.Masalah :** Sering lupa dengan suatu hal karena faktor usia
 - **Solusi :** **Fitur Reminder**
- 3.Masalah :** Lansia kesulitan berbicara karena faktor usia, sulit mengungkapkan keinginan. Dan pengurus lansia sulit memahami apa yang disampaikan oleh lansia serta berkomunikasi dengan mereka.
 - **Solusi :** **Fitur Daily word shortcut button (bisa customize)**



ELDEREASE

ElderEase App : Your Elder Assistant

4.Masalah : Kesulitan dalam menghubungi nomor darurat, harus mengetik nomor tersebut manual di handphone

- **Solusi : Fitur Emergency Call** untuk menghubungi kontak darurat dengan mudah

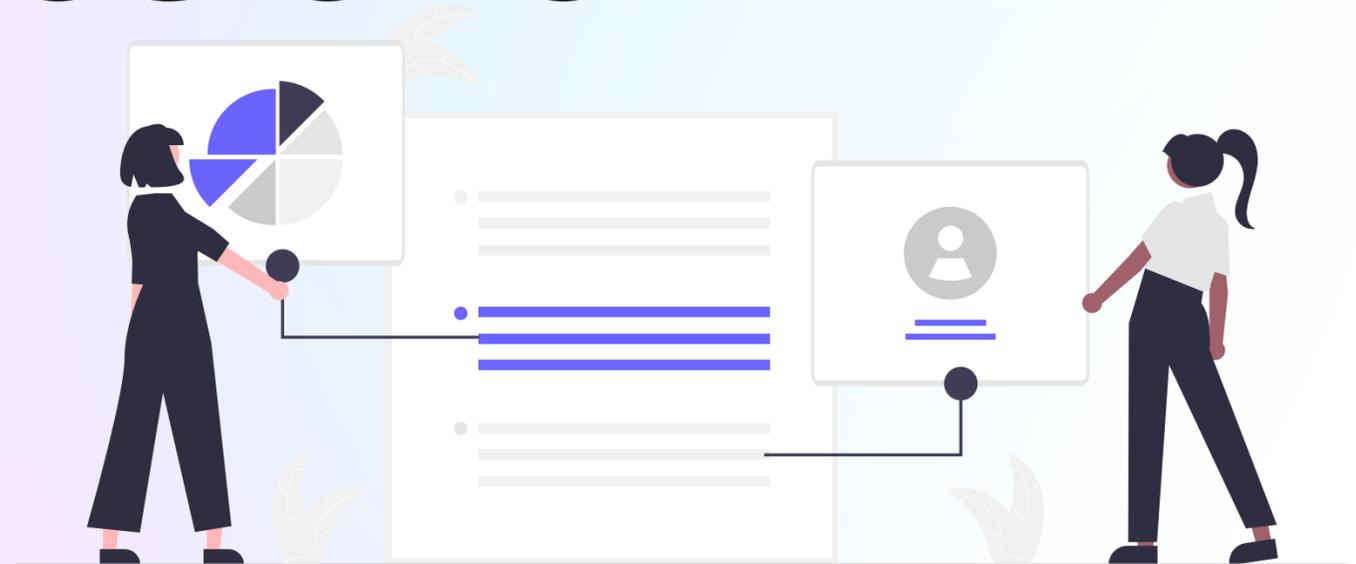
5.Masalah : Kesulitan dalam memantau lokasi lansia, lansia yang menderita alzheimer seringkali berpergian tanpa berpamitan sehingga menyebabkan keluarga resah

- **Solusi : Fitur Tracking location** untuk memudahkan keluarga dalam melacak lokasi lansia

6. Seluruh permasalahan di atas dapat menyelesaikan permasalahan **“Tidak Punya Cukup Biaya Untuk Berobat / Operasi (bagi lansia penderita stroke, katarak, dan lainnya)”** karena penggunaan aplikasi ElderEase tidak memerlukan biaya semahal operasi dan fiturnya dapat menjadi solusi bagi seluruh permasalahan yang dialami oleh lansia serta pengurusnya.



Hasil Kuesioner



Responden

Terkumpul 31 responden, mayoritas responden merupakan Binusian dan berusia sekitar 17-25 tahun.

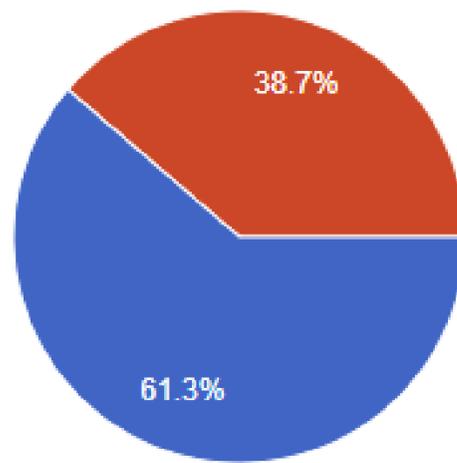
31 responses

[Link to Sheets](#)

Accepting responses

Status

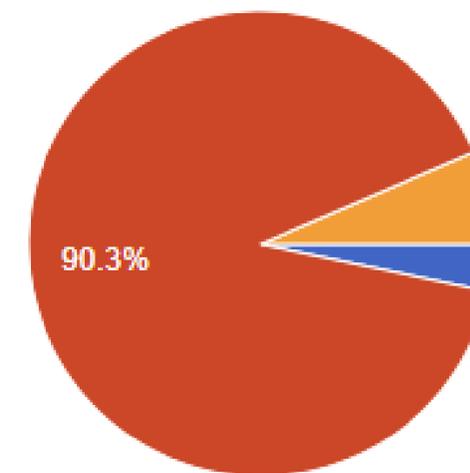
31 responses



Usia

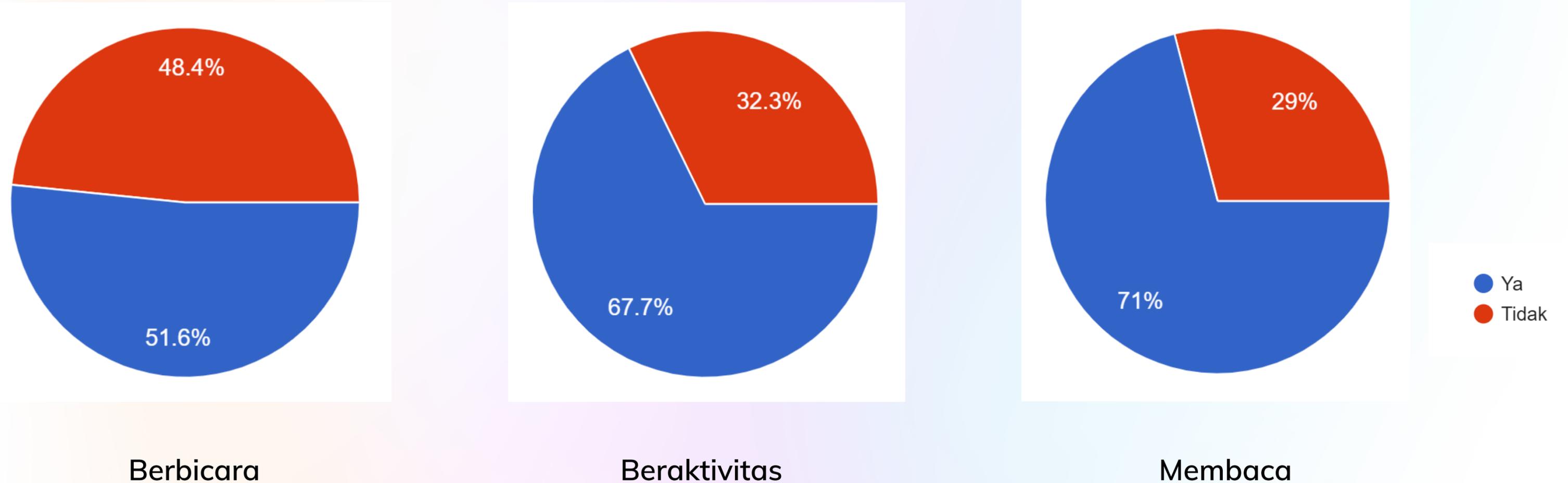
31 responses

● Binusian
● Non-Binusian



● < 17 tahun
● 17 - 25 tahun
● > 25 tahun

Tantangan / Keterbatasan Lansia

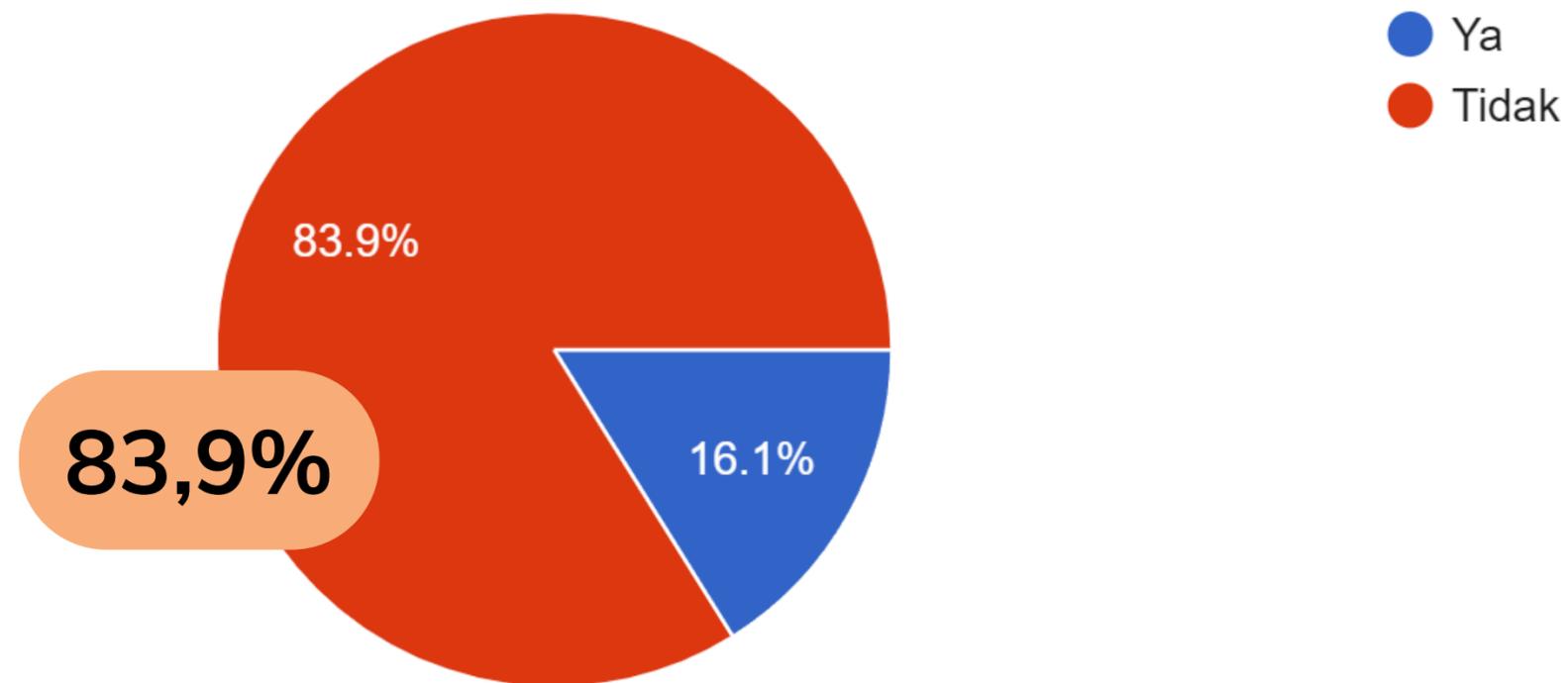


Dari hasil kuesioner tersebut, dapat disimpulkan bahwa lansia cenderung mengalami keterbatasan dalam beraktivitas dan membaca sehingga dalam kesehariannya memerlukan bantuan. Setengah responden juga mengungkapkan bahwa lansia memiliki keterbatasan dalam berbicara.

Solusi dalam Mengatasi Keterbatasan

Apakah Anda sudah menemukan solusi untuk mengatasi keterbatasan tersebut?

31 responses

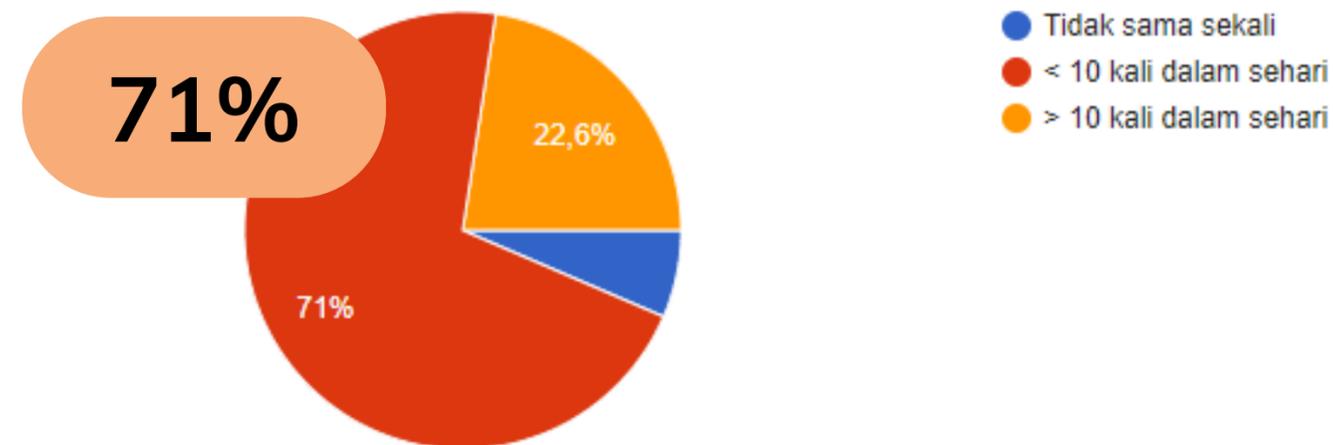


Dari hasil kuesioner tersebut, dapat disimpulkan bahwa rata-rata pengurus atau keluarga lansia belum menemukan solusi yang efektif untuk mengatasi setiap keterbatasan lansia.

Dalam sehari, seberapa sering lansia tersebut meminta bantuan kepada Anda atau keluarganya lainnya?

Salin

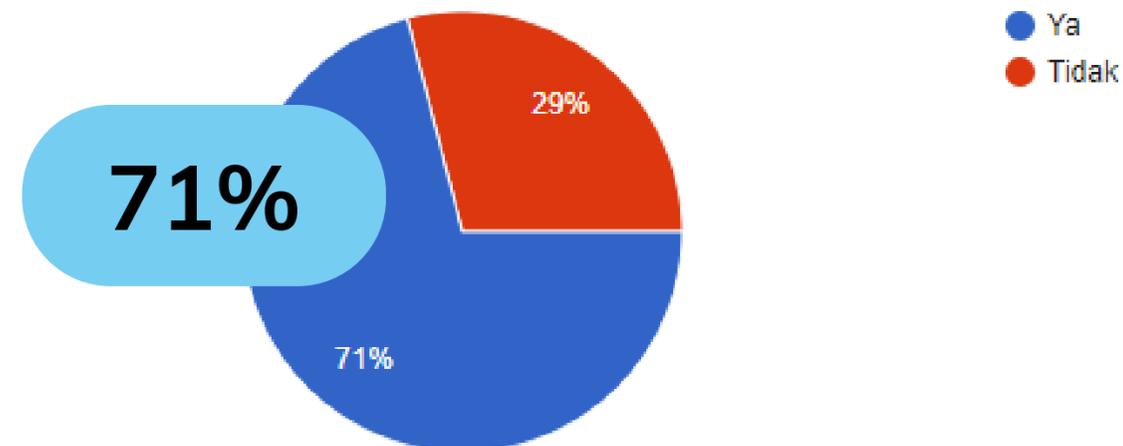
31 jawaban



Apakah Anda sering mengalami kesulitan dalam memahami keinginan para lansia yang memiliki keterbatasan?

Salin

31 jawaban



Frekuensi Kesulitan yang Dialami

Dari hasil kuesioner tersebut, dapat disimpulkan bahwa rata-rata lansia memerlukan bantuan kepada pengurus atau keluarganya dalam keseharian mereka. Namun, pengurus cenderung kesulitan dalam memahami apa yang dimaksudkan oleh lansia.

Ketersediaan Fasilitas yang Memadai

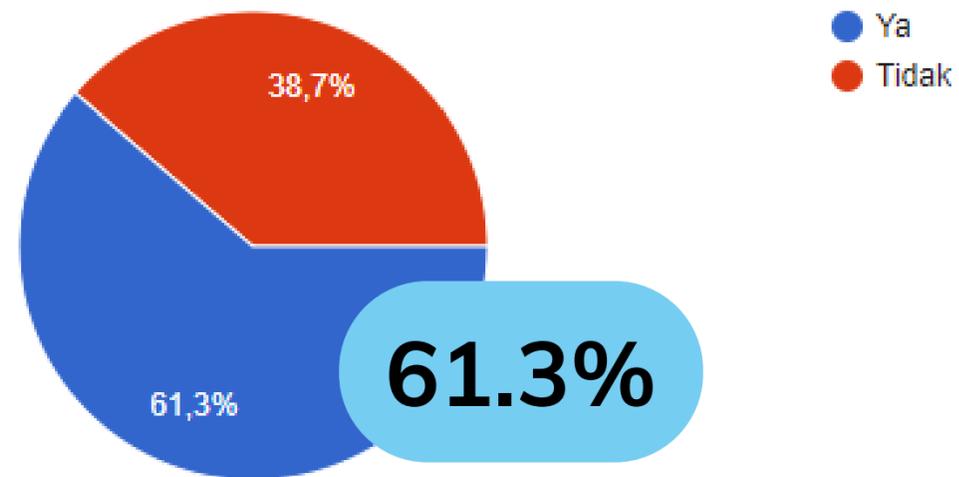


Dari hasil kuesioner tersebut, dapat disimpulkan bahwa **rata-rata keluarga lansia memiliki smartphone untuk memfasilitasi lansianya**. Hal ini sangat mendukung ide yang kami tawarkan yaitu ElderEase yang berbasis Mobile App.

Tingkat Pemahaman Lansia dalam Penggunaan Smartphone

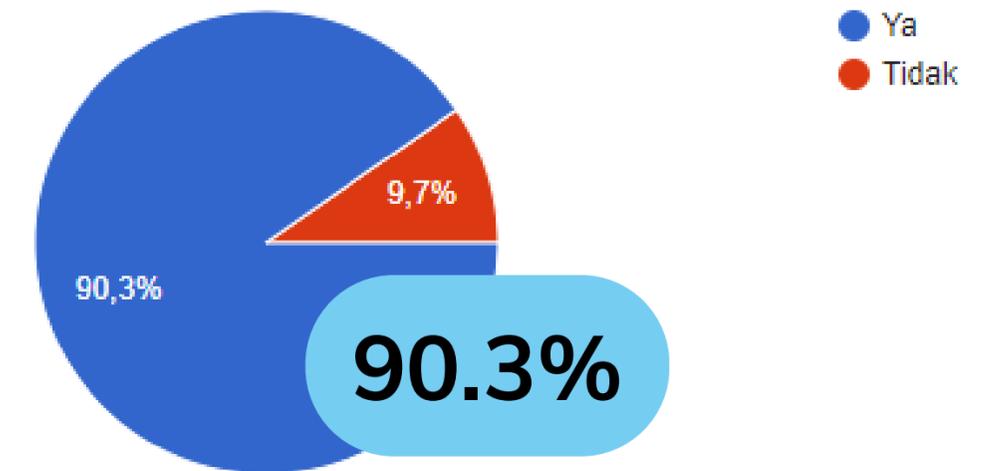
Apakah lansia yang bersama dengan Anda memiliki pemahaman atau kemampuan dasar dalam mengakses aplikasi pada smartphone?

31 jawaban



Apakah Anda bersedia mengajarkan lansia untuk menggunakan aplikasi ElderEase?

31 jawaban

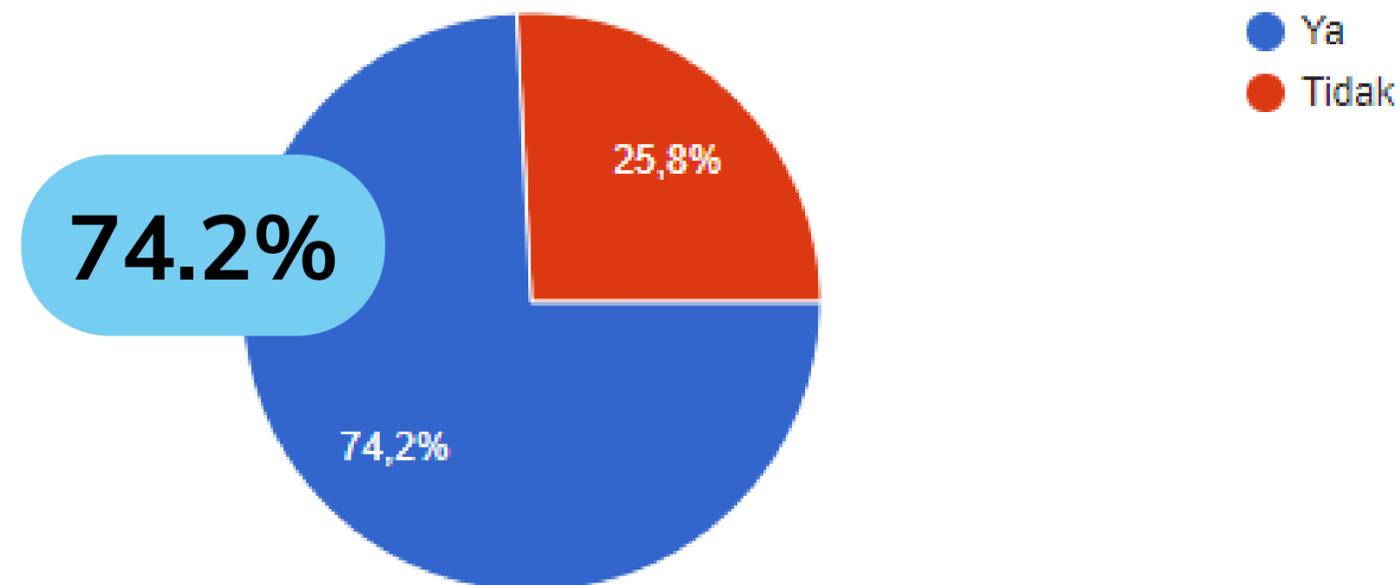


Dari hasil kuesioner tersebut, dapat disimpulkan bahwa rata-rata lansia cukup mengerti atau memiliki kemampuan dasar dalam penggunaan smartphone. Para anggota keluarga juga dengan senang hati akan siap memberikan edukasi kepada lansia bagaimana cara menggunakan smartphone untuk hal-hal sederhana.

Ketertarikan dengan ElderEase

Berdasarkan manfaat dari fitur aplikasi ElderEase, apakah anda tertarik untuk menggunakan aplikasi ini?

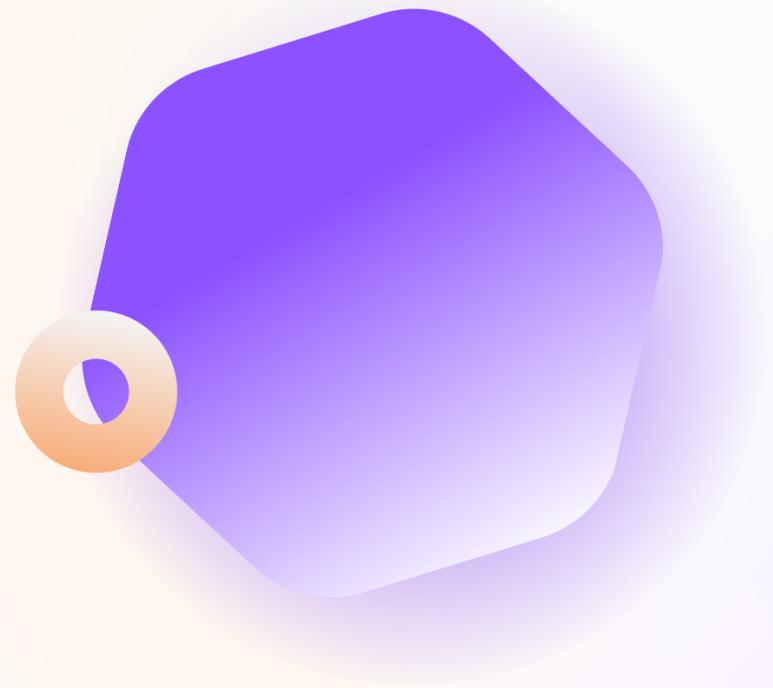
31 jawaban



Dari hasil kuesioner tersebut, dapat disimpulkan **bahwa mayoritas responden setuju dengan adanya aplikasi ElderEase** karena dapat membantu mereka mengatasi masalah yang belum ada solusinya.

Saran Fitur Pada ElderEase

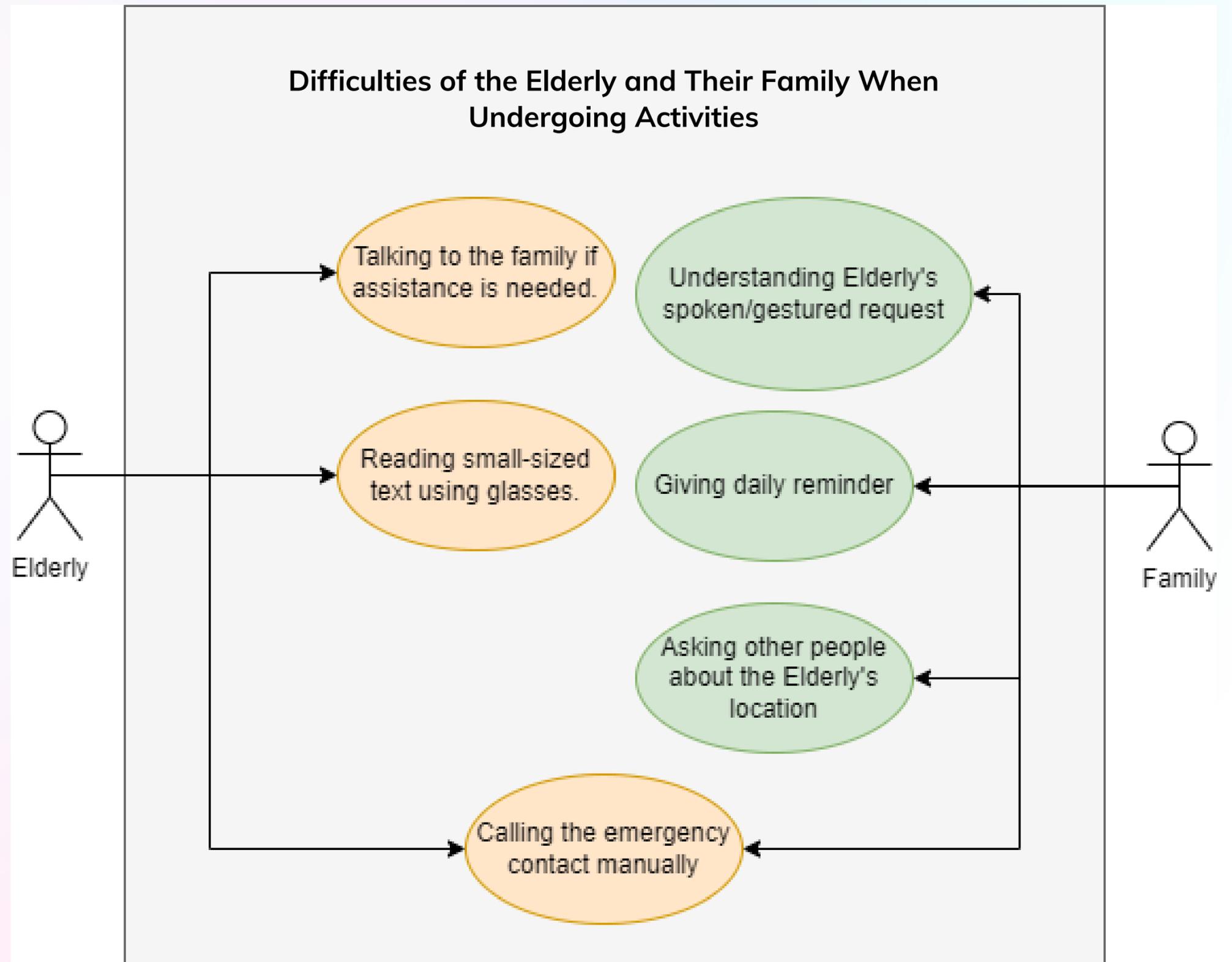
- Reminder (mengingatkan jadwal seperti makan, tidur, dsb)
- Pembaca teks (text to speech, Artificial Intelligence)
- Pelacakan lokasi
- Fitur untuk mengulangi dan memperjelas apa yang diucapkan oleh keluarganya
- Dapat menyampaikan keinginan mereka lewat shortcut
- UI yang mudah dimengerti lansia, tulisan yang besar



Use Case



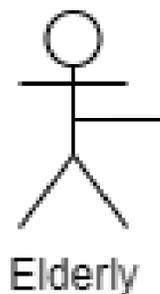
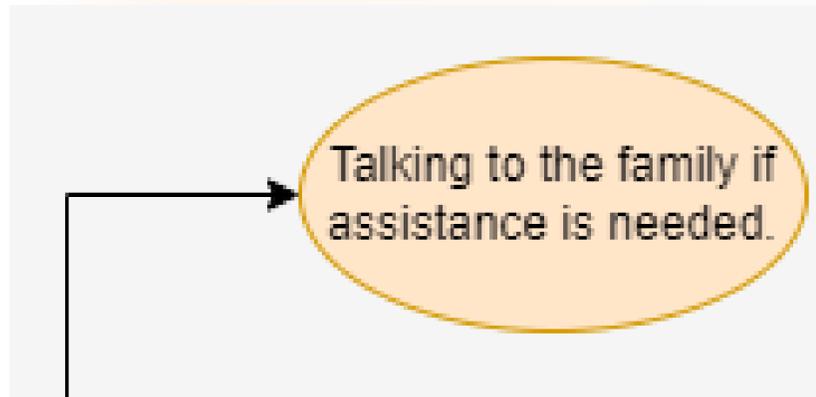
Use Case Diagram



1

Masalah : lansia kesulitan berbicara
atau beraktivitas

Use Case Description (1)

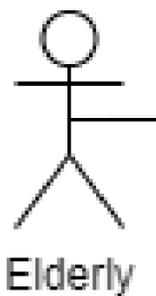
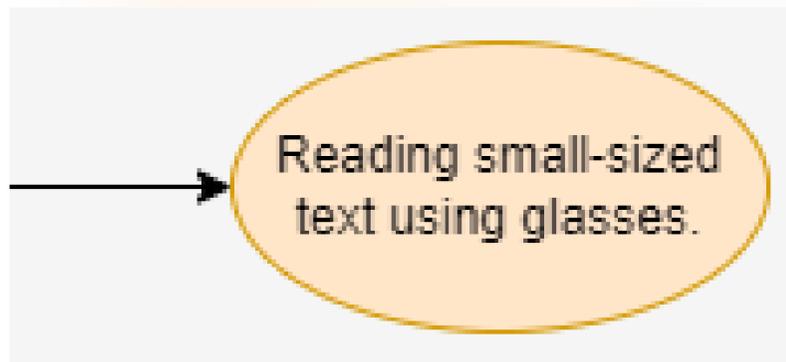


ID	1
Importance Level	High
Use Case	Talking to the Family When Assistance is Needed
Use Case Type	Detail, Essential
Brief Description	This use case is about helping a person, especially the elderly get in touch with their family when they need help. It makes sure there's always a way for the person to get help.
Goal	To establish or facilitate communication with family members when the user requires assistance.
Actor	Elderly (Person needing assistance)
Relationship	Association : Elderly Include : - Extend : - Generalization : -
Pre-condition	1. Family members are available and able to respond to communication efforts.
Post-condition	1. The family members are informed about the user's need for assistance. 2. A family member has acknowledged the request and initiated a response.
Basic Path	1. The elderly identify a need for assistance. 2. The elderly decide to call a family member for help. 3. If the family members understand the elderly's request, they will respond to the elderly's request and provide the necessary assistance or arrange for help.
Alternative Path	If the family member doesn't understand the elderly's request, elderly's will speak while demonstrating their words as if showing sign language that describes their desire.
Exceptional Path	If the user is unable to communicate due to a medical or other emergency, they can write their desire in the notebook or paper.

2

Masalah : lansia kesulitan membaca tulisan

Use Case Description (2)

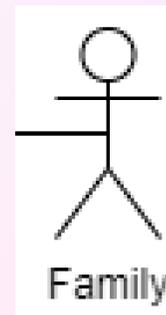
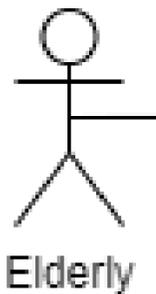
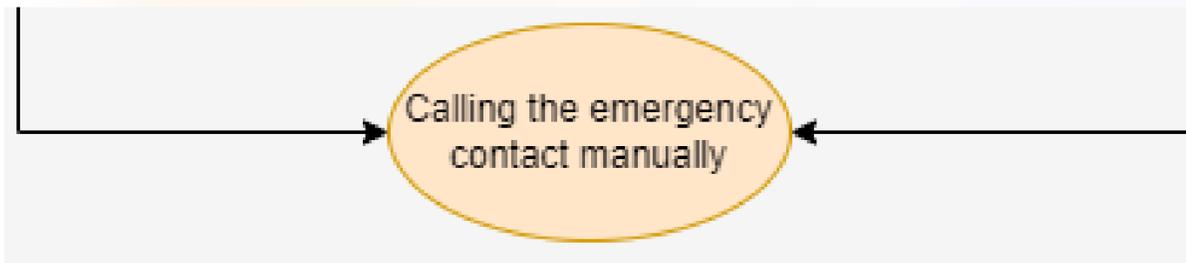


ID	2
Importance Level	High
Use Case	Reading Small-Sized Text Using Glasses
Use Case Type	Detail, Essential
Brief Description	This use case describes the situation where a person needs to read text that is too small to see clearly with the naked eye. The person will use glasses specifically designed to magnify the text, making it easier to read. This process involves identifying the need to enhance vision, locating the glasses, and using them effectively to read the small-sized text.
Goal	To read the texts that are hard to see.
Actor	Elderly (Person needing to read small-sized text).
Relationship	Association : Elderly Include : - Extend : - Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. The Elderly has difficulty reading small-sized text without assistance. 2. The Elderly has access to a pair of glasses suitable for reading small text. 3. The text to be read is available to the Elderly (e.g., in a book, on a label, on a screen).
Post-condition	<ol style="list-style-type: none"> 1. The Elderly is able to read the small-sized text clearly. 2. The glasses are returned to their storage location for future use.
Basic Path	<ol style="list-style-type: none"> 1. The elderly encounter small-sized text that they need to read. 2. The elderly retrieve the glasses from their storage location. 3. The elderly put on the glasses. 4. The elderly look at the small-sized text through the glasses, adjusting the distance between the glasses and the text if necessary for better clarity. 5. The elderly read the required information. 6. After reading, the elderly remove the glasses and put them back in their storage location.
Alternative Path	If the elderly have misplaced their glasses, they may search for them or use an alternative magnifying tool if available.
Exceptional Path	If the glasses are broken or not suitable for the text size, the user may need to find another pair of glasses or use a digital magnifying option if available.

3

Masalah : lansia dan keluarga kesulitan menghubungi seseorang saat meminta bantuan

Use Case Description (3)

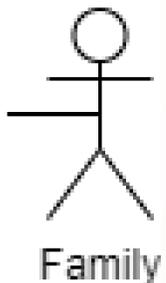


ID	3
Importance Level	High
Use Case	Calling the Emergency Contact Manually
Use Case Type	Detail, Essential
Brief Description	This use case describes the process by which the elderly and family members manually initiate a call to a designated emergency contact. This process is crucial in situations where an elderly and family member require immediate assistance due to health concerns, safety threats, or other urgent matters. The elderly and family members must access a phone, recall or locate the emergency contact's number, and make the call to convey the emergency situation.
Goal	To notify the family members and elderly of the current emergency situation and to get in touch with them.
Actor	Elderly and family members (Person initiating the emergency call).
Relationship	Association : Elderly and Family Members Include : - Extend : - Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. The elderly and family members have determined there is an emergency requiring immediate attention. 2. The elderly and family members have access to a communication device, such as a landline or mobile phone. 3. The emergency contact's information is readily available or memorized by the elderly and family members.
Post-condition	<ol style="list-style-type: none"> 1. The emergency contact has been notified about the situation. 2. The emergency contact takes appropriate action to assist the elderly and family members.
Basic Path	<ol style="list-style-type: none"> 1. The elderly and family members identify an emergency situation requiring assistance. 2. The elderly and family members retrieve the communication device and access the emergency contact's information. 3. The elderly and family members dial the emergency contact's phone number. 4. The elderly and family members communicate the nature of the emergency once the contact answers. 5. The elderly and family members follow any instructions given by the emergency contact or wait for assistance to arrive.
Alternative Path	If the elderly and family members are unable to reach the emergency contact, the elderly and family members dial a general emergency number for assistance.
Exceptional Path	If the elderly and family members cannot operate the phone due to the nature of the emergency, the user may use a personal emergency response system (PERS) if available, or signal for help by other means.

4

Masalah : keluarga terkadang lupa untuk mengingatkan lansia

Use Case Description (4)

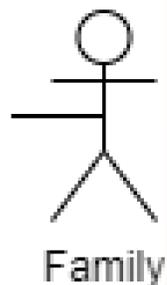
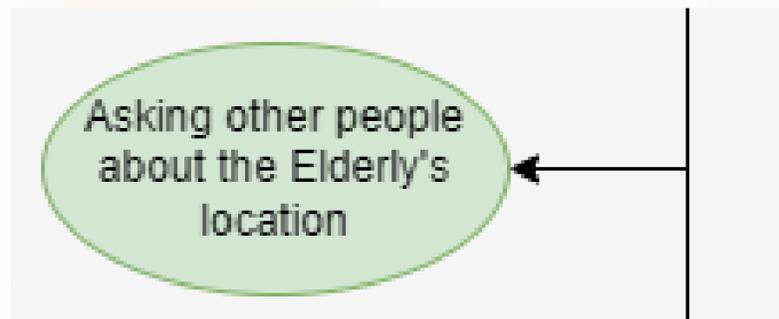


ID	4
Importance Level	Medium
Use Case	Giving Daily Reminders
Use Case Type	Slightly Essential
Brief Description	This use case describes the process where a person provides daily reminders to the elderly to help them remember important tasks and appointments. The reminders could be for taking medication, attending appointments, or performing routine tasks. The aim is to support the elderly in maintaining their daily routine and health regimen.
Goal	To make sure the elderly do all the important things they need to do.
Actor	Family members.
Relationship	Association : Family Members Include : - Extend : - Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. The elderly user may have a condition that affects their memory. 2. A family member has remembered everything the elderly have to do. 3. The elderly user has agreed to receive daily reminders.
Post-condition	<ol style="list-style-type: none"> 1. The elderly user receives the reminder and acknowledges it. 2. The user takes action based on the reminder (e.g., takes medication, prepares for an appointment).
Basic Path	<ol style="list-style-type: none"> 1. The family member remembers there is something the elderly must do. 2. The family member reminds the elderly. 3. The elderly user hears/sees the reminder. 4. The elderly acknowledge the reminder by taking the required action (like taking medication).
Alternative Path	If the family member is not there to remind the elderly, other family members can help him/her to remember the elderly's schedule and remind them.
Exceptional Path	If everyone accidentally forgets the elderly's schedule, he/she might write down the elderly's schedule and stick it at a place where the elderly or other family members can easily see.

5

Masalah : keluarga lansia kesulitan mencari / monitoring keberadaan lansia

Use Case Description (5)

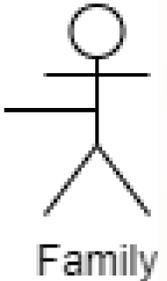


Family

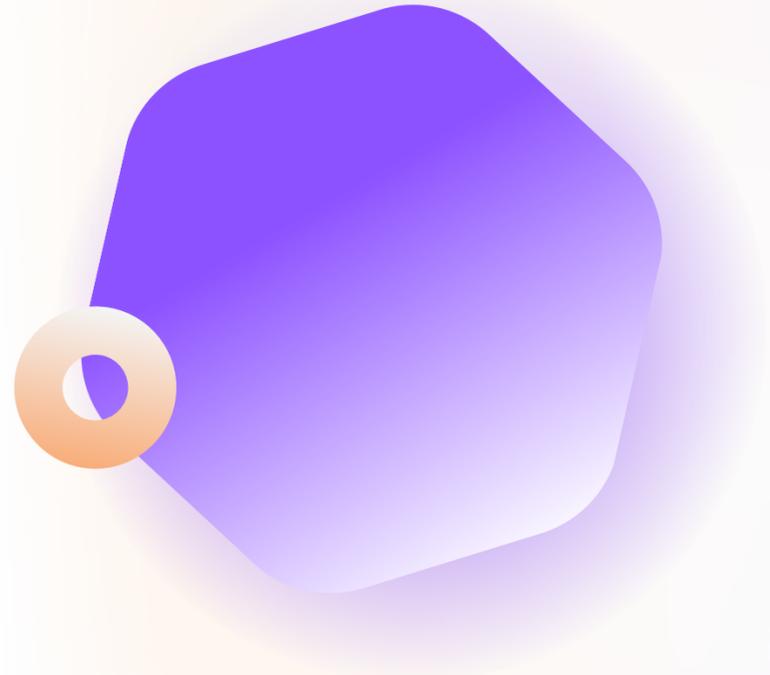
ID	5
Importance Level	Medium
Use Case	Asking Other People About the Elderly's Location
Use Case Type	Slightly Essential
Brief Description	This use case details the scenario where someone needs to inquire about an elderly person's whereabouts. This could be due to the elderly individual having memory issues, wandering tendencies, or simply being out of touch for an unexpected length of time. It involves the person making inquiries to locate the elderly individual, potentially using various means such as calling acquaintances, using location tracking devices, or engaging community resources.
Goal	To find the elderly and make sure they are safe.
Actor	Family members (Person seeking the elderly individual's location).
Relationship	Association : Family Members Include : - Extend : - Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. The elderly individual is not at their expected location, and there is a concern about their whereabouts. 2. The family members have access to contact information for the elderly individual's friends, neighbors, or any tracking services they might be using. 3. The elderly individual has a network of known associates or a system in place that can assist in locating them.
Post-condition	<ol style="list-style-type: none"> 1. The family members have successfully obtained information about the elderly individual's current location. 2. Appropriate actions are taken to ensure the elderly individual's safety and wellbeing.
Basic Path	<ol style="list-style-type: none"> 1. The family members realize the need to determine the elderly individual's location. 2. The family members start by contacting close associates of the elderly person, such as family, friends, or neighbors. 3. If the elderly person uses a location tracking device or service, the family members check it for their current location. 4. The family members may extend the search to local businesses or community centers the elderly person frequents. 5. Once the elderly individual's location is known, the family members take appropriate steps to ensure their safety, which may include visiting them or calling for a wellness check.
Alternative Path	If initial inquiries are unsuccessful, the family member may contact local authorities or community services for assistance. The family member could also post on community social media groups or use community alert systems if available.

6 Masalah : keluarga sulit memahami ucapan dan gesture dari lansia

Use Case Description (6)



ID	6
Importance Level	High
Use Case	Understanding Elderly's Spoken or Gestured Request
Use Case Type	Detail, Essential
Brief Description	This use case details the scenario where someone is trying to help an elderly by understanding the elderly's request. Depending on the elderly's condition, the request might have to be gestured if the elderly has difficulty talking. The person will have to try to understand whatever it is the elderly wants in order to assist him/her properly.
Goal	Helping elderly to get the right assistance based on what they want/need.
Actor	Family members (Person trying to understand elderly's request).
Relationship	Association : Family Members Include : - Extend : - Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. The elderly want something but have difficulty speaking clearly. 2. The elderly trying to gesture his/her needs to help other people understand his/her request. 3. The family members want to help the elderly but have difficulty understanding.
Post-condition	<ol style="list-style-type: none"> 1. Family members finally understand the elderly's request. 2. The elderly get the assistance he/she needs.
Basic Path	<ol style="list-style-type: none"> 1. The elderly realizes he/she needs assistance to do something. 2. The elderly call a family member. 3. A family member notices elderly's need for assistance. 4. The family member tries to understand the elderly's request. 5. The family member understands the elderly's request and gives his/her assistance.
Alternative Path	If the family member still can't understand the elderly's request through talking or gesturing, the family member can try asking a yes or no question to the elderly such as, "Do you want to eat?", "Do you want to stand up?", etc.
Exceptional Path	If the elderly have difficulty answering questions, the family member can try bringing the things the elderly usually want and just let the elderly pick out the things that are brought to them. If the elderly don't want things, the family member can assist the elderly to move to another place and just follow the elderly's direction.



Backlog Documents



User Stories

AGILE USER STORY - ELDEREASE

USER STORY ID	PRIORITY	AS A <type of user>	I WANT TO <perform some task>	SO THAT I CAN <achieve some goal>	FINAL STORY
1	High	Elderly	read texts easily	know the context of texts	As an elderly, I want to read texts easily, so that I can know the context of texts.
2	High	Elderly	communicate with my family easily	have a conversation with them and tell them my desires	As an elderly, I want to communicate with my family easily, so that I can have a conversation with them and tell them my desires.
3	High	Elderly	call the emergency contacts easily	ask for help when I have an emergency situation	As an elderly, I want to call the emergency contacts easily, so that I can ask for help when I have an emergency situation.
4	High	Elderly	freely express my desires without limits	get anything I want	As an elderly, I want to freely express my desires without limits, so that I can get anything I want.
5	Medium	Elderly	receive a reminder	be informed of my daily necessities	As an elderly, I want to receive a reminder, so that I can be informed of my daily necessities.
6	Medium	Family Member	want to know my elderly's location	track their activities and take care of them	As a family member, I want to know my elderly's location, so that I can track their activities and take care of them.

User Stories di atas mengungkapkan keinginan dari elderly dan family supaya mereka bisa mencapai goal yang diinginkan, yaitu mendapatkan kemudahan dalam komunikasi dan beraktivitas.

Product Backlog

AGILE PRODUCT BACKLOG - ELDEREASE

TASK ID	TASK NAME	SPRINT #	ASSIGNED TO	START (month / date / year)	FINISH (month / date / year)	STORY	SPRINT READY	PRIORITY	STATUS	STORY POINTS	ASSIGNED TO SPRINT
1	Setting up project (framework and database)	Sprint 1	Verren (Scrum Master & Analyst)	2/22/2024	2/27/2024	No	Yes	High	In Progress	1	Yes
2	Develop application interface (Figma)	Sprint 1	Karen (Product Owner & Code Developer Fullstack Backend)	2/28/2024	3/6/2024	No	Yes	Medium	In Progress	1	Yes
3	Develop application interface (Code)	Sprint 2	Carissa (UI/UX Designer & Code Developer Fullstack Frontend)	3/7/2024	3/11/2024	No	Yes	Medium	In Progress	8	Yes
4	Connect application to database	Sprint 2	Alika (Software Tester & Code Developer Fullstack Frontend)	3/7/2024	3/11/2024	No	Yes	High	In Progress	13	Yes
5	Input functionalities (button to speech, navigate between pages, etc)	Sprint 2	Marvella (Analyst & Code Developer Fullstack Backend)	3/12/2024	3/15/2024	Yes	No	High	In Progress	13	Yes
6	Input customize daily word button feature	Sprint 2	Karen (Product Owner & Code Developer Fullstack Backend)	3/16/2024	3/20/2024	Yes	No	Medium	In Progress	5	Yes
7	Prepare the dataset and train the data to build the AI model	Sprint 3	Verren (Scrum Master & Analyst)	3/21/2024	3/23/2024	No	Yes	High	Complete	13	Yes
8	Develop scan and read text feature	Sprint 3	Verren (Scrum Master & Analyst)	3/24/2024	3/31/2024	Yes	Yes	High	Complete	13	Yes
9	Embed feature into the application	Sprint 3	Alika (Software Tester & Code Developer Fullstack Frontend)	4/1/2024	4/3/2024	Yes	No	Medium	Not Started	8	Yes
10	Develop emergency call button	Sprint 4	Marvella (Analyst & Code Developer Fullstack Backend)	4/4/2024	4/8/2024	Yes	No	High	Not Started	13	No
11	Embed the feature into the application	Sprint 4	Carissa (UI/UX Designer & Code Developer Fullstack Frontend)	4/9/2024	4/10/2024	Yes	No	Medium	Not Started	8	No
12	Add phone number customization feature	Sprint 4	Karen (Product Owner & Code Developer Fullstack Backend)	4/11/2024	4/15/2024	Yes	No	Medium	Not Started	5	No

Product Backlog

13	Test the application	Sprint 4	Verren (Scrum Master & Analyst)	4/16/2024	4/17/2024	No	No	Medium	Not Started	8	No
14	Develop reminder feature	Sprint 5	Marvella (Analyst & Code Developer Fullstack Backend)	4/18/2024	4/27/2024	Yes	No	Medium	Not Started	8	No
15	Embed the feature into the application	Sprint 5	Alika (Software Tester & Code Developer Fullstack Frontend)	4/28/2024	5/1/2024	Yes	No	Medium	Not Started	8	No
16	Develop tracking location feature	Sprint 6	Karen (Product Owner & Code Developer Fullstack Backend)	5/2/2024	5/10/2024	Yes	No	High	Not Started	13	No
17	Embed the feature into the application	Sprint 6	Carissa (UI/UX Designer & Code Developer Fullstack Frontend)	5/11/2024	5/13/2024	Yes	No	Medium	Not Started	8	No
18	Test the application	Sprint 6	Verren (Scrum Master & Analyst)	5/14/2024	5/15/2024	No	No	Medium	Not Started	8	No
19	Develop login menu	Sprint 7	Alika (Software Tester & Code Developer Fullstack Frontend)	5/16/2024	5/23/2024	No	No	Low	Not Started	3	No
20	Develop register menu	Sprint 7	Marvella (Analyst & Code Developer Fullstack Backend)	5/16/2024	5/23/2024	No	No	Low	Not Started	3	No
21	Embed the new feature into the application	Sprint 7	Karen (Product Owner & Code Developer Fullstack Backend)	5/24/2024	5/26/2024	No	No	Low	Not Started	3	No
22	Test the application	Sprint 7	Carissa (UI/UX Designer & Code Developer Fullstack Frontend)	5/27/2024	5/29/2024	No	No	Medium	Not Started	8	No
23	Finalize the whole features	Sprint 8	Verren (Scrum Master & Analyst)	5/30/2024	6/6/2024	No	No	High	Not Started	13	No
24	Deploy the application	Sprint 8	Alika (Software Tester & Code Developer Fullstack Frontend)	6/7/2024	6/8/2024	No	No	Medium	Not Started	5	No
25	Maintain the application	Sprint 8	Marvella (Analyst & Code Developer Fullstack Backend)	6/9/2024	6/12/2024	No	No	High	Not Started	13	No

Product Backlog

This section is for
the drop-down list

Yes	High	Complete
No	Medium	In Progress
	Low	Not Started

Kelompok kami menggunakan skala Fibonacci untuk penomoran Story Points, berikut detail deskripsinya :

1. Hard = 13
2. Medium = 5, 8
3. Easy = 1, 3

Keterangan :

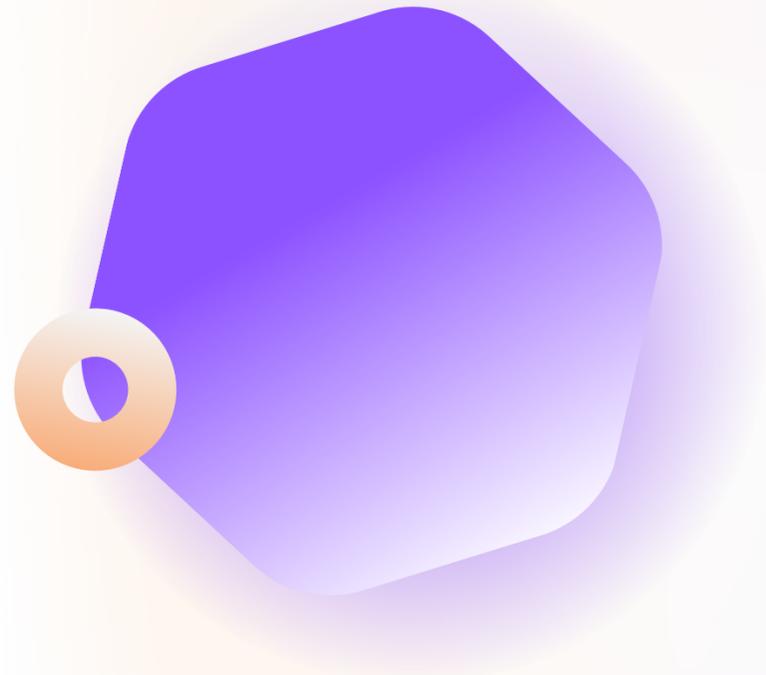
Level 1 = untuk setting awal

Level 3 = untuk develop login-register menu

Level 5 = untuk customize, add data, dan deploy aplikasi

Level 8 = embed dan testing feature, develop feature yang memiliki level priority medium pada user storynya

Level 13 = finalize dan maintain aplikasi, develop feature yang memiliki level priority high pada user storynya



Design Artefact



Use Case Description (Proposed)

ID	1
Importance Level	Low
Use Case	Register to Application
Use Case Type	Less essential
Brief Description	This use case describes a process that must be followed by new users to obtain their account in the ElderEase application. They need to register their identity and provide some necessary information on the ElderEase application's homepage.
Goal	So that every activity history carried out by the Elderly can be stored properly.
Actor	Elderly, Family Member
Relationship	Association : Elderly, Family Member Include : Input identity, choose role Extend : - Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. The Elderly and family member are unable to save their activity history within the application. 2. The Elderly and family member feel uncomfortable because every time they want to switch devices, they have to set up the application settings from scratch.
Post-condition	<ol style="list-style-type: none"> 1. The Elderly and family member feel more assisted because the ElderEase application can properly store all activity histories. 2. The Elderly and family member do not need to set up ElderEase again, saving time and increasing efficiency.
Normal Flow	<ol style="list-style-type: none"> 1. Elderly and family member will download the ElderEase application. 2. Then they will be prompted to fill out the registration form and choose their own role on the homepage.
Alternative Flow	There is no alternative flow in this use case.
Exceptional Flow	There is no exceptional flow in this use case.

Use Case Description (Proposed)

ID	2
Importance Level	Low
Use Case	Input Elderly's ID
Use Case Type	Less essential
Brief Description	This use case describes a mandatory process that must be followed by a family member's role while they want to connect with the elderly's account using the elderly's id.
Goal	So that the family member's account is able to connect with their elderly's account.
Actor	Family Member
Relationship	Association : Family Member Include : - Extend : - Generalization : -
Pre-condition	Family member has no application through which the system can connect them with their elderly.
Post-condition	With this use case, family member is able to be connected with their elderly using ElderEase. This application provides a system that gives family member a chance to keep track and help the ElderEase undirectly.
Normal Flow	<ol style="list-style-type: none"> 1. After filling out the form registration at the beginning of the registration process, the family member's will be asked to input the elderly's id in the login menu. 2. The system will identify the elderly's id and process the login request. After the verifying process has been finished, family member will be forwarded into the main menu.
Alternative Flow	There is no alternative flow in this use case.
Exceptional Flow	There is no exceptional flow in this use case.

Use Case Description (Proposed)

ID	3
Importance Level	Low
Use Case	Login
Use Case Type	Less essential
Brief Description	This use case describes a process that both actors, the Elderly and Family Member, must undergo to access all the features available within the application.
Goal	Elderly and Family Member can access features based on the role they choose during login.
Actor	Elderly, Family Member
Relationship	Association : Elderly, Family Member Include : Save user login credentials Extend : - Generalization : -
Pre-condition	The Elderly and Family Member manage their daily lives without the assistance of sophisticated application systems in ElderEase.
Post-condition	The Elderly and Family Member can access their features based on the role they choose during login.
Normal Flow	<ol style="list-style-type: none">1. Elderly and Family member access the login menu after registering.2. The ElderEase system will save the login credentials.
Alternative Flow	There is no alternative flow in this use case.
Exceptional Flow	There is no exceptional flow in this use case.

Use Case Description (Proposed)

ID	4
Importance Level	Medium
Use Case	Press Daily Word Shortcut Buttons
Use Case Type	Slightly essential
Brief Description	This use case describes the process that will need to be done by Elderly and Family Member in the ElderEase application so that Elderly able to communicate his/her need with a variety of buttons that are customized by the Family Member in advance.
Goal	Elderly able to communicate his/her wants and needs easily and effectively, therefore his/her limitation does not hindrance his/her communication. Then, Family Member is able to understand what the Elderly wants and needs.
Actor	Elderly
Relationship	Association : Elderly Include : - Extend : Input custom words Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. Elderly having trouble speaking due to his/her age. Causing his/her pronunciation to be poorly understood. 2. Elderly has to make a gesture to clearly explain his/her needs. 3. Family Member poorly understands what the Elderly wants and needs.
Post-condition	<ol style="list-style-type: none"> 1. Elderly able to effectively communicate his/her wants and needs using the daily word button shortcut. 2. Elderly doesn't need to add gestures for communicating his/her wants and needs. 3. Family Member is able to understand Elderly's wants and needs through the sound of the daily word shortcut button. 4. Family Member is far more ready to respond to the Elderly's wants and needs.
Normal Flow	<ol style="list-style-type: none"> 1. The elderly's role are able to set up a variety of daily activities that are possibly needed by the Elderly. 2. Elderly have wants and needs to communicate using customized colored buttons that have been assigned accordingly with its word. 3. Elderly will click the button according to his/her needs. 4. Elderly will click the button near the Family Member. 5. Family Member will listen to the Elderly's needs. 6. Family Member will do the Elderly's needs.
Alternative Flow	When the necessary needs of the Elderly are not available, the Elderly can communicate them to family member so that family member can assist in creating custom shortcut daily word buttons.
Exceptional Flow	If the sound in the application is not audible, family member can increase the volume of the sound or even pay close attention to which button is being clicked.

Use Case Description (Proposed)

ID	5
Importance Level	High
Use Case	Read a Text
Use Case Type	Detail, Essential
Brief Description	This use case describes a specific process that will be carried out specifically by the Elderly to assist them in reading nearby text with the help of an "AI-based read text" feature. The implementation of this AI is used for text-to-speech conversion.
Goal	The Elderly can read the text clearly, enabling them to understand its message, even if it is small in size.
Actor	Elderly
Relationship	Association : Elderly Include : Open Camera, Scan Text Extend : - Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. The Elderly cannot read the text around them due to visual limitations. 2. They need to ask for assistance from others to read the messages they want to read.
Post-condition	<ol style="list-style-type: none"> 1. The Elderly can read any text with this feature, thus overcoming limitations and no longer needing to wait for assistance from others. 2. The Elderly can easily and effectively read text of various sizes using this feature.
Normal Flow	<ol style="list-style-type: none"> 1. Elderly encounters a piece of text that is difficult to read due to their eyesight. 2. Elderly opens the ElderEase application and taps on the camera feature to scan the text. The application will detect each word and convert it into text that can be heard by the Elderly, enabling them to understand the message easily.
Alternative Flow	If the Elderly cannot hear well, they can rescan the text or activate the replay feature so that the text will be read aloud again.
Exceptional Flow	If the Elderly still can't grasp the message well, there might be a possibility that the application is unable to read the text clearly or the application volume is too low. The Elderly can increase the volume or ask for assistance from family member.

Use Case Description (Proposed)

ID	6
Importance Level	High
Use Case	Receive a Reminder
Use Case Type	Detail, Essential
Brief Description	This use case describes the process that will be done by Elderly to get a reminder of the Elderly's activities through the ElderEase app.
Goal	Help the elderly to memorize a daily task or even something important that must be done in the current time.
Actor	Elderly
Relationship	Association : Elderly Include : - Extend : - Generalization : -
Pre-condition	Elderly often forget to do his/her activities.
Post-condition	Elderly able to do his/her activities in time.
Normal Flow	Elderly will get a reminder when the time of his/her activities comes.
Alternative Flow	There is no alternative flow in this use case.
Exceptional Flow	There is no exceptional flow in this use case.

Use Case Description (Proposed)

ID	7
Importance Level	High
Use Case	Input Custom Reminder
Use Case Type	Detail, Essential
Brief Description	This use case describes the process that will be done by Family Member to input custom reminders of the Elderly's activities through the ElderEase app.
Goal	Completed the elderly's needs in their daily life, such as providing a friendly reminder that can help the elderly.
Actor	Family Member
Relationship	Association : Family Member Include : - Extend : - Generalization : -
Pre-condition	Family member want to set reminders for Elderly but they don't know the effective way.
Post-condition	Finally the elderly can get a reminder in their daily life to help them memorize any important task that must be done.
Normal Flow	<ol style="list-style-type: none">1. Family Member will input a reminder of his/her activities according to the schedule or time and also custom emergency contact needed.2. New reminders are added to the Elderly's reminder.
Alternative Flow	<ol style="list-style-type: none">1. Family Member want to change the time of an activity reminder.2. Family Member want to remove an activity reminder.
Exceptional Flow	There is no exceptional flow in this use case.

Use Case Description (Proposed)

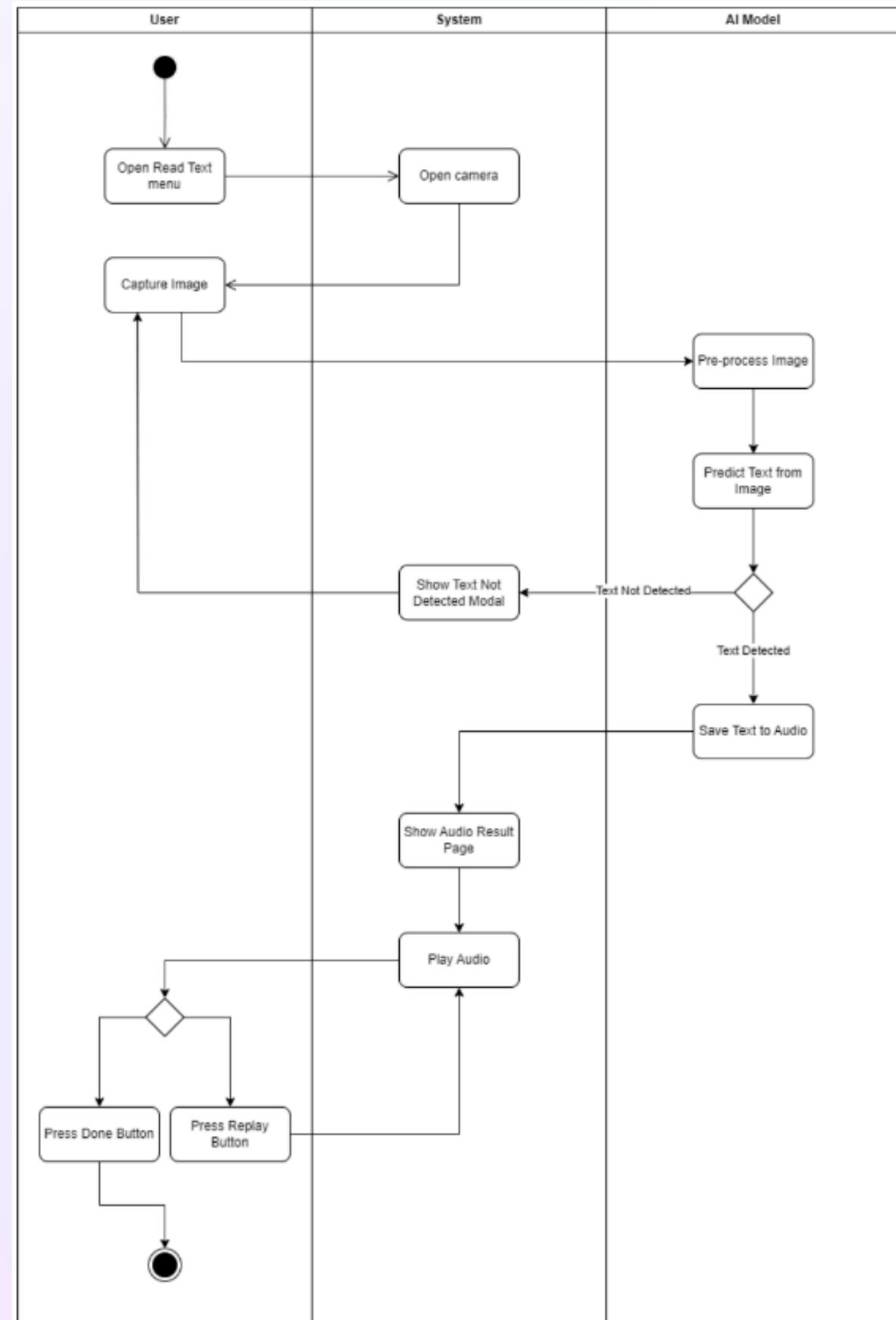
ID	8
Importance Level	High
Use Case	Make emergency call
Use Case Type	Detail, Essential
Brief Description	This use case describes the process that will need to be done by Elderly to make an emergency call to his/her emergency contact.
Goal	Elderly are able to call his/her emergency contact with less application navigation.
Actor	Elderly
Relationship	Association : Elderly Include : Input emergency contact Extend : - Generalization : -
Pre-condition	<ol style="list-style-type: none"> 1. Elderly have an emergency that needs help. 2. Elderly having trouble navigating the application to make an emergency call to the emergency contact.
Post-condition	<ol style="list-style-type: none"> 1. Elderly get the help he/she needs from the emergency contact. 2. Elderly able to easily navigate applications to make an emergency call.
Normal Flow	<ol style="list-style-type: none"> 1. The elderly's role are able to input and customize the emergency contact needed, the elderly can input one to many phone numbers in the feature. 2. Elderly have an emergency. 3. Elderly make an emergency call.
Alternative Flow	<ol style="list-style-type: none"> 1. The primary emergency contact of the Elderly cannot be reached. 2. Call the secondary emergency contact of the Elderly.
Exceptional Flow	There is no exceptional flow in this use case.

Use Case Description (Proposed)

ID	9
Importance Level	High
Use Case	Track Elderly
Use Case Type	Detail, Essential
Brief Description	This use case describes the process that can help the family member to keep tracking the location of the elderly.
Goal	Family member's are able to see and track the current location of the elderly easily.
Actor	Family Member
Relationship	Association : Family Member Include : - Extend : - Generalization : -
Pre-condition	Elderly went to someplace without telling one of the family member first. Therefore, the family member was struggling to find out the current location of the elderly's at the moment.
Post-condition	Finally the family member's can keep tracking the current location of the elderly easily using the apps.
Normal Flow	One family member realized the elderly were going to someplace and they just opened up the feature of track location to find out their elderly's location. Therefore, the family member can easily pick up at the time.
Alternative Flow	There is no exceptional flow in this use case.
Exceptional Flow	There is no exceptional flow in this use case.

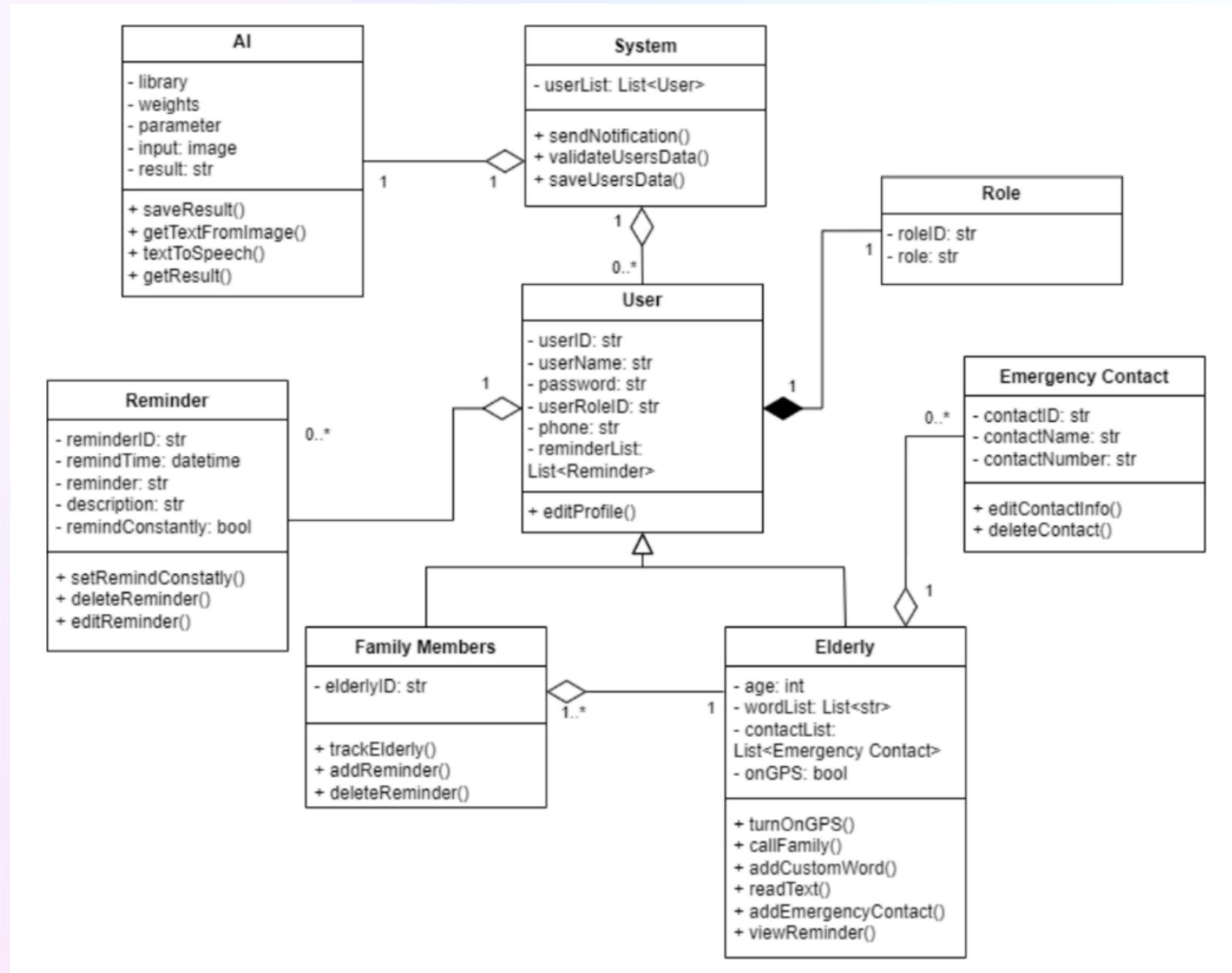
Activity Diagram

This activity diagram beside is describing the flow of AI's features which provide a system that can process a text then generate the text into speech directly. Start from capturing an image containing text as an input for the system, system will recognized and give a feedback through output in a form of sound that can heard by the user (elderly) easily.



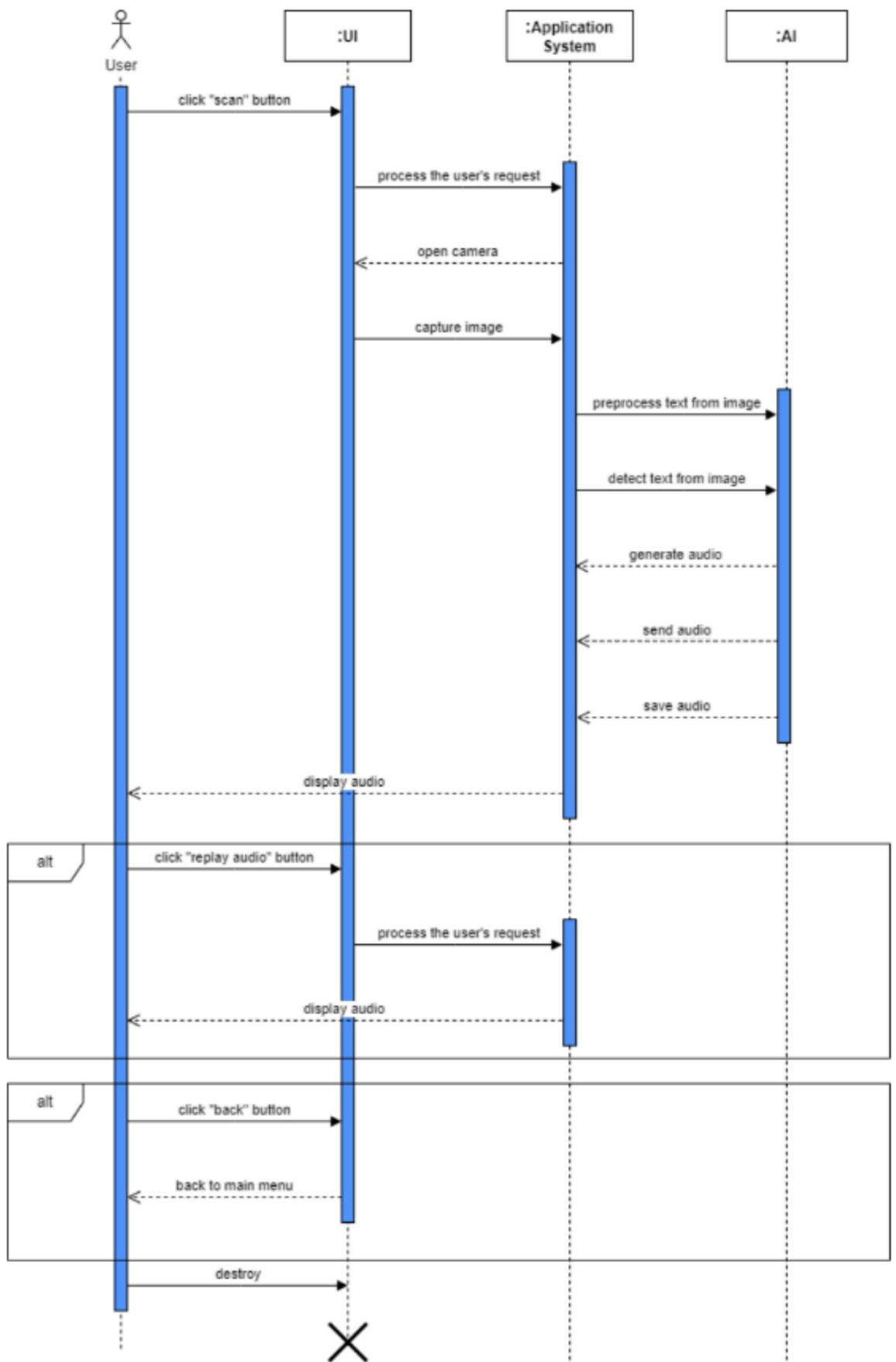
Class Diagram

This class diagram beside is describing a whole feature existing in the ElderEase application and based on the diagram, explains about the relation, the attributes and the method given by each class.



Sequence Diagram

This sequence diagram beside is describing the interaction between every object existing in the class of AI's feature to help elderly read text easily. According to the diagram provided below, we are able to find out the correlation and kinds of feedback given by any object to other object.



UI/UX Design

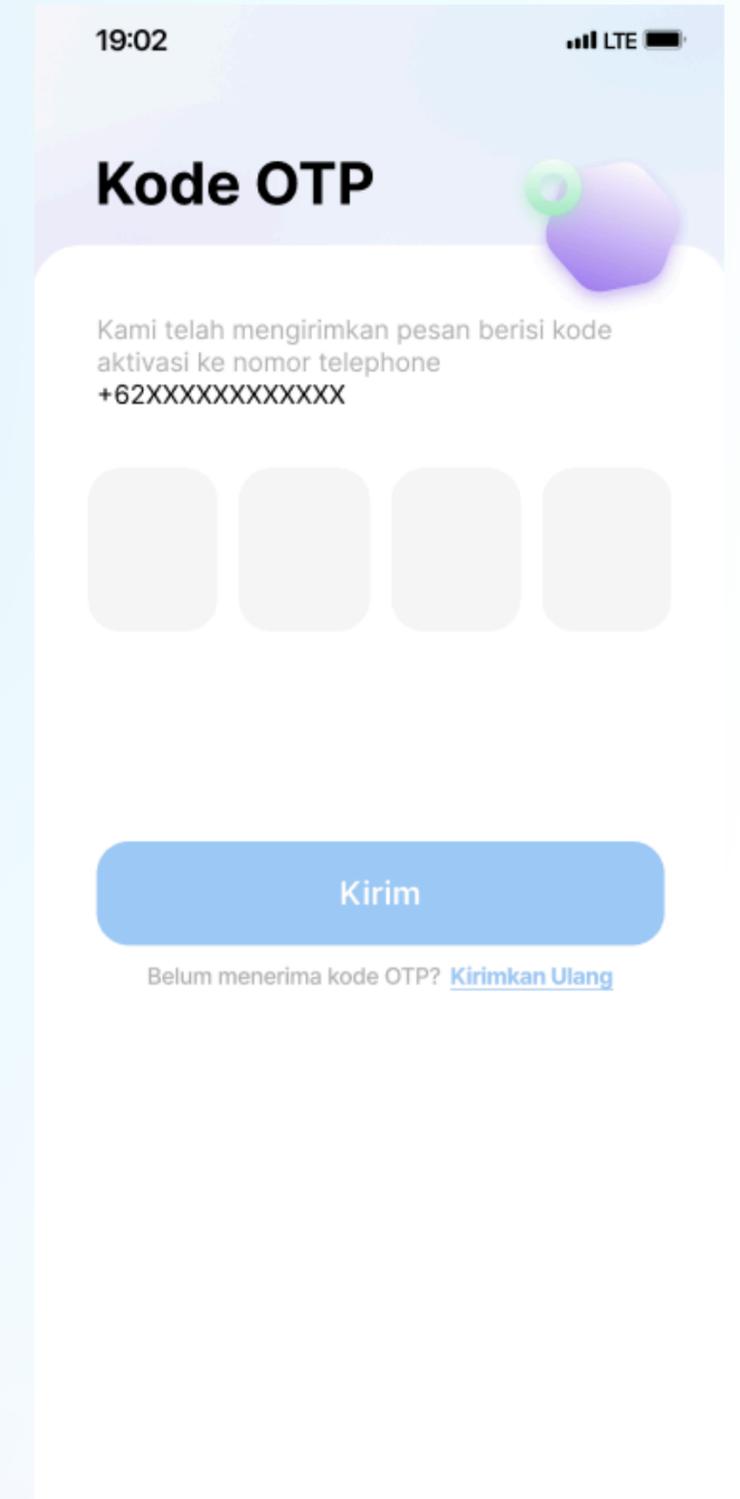
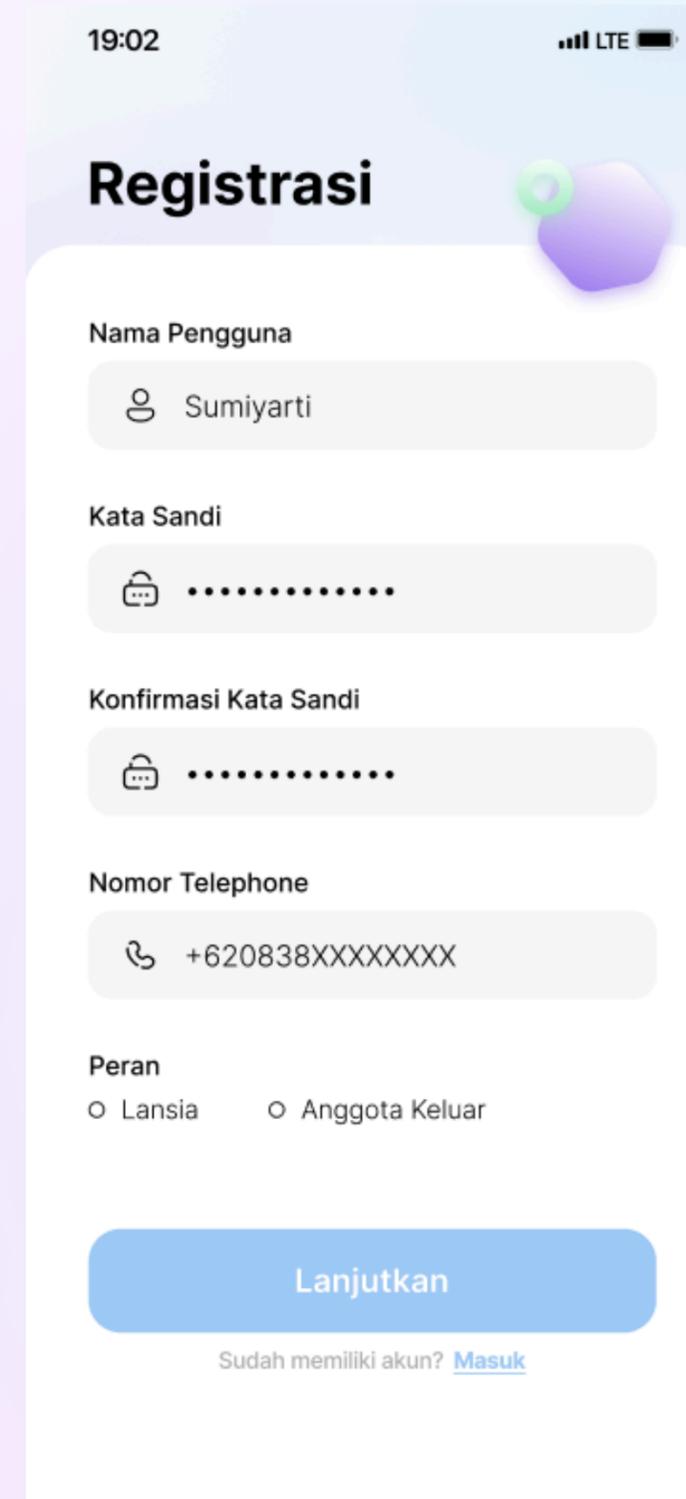
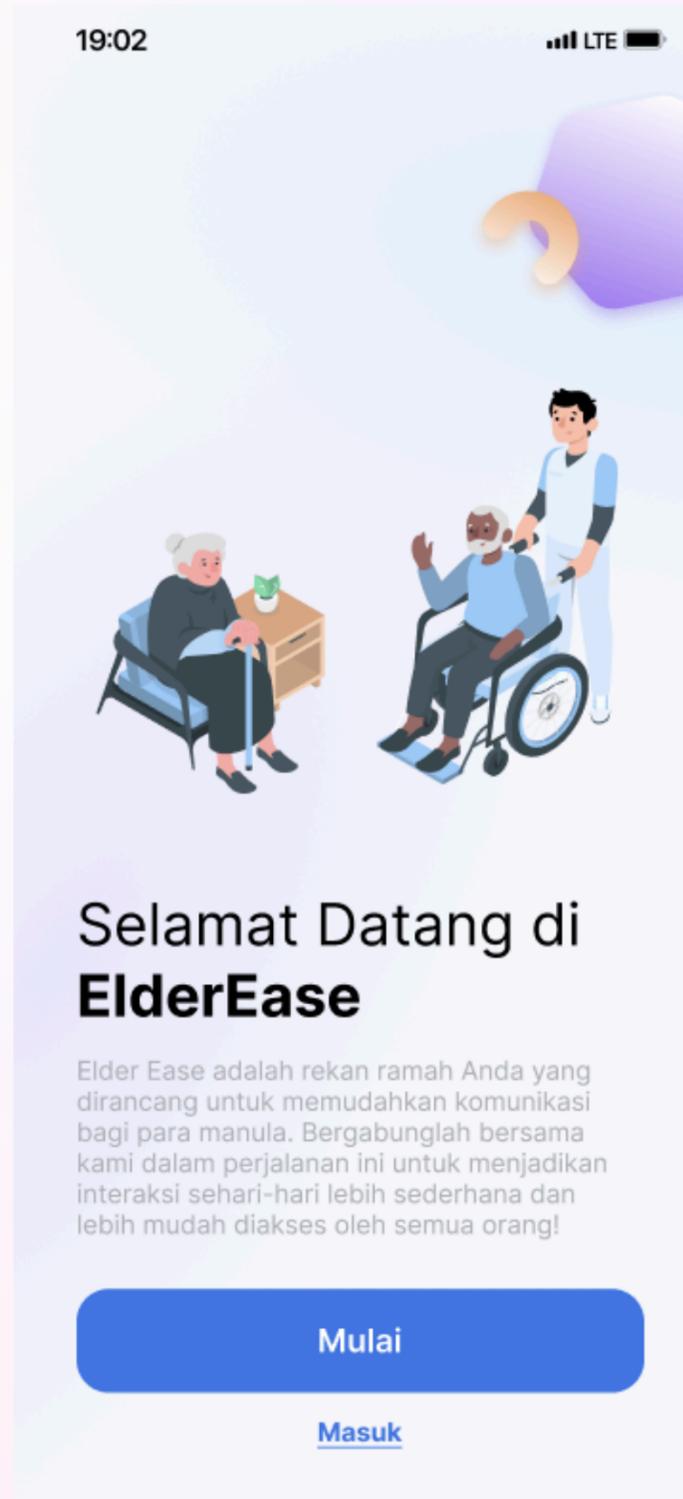


This UI/UX design is describing the mobile application's interface of ElderEase, such as the login, register, and various features provided by this app. We provide the following link to Figma for the better quality of interfaces :

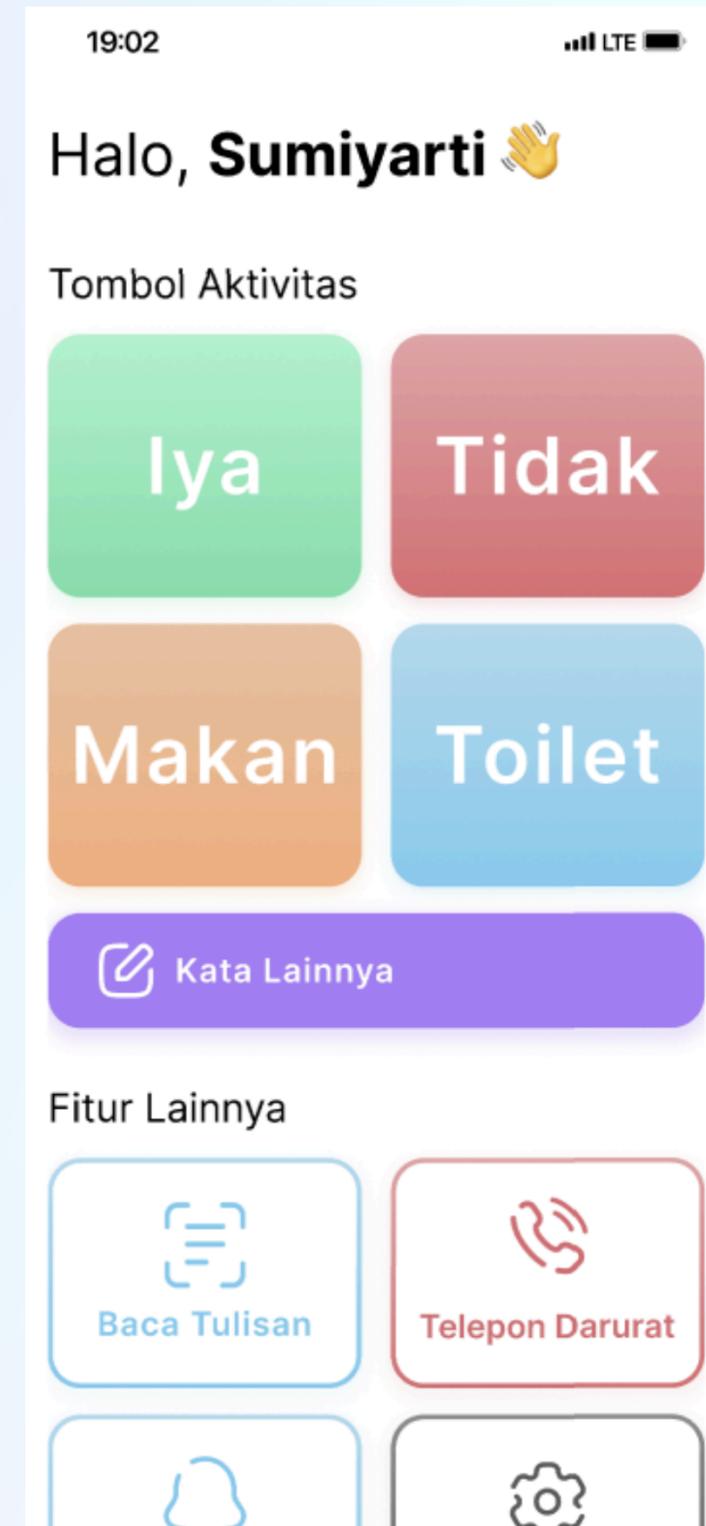
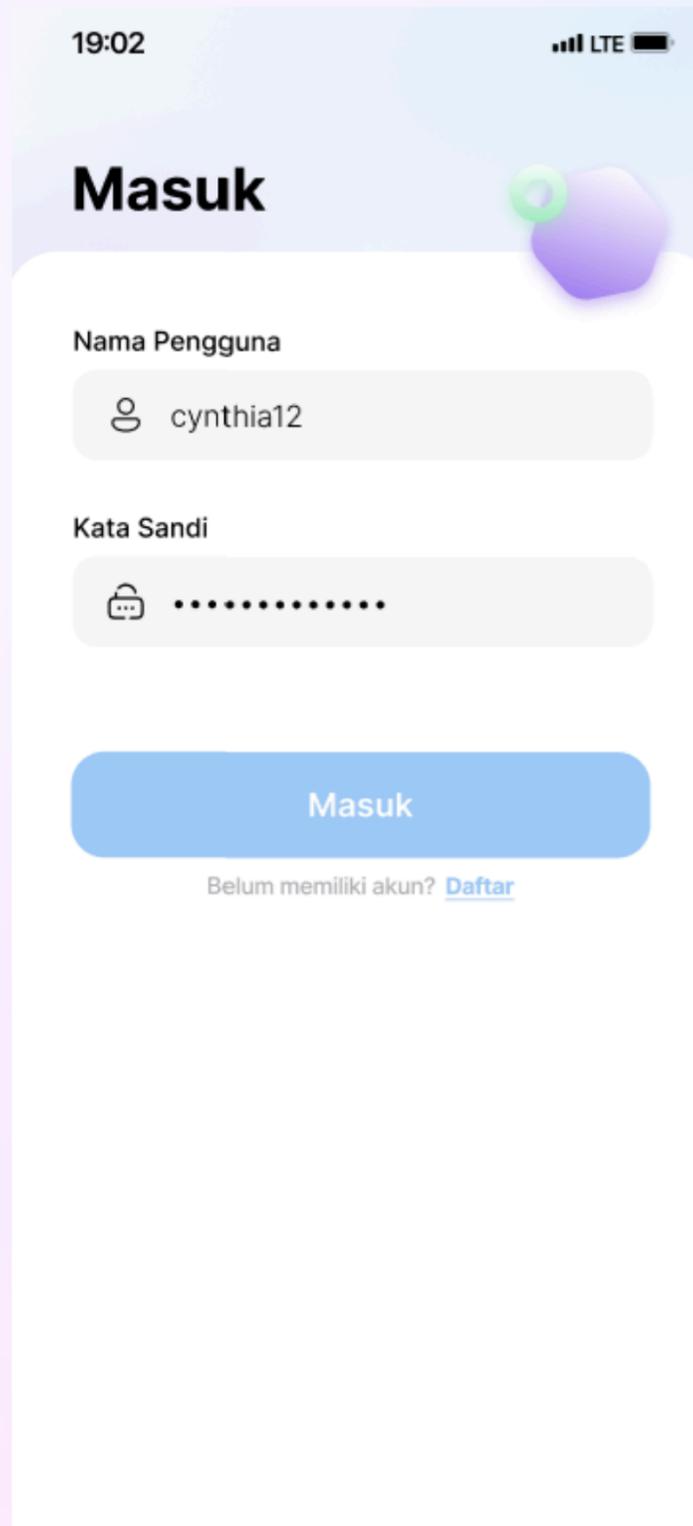
https://www.figma.com/file/px3445o1tOAtSbOKmJ3BiA/SE%3A-ElderEase?type=design&node-id=0%3A1&mode=design&t=yQ_Onuql5OcCVDFqp-1



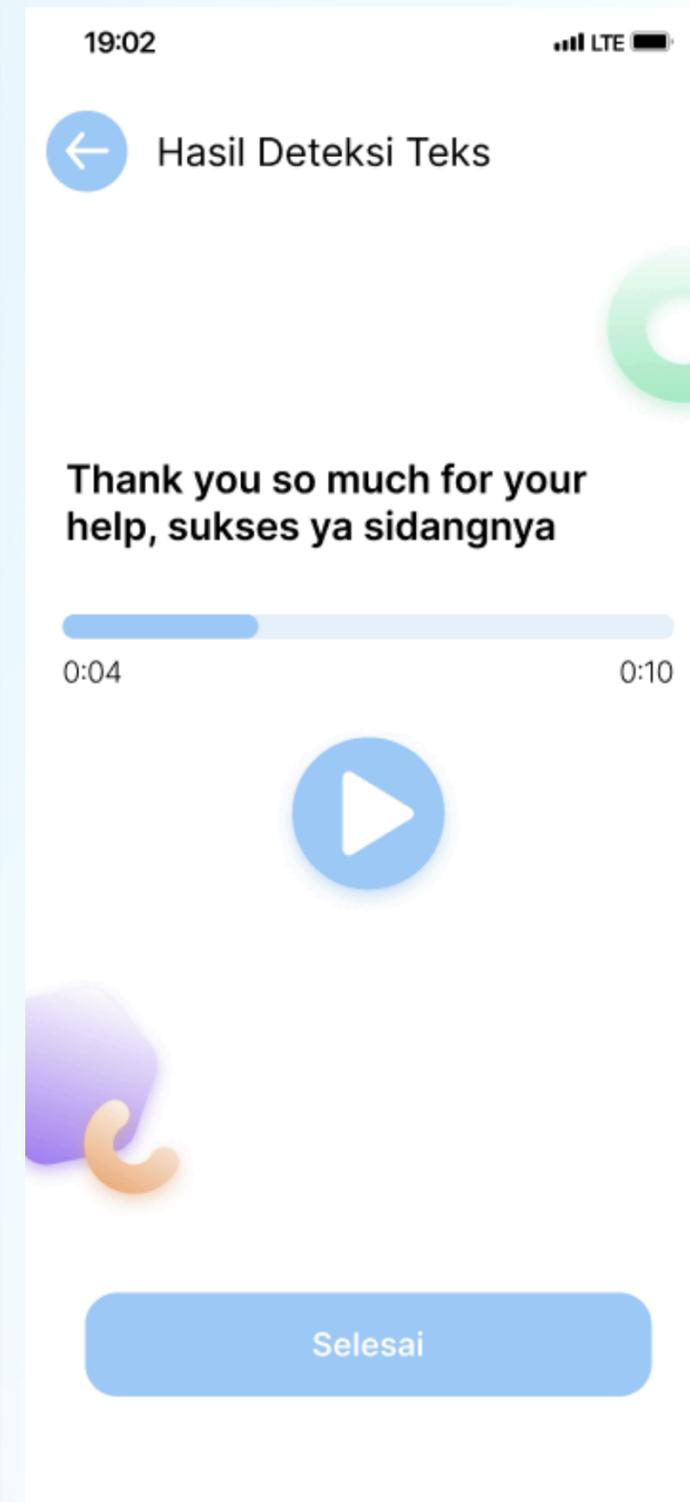
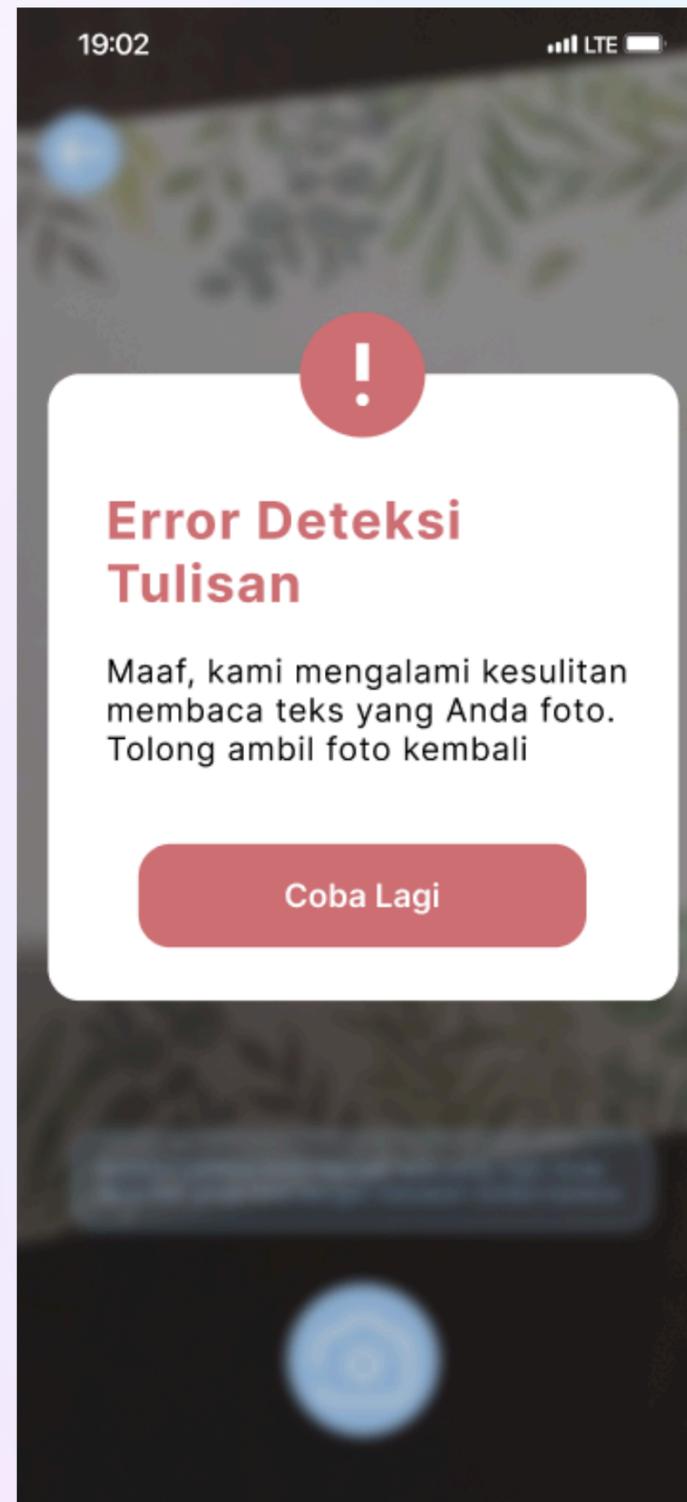
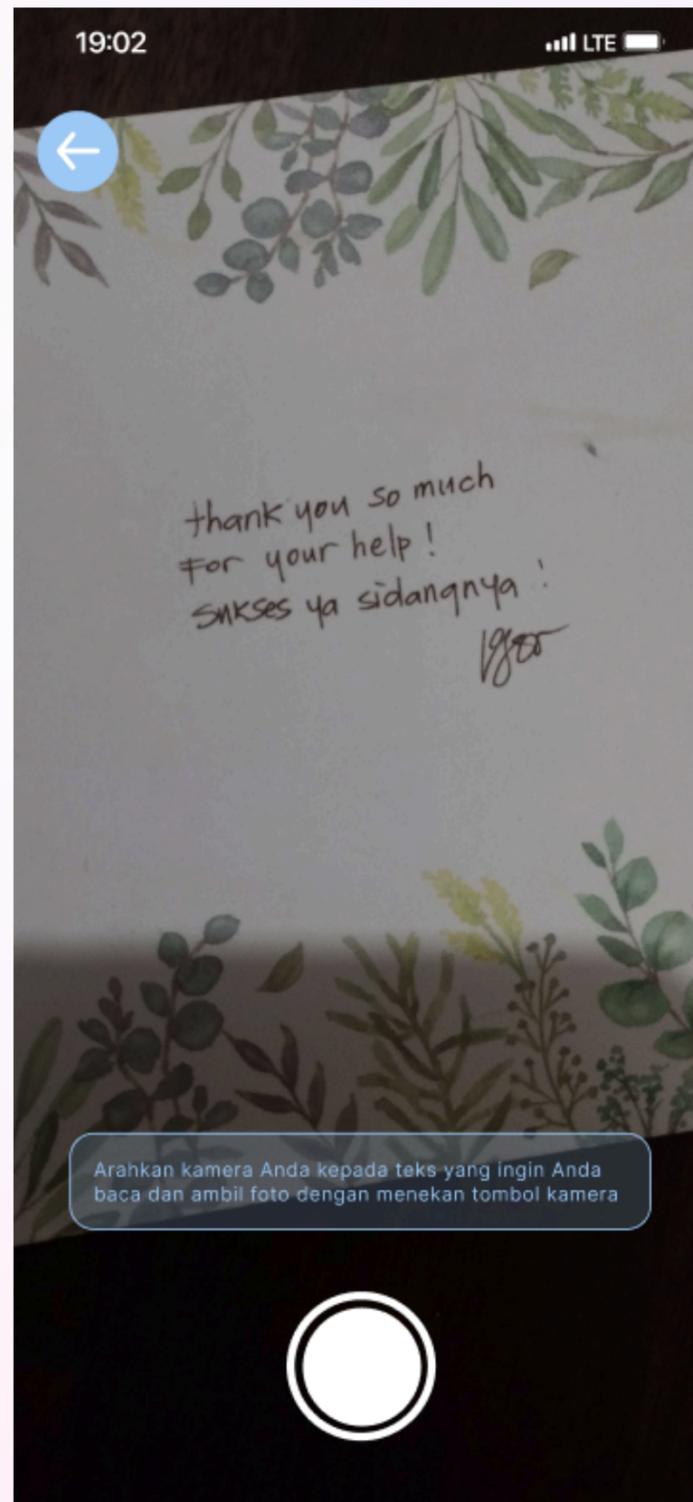
Registration Menu



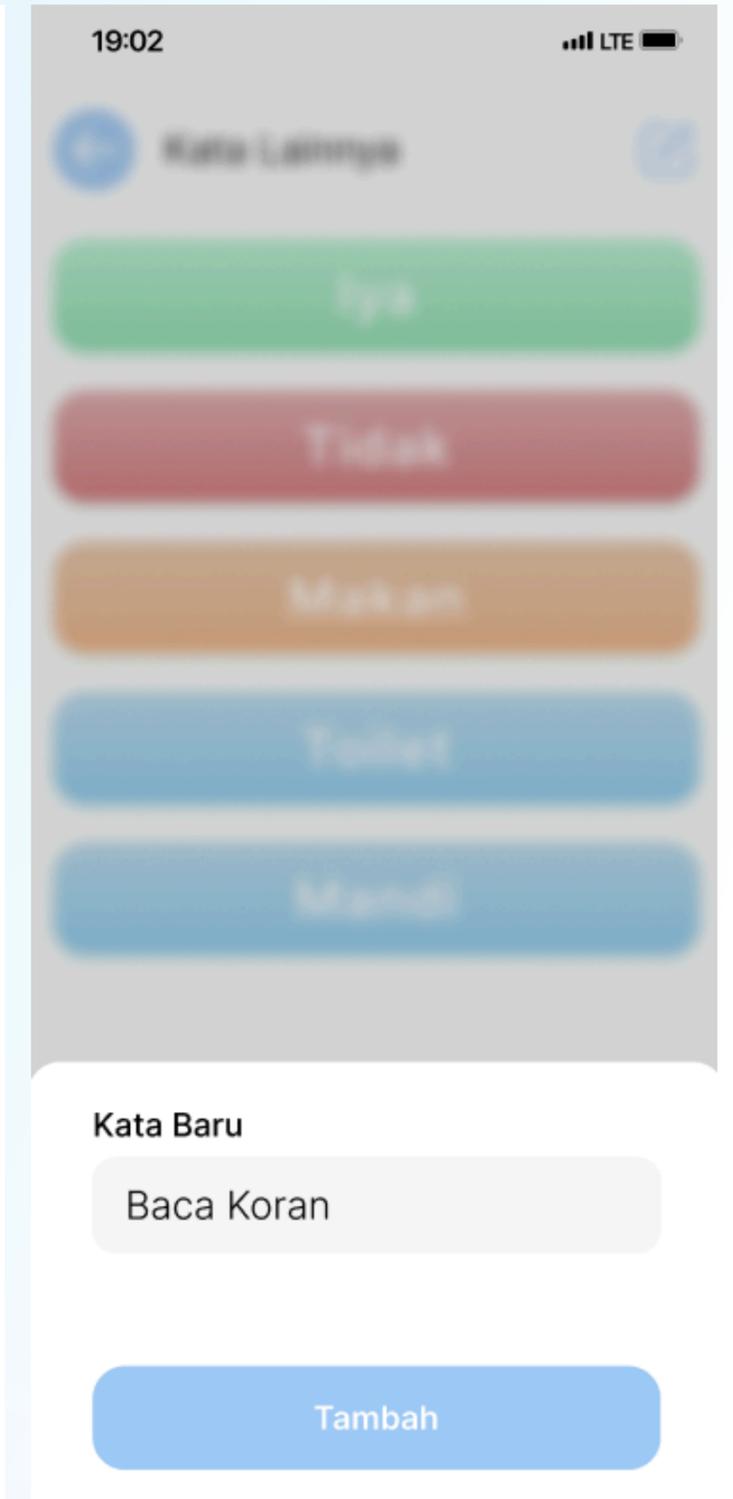
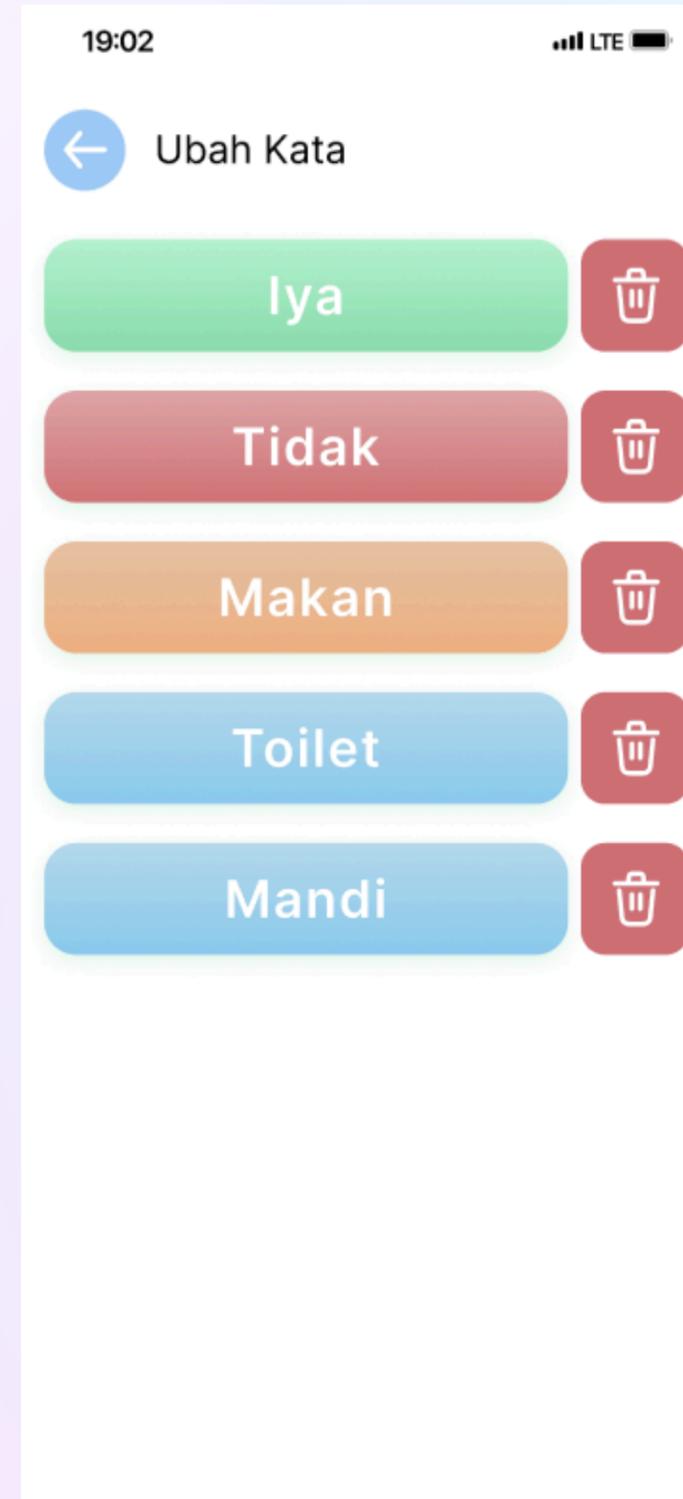
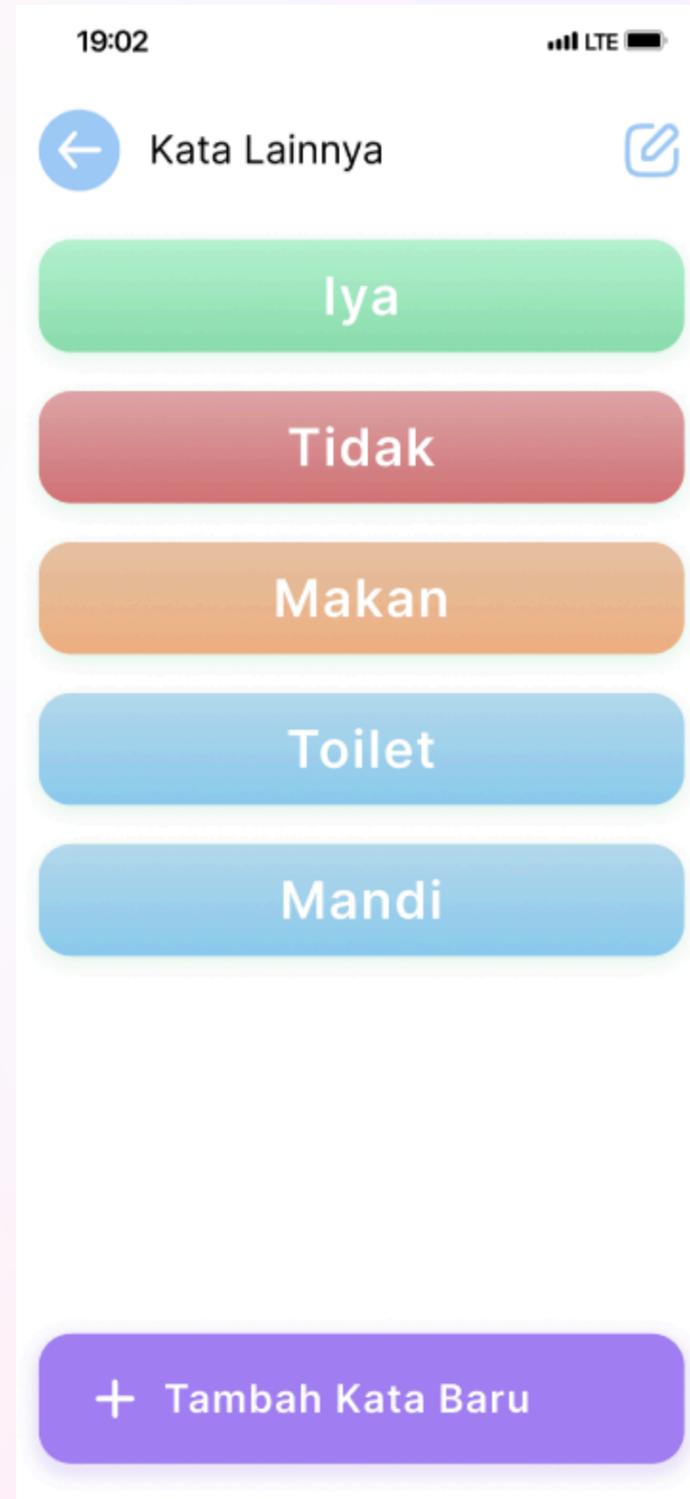
Login Menu & Home Page



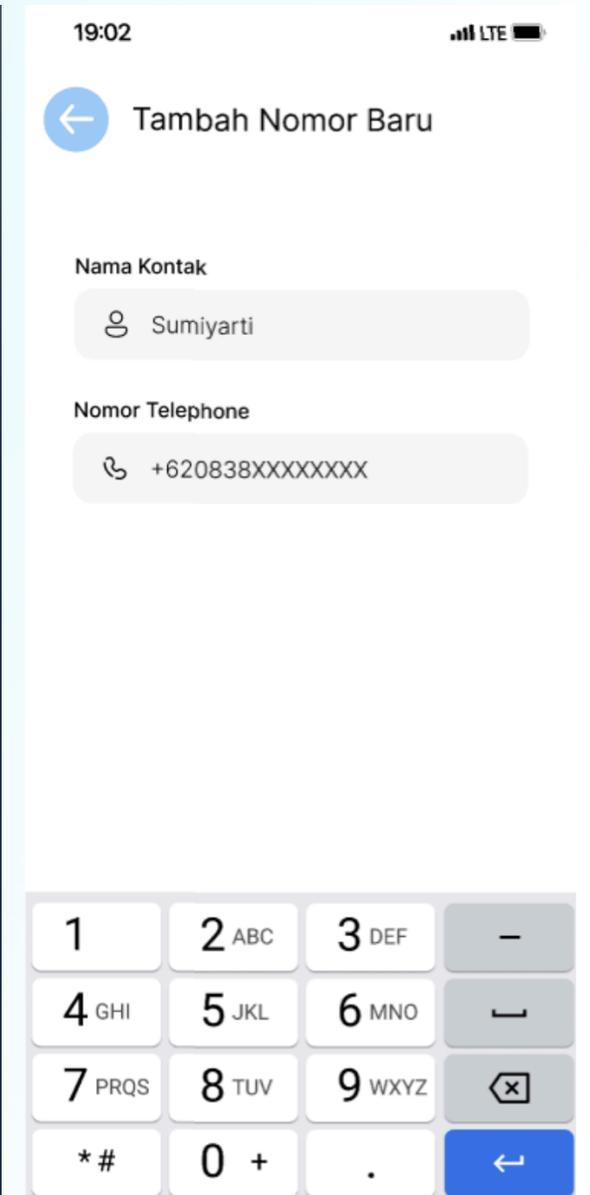
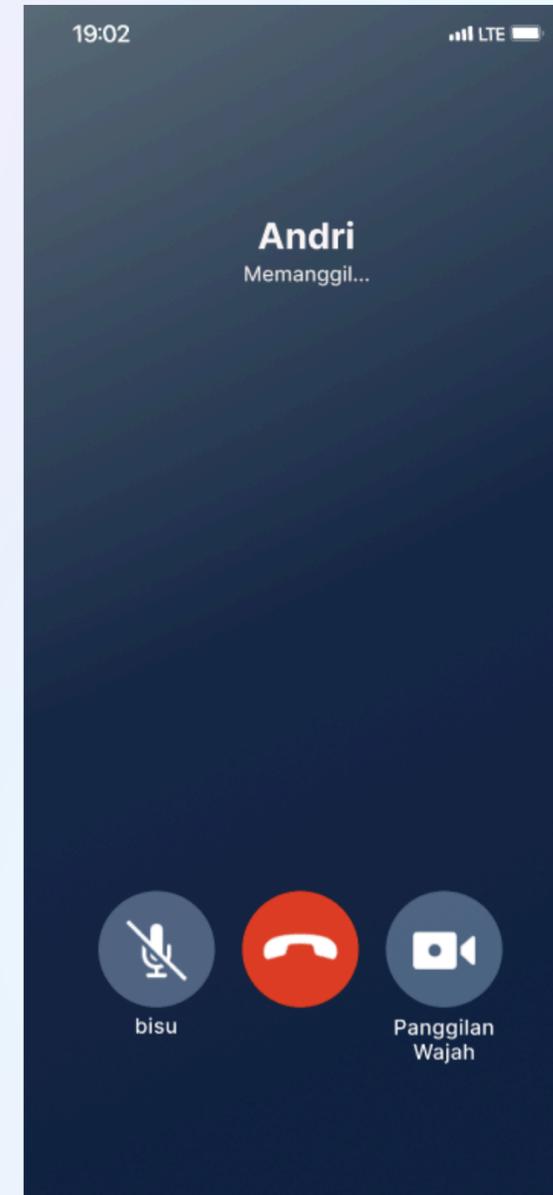
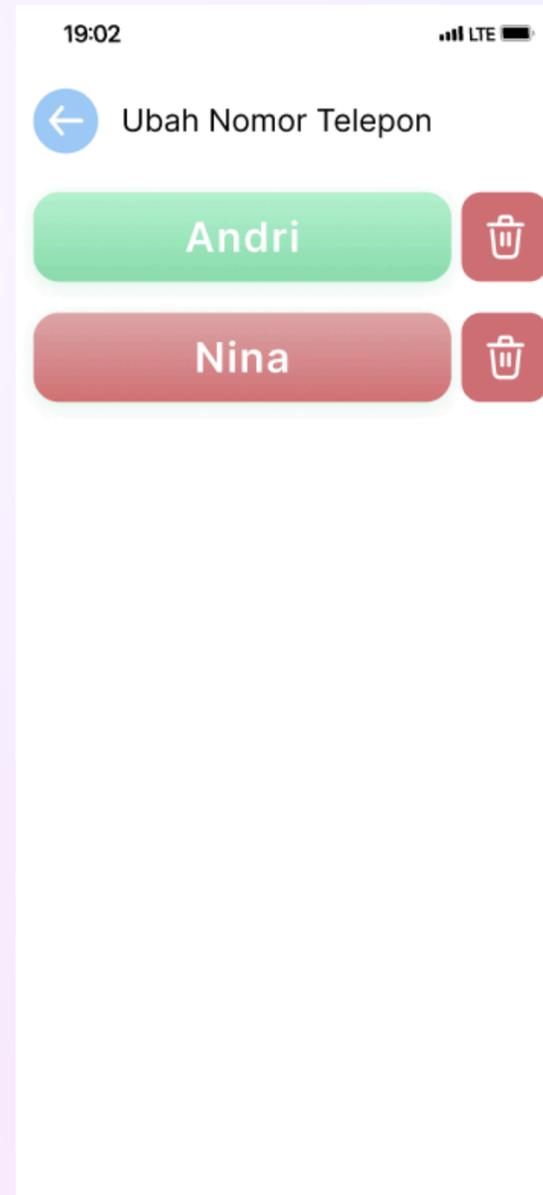
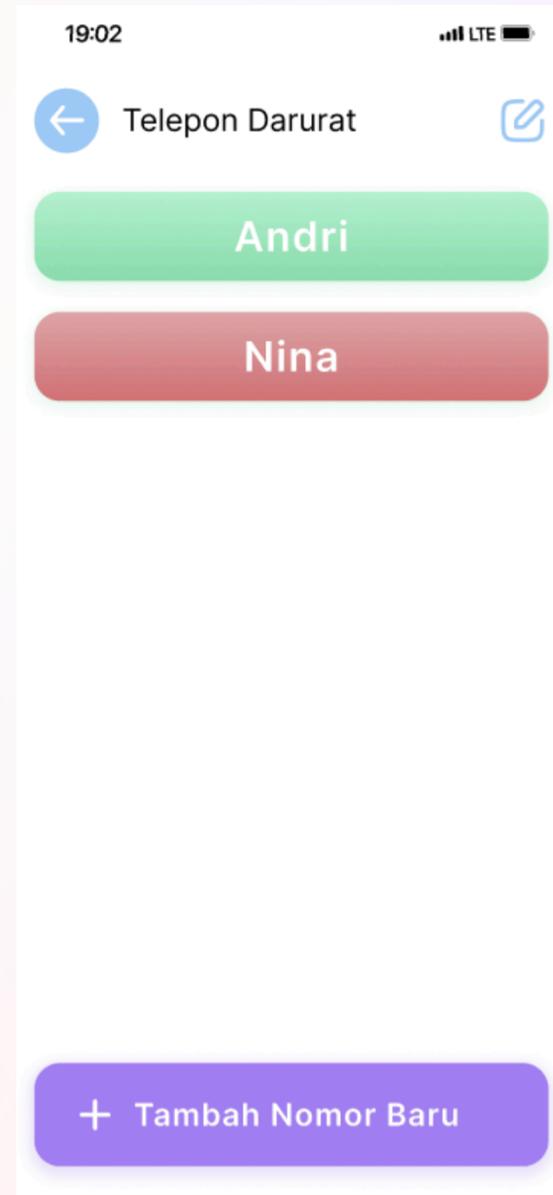
Read Text Menu



Daily Word Shortcut Button Menu

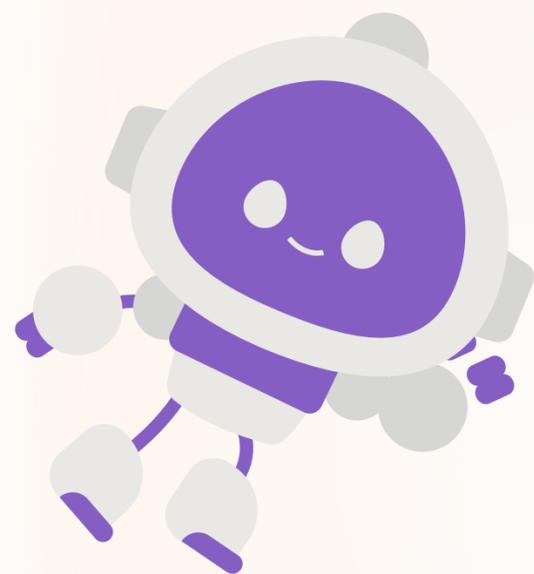


Emergency Call Menu



Reminder Menu





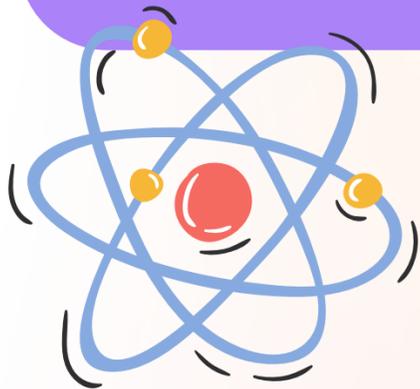
Artificial Intelligence Model



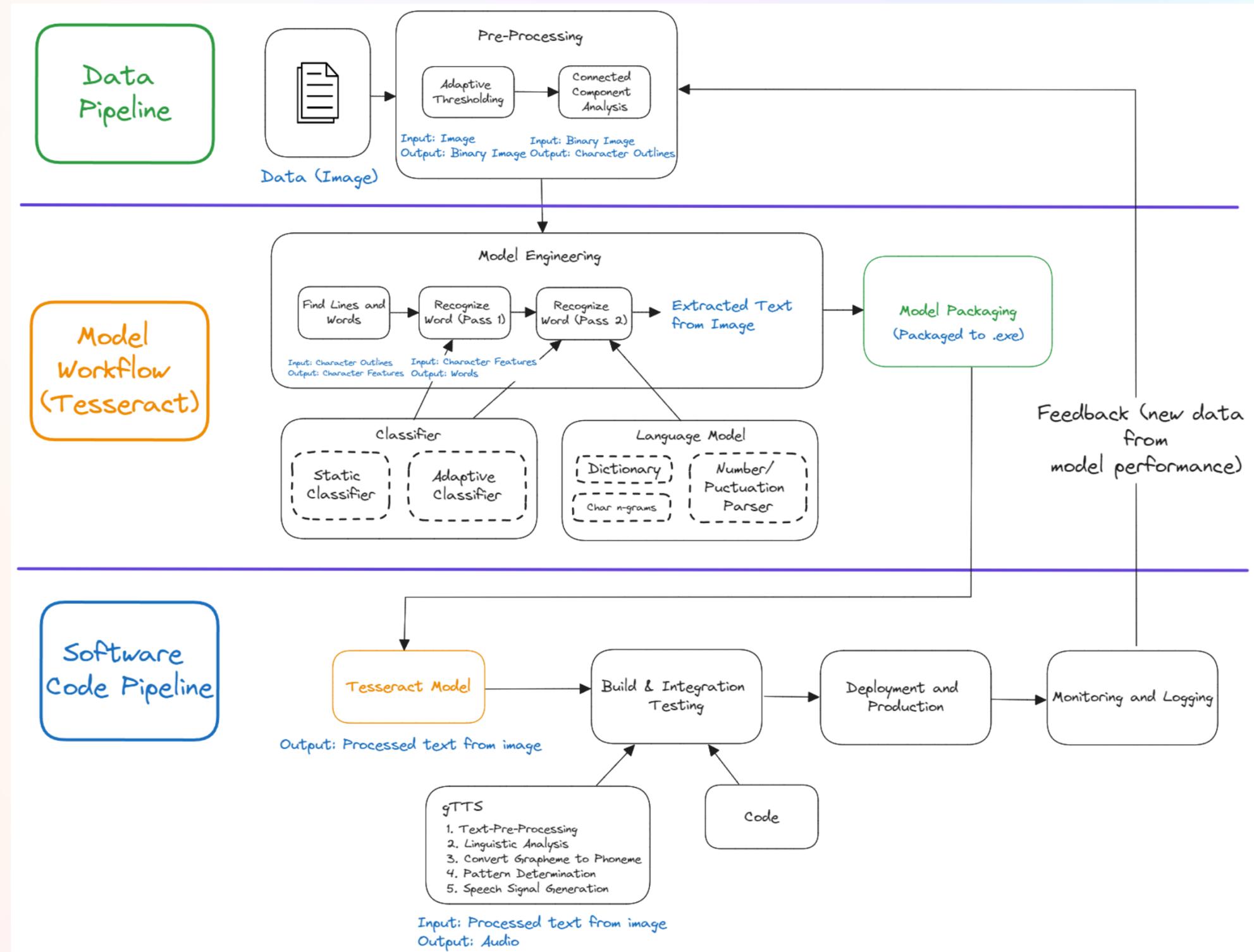
End-to-end Machine Learning Workflow

Berikut adalah End-to-end Machine Learning Workflow pada aplikasi ElderEase yang menggunakan **Engine Tesseract** (alur kerja pembelajaran mesin dari ujung ke ujung), berisi proses lengkap untuk mengembangkan dan menerapkan solusi berbasis pembelajaran mesin, dari pengumpulan dan persiapan data hingga pengembangan model, evaluasi dari **Model OCR (Optical Character Recognition)**. Untuk gambar lebih jelasnya dapat diakses melalui link berikut :

<https://excalidraw.com/#room=fcacc31cc585874c1aaf,tNGu5KeFajjSv7aI7kzwuA>



End-to-end Machine Learning Workflow



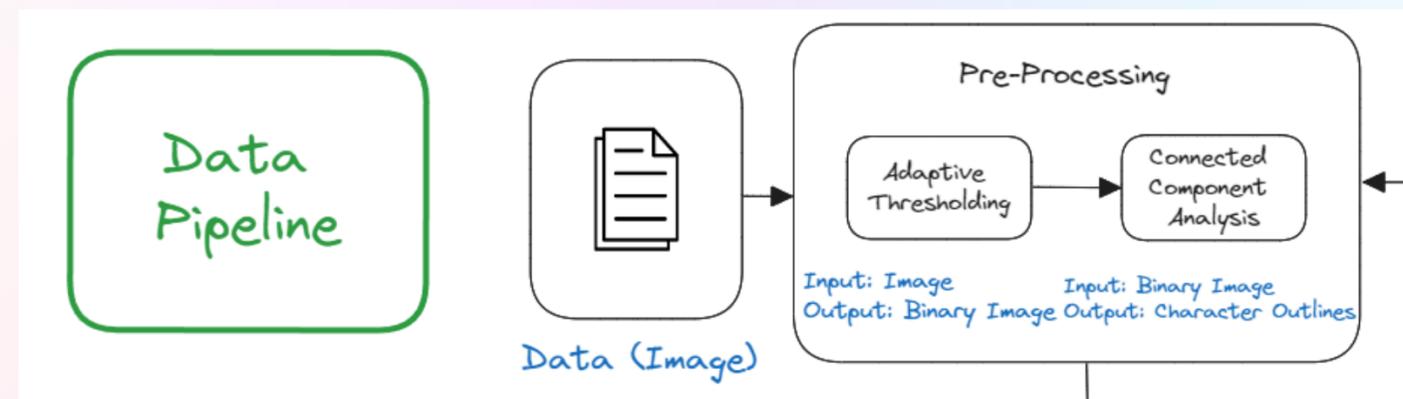
End-to-end Machine Learning Workflow

End to end machine learning workflow dapat dibagi menjadi tiga komponen utama yang saling terkait:

I. Data Pipeline

Pada tahap awal data gambar dimuat ke dalam sistem dalam berbagai format seperti JPEG, PNG, TIFF, dan lainnya. Lalu pada tahap pre-processing, terdapat beberapa langkah kritikal untuk mempersiapkan data agar lebih efektif saat pembelajaran mesin:

- **Adaptive Thresholding** = mengubah gambar grayscale menjadi output berupa gambar biner (nilai piksel hitam atau putih).
- **Connected Component Analysis (CCA)** = mendeteksi semua wilayah dalam gambar biner, piksel sama akan dianggap sebagai satu komponen. Outputnya berupa kontur atau batasan dari karakter yang teridentifikasi untuk pengenalan karakter optik.



End-to-end Machine Learning Workflow

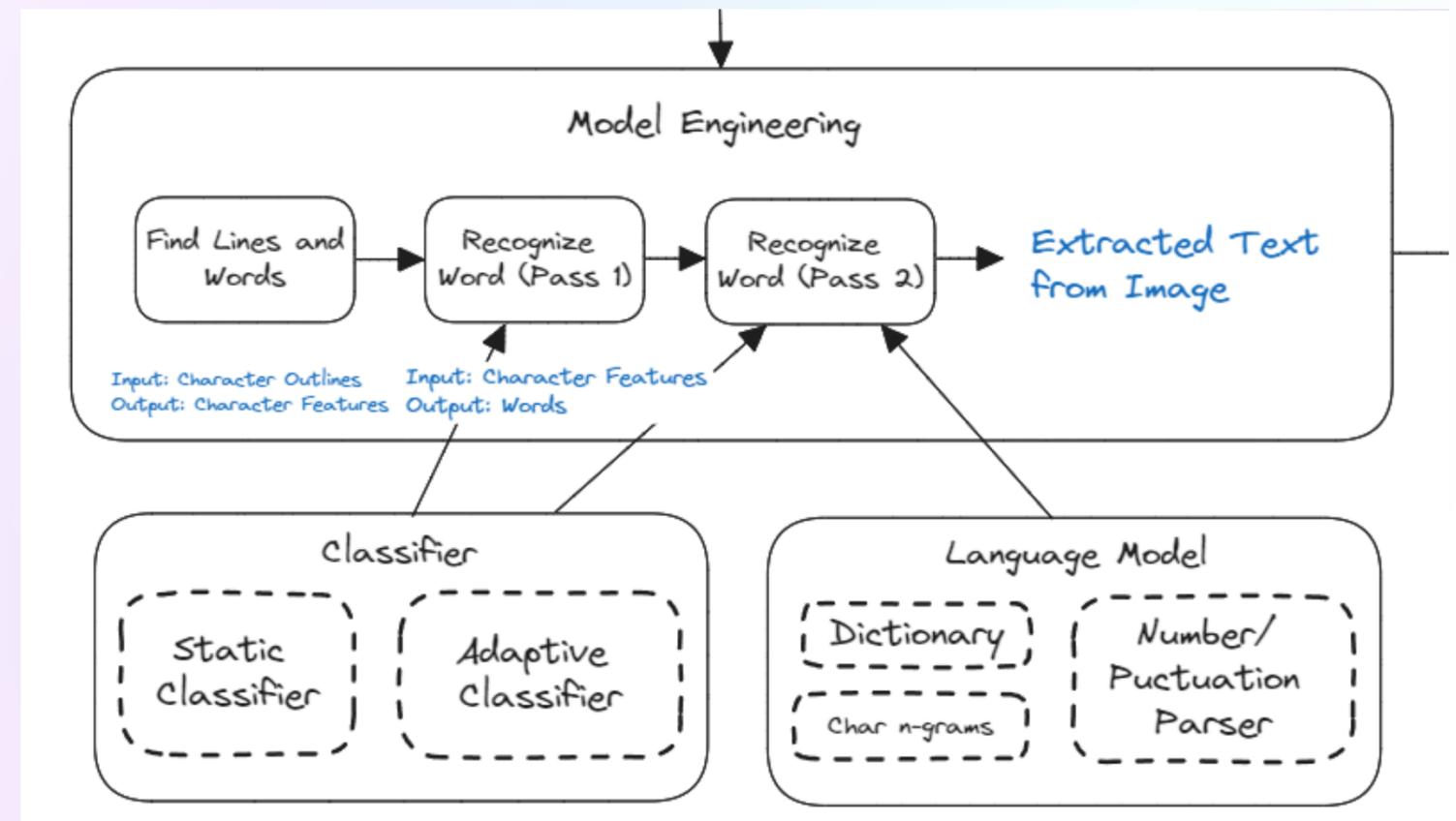
II. Machine Learning Pipeline

Pada tahap model engineering atau training model OCR pada engine tesseract, terdapat beberapa serangkaian proses:

- Kontur karakter yang diperoleh pada tahap preprocessing akan diproses untuk mendeteksi garis dan kata dengan penggunaan algoritma, sehingga outputnya fitur karakter lanjutan.
- Tahap Pass 1 merupakan upaya pertama mengenali kata-kata dalam gambar menggunakan fitur yang sudah diekstraksi dan menghasilkan kata-kata. Dapat menggunakan static classifier (sistem klasifikasi statik) ataupun adaptive classifier (sistem klasifikasi dinamis berdasarkan data input).
- Klasifikasi Statik memiliki proses klasifikasi dua tahap. Pertama, membuat daftar pendek kelas karakter yang paling mungkin cocok dengan yang tidak diketahui. Kedua, menghitung kesamaan aktual antara fitur dari yang tidak diketahui dan vektor prototipe dari setiap kelas dalam daftar pendek. Klasifikasi statik dilatih pada 20 sampel dari 94 karakter dari 8 font dalam satu ukuran, tetapi dengan 4 atribut (normal, tebal, miring, tebal miring), membuat total 60.160 sampel pelatihan. Klasifikasi statik menormalkan karakter berdasarkan pusat (moments pertama) untuk posisi dan moments kedua untuk normalisasi ukuran anisotropik. Klasifikasi statik mampu mengenali karakter yang rusak dengan mudah dan baik dalam menggeneralisasi ke jenis font apa pun. Sedangkan, Klasifikasi Adaptif dilatih oleh hasil dari klasifikasi statik menggunakan normalisasi baseline/tinggi x isotropik. Lebih mudah mengidentifikasi huruf besar dan kecil.

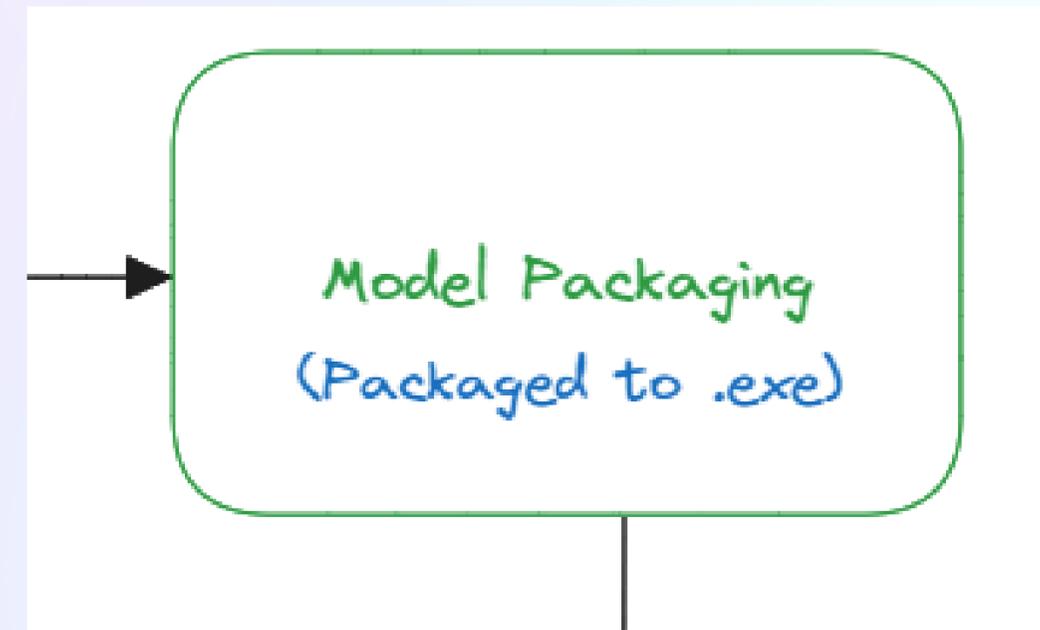
End-to-end Machine Learning Workflow

- Tahap Pass 2 merupakan lanjutan untuk memproses output tahap pertama, menambahkan pengetahuan dari model untuk meningkatkan akurasi sehingga outputnya berupa kata-kata dengan akurasi yang lebih tinggi. Ada beberapa jenis language model yang dapat dipilih: dictionary (cek kata-kata terhadap kamus), numbers / punctuation (memastikan angka dan tanda baca dikenali dengan benar), char n-grams (menggunakan model n-gram untuk memahami konteks kata), dan parser (analisis struktural dari teks untuk interpretasi semantik).
- Hasil akhir dari proses pengenalan kata, menghasilkan teks yang diekstraksi dari gambar.



End-to-end Machine Learning Workflow

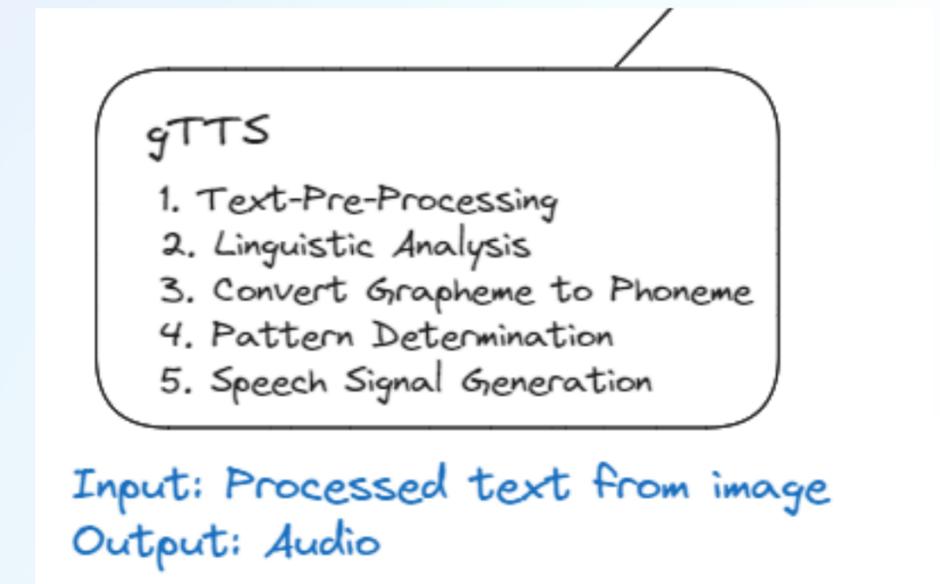
Pada proses model packaging, model yang telah dikonfigurasi dan dilatih akan dikonversi menjadi paket yang dapat dieksekusi (file .exe), memungkinkan distribusi dan penerapan yang mudah di berbagai sistem tanpa perlu konfigurasi tambahan.



End-to-end Machine Learning Workflow

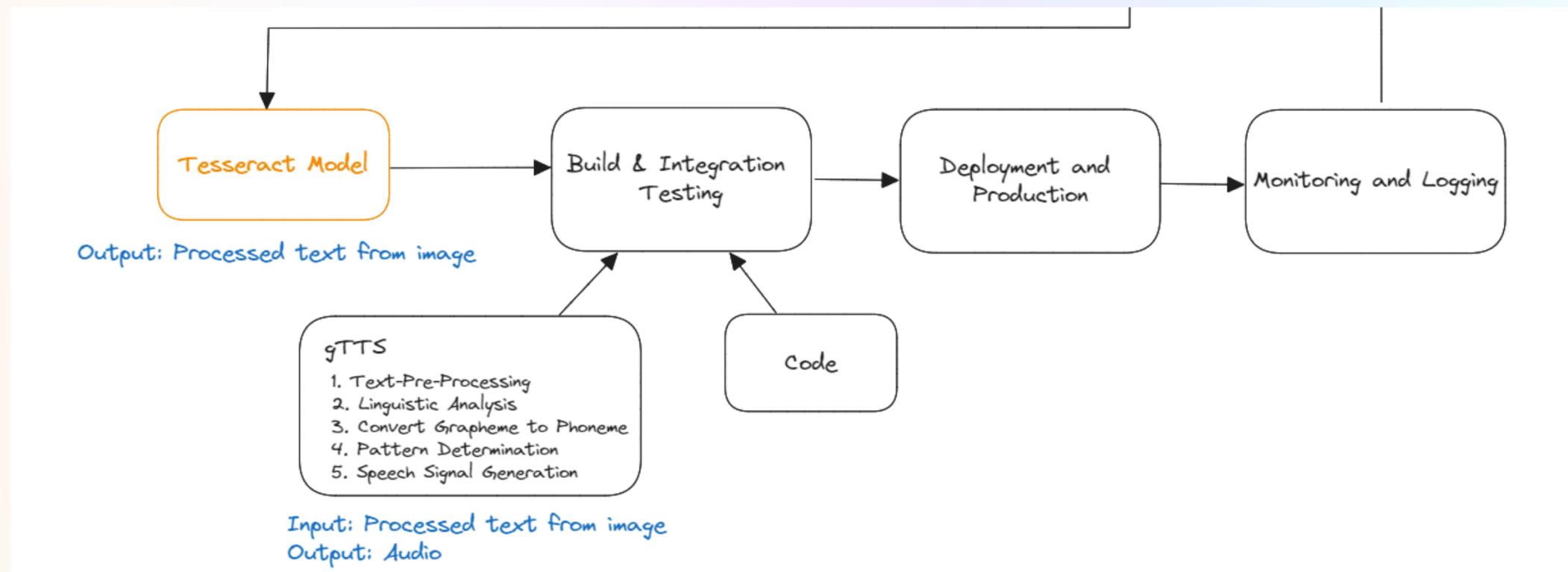
III. Software Code Pipeline

- Model packaging akan menghasilkan tesseract engine yang mampu memberikan model OCR untuk deteksi gambar menjadi teks.
- Pembangunan model akan melibatkan program (code) yang sudah dimodifikasi dengan memanfaatkan tesseract engine dan GTSS (Google Text to Speech), yakni API untuk mengambil output suara dengan artikulasi orang Indonesia.
- GTSS akan melakukan teks processing secara otomatis yang melibatkan proses NLP, dilanjutkan dengan linguistic analysis (memahami konteks kalimat, yang penting untuk intonasi dan penekanan yang tepat dalam sintesis suara), konversi grapheme menjadi phoneme, determinasi pola kalimat, dan output suara akan disintesis formant atau concatenative speech synthesis untuk menghasilkan suara yang terdengar seperti bicara manusia.



End-to-end Machine Learning Workflow

- Setelah berhasil di build dan diuji, sistem siap untuk di deploy ke lingkungan produksi. Ini melibatkan setup infrastruktur yang diperlukan, konfigurasi server, dan penerapan kode ke server.
- Setelah sistem di deploy, langkah selanjutnya adalah memantau performanya dalam lingkungan produksi dan melakukan logging. Ini vital untuk mendeteksi dan menangani isu yang mungkin muncul serta untuk melakukan optimalisasi sistem berdasarkan feedback yang diterima dari penggunaan nyata.

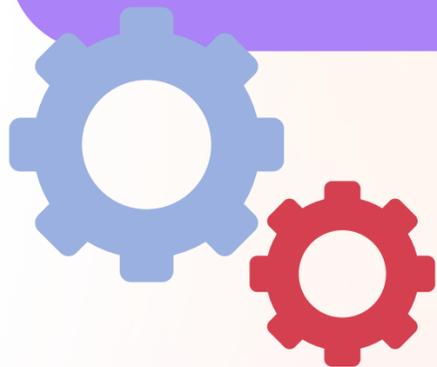


Proses ini akan menghasilkan feedback (umpan balik) yang akan digunakan sebagai data baru untuk meningkatkan kinerja model dan proses pun kembali berulang dari tahap awal.

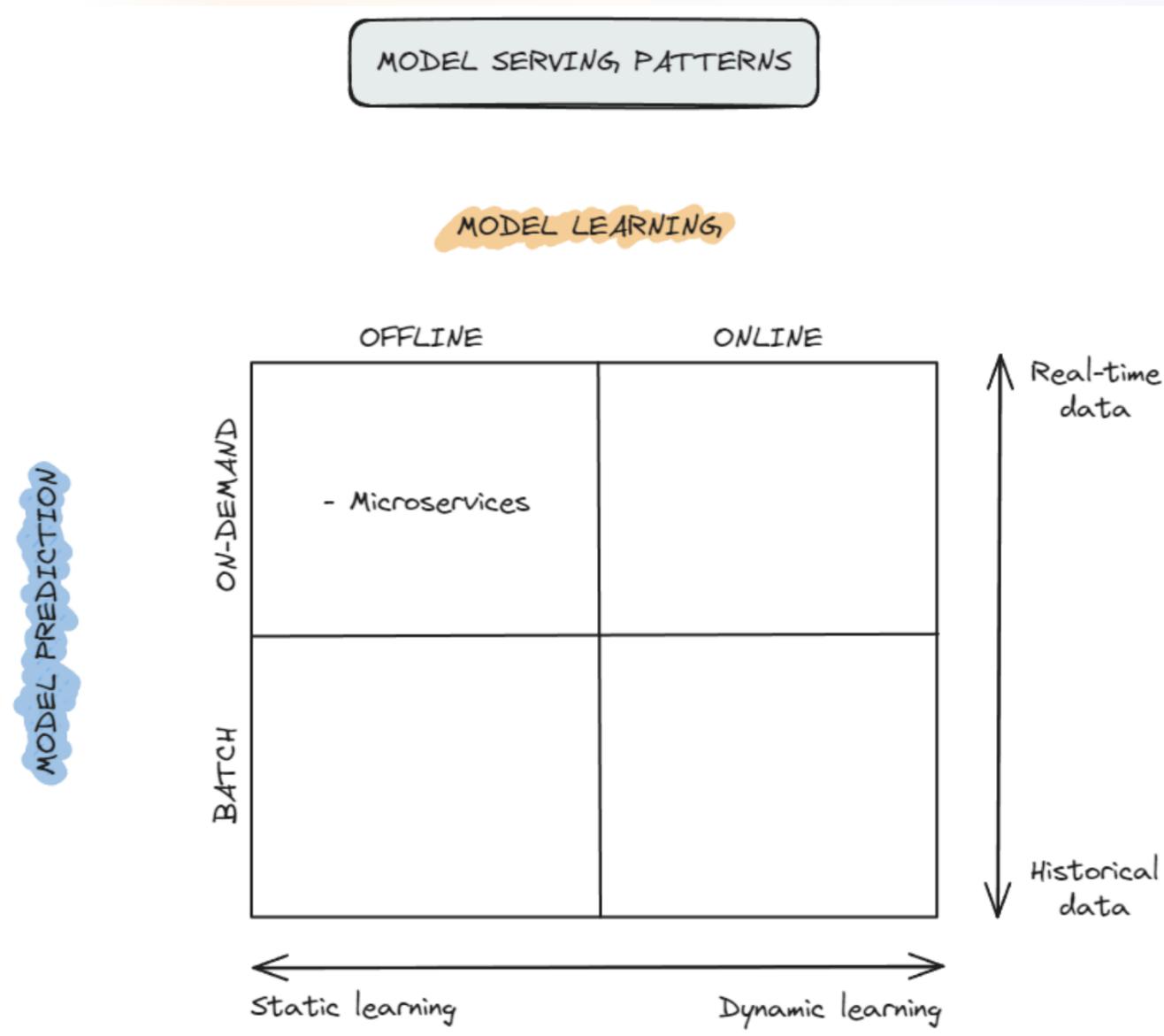
Machine Learning Pipelines

Model learning yang paling cocok dengan program AI kelompok software engineering kami adalah microservices. Karena feature "Read Text" dalam aplikasi ElderEase menggunakan model OCR (Optical Character Recognition) yang berasal dari engine Tesseract serta API Google Text to Speech untuk mengkonversi teks bacaan menjadi output suara. Dan secara keseluruhan, arsitektur microservices yang paling sesuai dengan model AI ElderEase. Untuk gambar lebih jelasnya dapat diakses melalui link berikut :

<https://excalidraw.com/#room=1206887d782b9718a7c5,R03Zt5nUeWrH4mIUv0H8PA>



Machine Learning Pipelines



Microservices:

Tesseract menggunakan model OCR yang telah dilatih sebelumnya dan tidak melakukan pembelajaran atau adaptasi secara real-time saat dipakai, maka disebut sebagai static learning. Tesseract juga bekerja secara offline dalam arti bahwa ia tidak memerlukan koneksi ke server atau layanan eksternal. Ia menjalankan semua pemrosesan secara lokal di mesin pengguna, menggunakan model yang telah dilatih untuk mengenali teks dari gambar. Tesseract dijalankan sesuai permintaan pengguna yaitu dilakukan untuk setiap memproses file yang diberikan oleh pengguna secara individu (on demand). Oleh karena itu, dapat disimpulkan bahwa Tesseract merujuk pada arsitektur microservices. Karena dijalankan secara offline, termasuk static learning, dan sifatnya on demand (menunggu permintaan baru untuk menjalankan tugas yang diperintahkan).

Machine Learning Pipelines

Berikut adalah hasil analisis mengapa model learningnya tidak sesuai dengan model AI ElderEase:

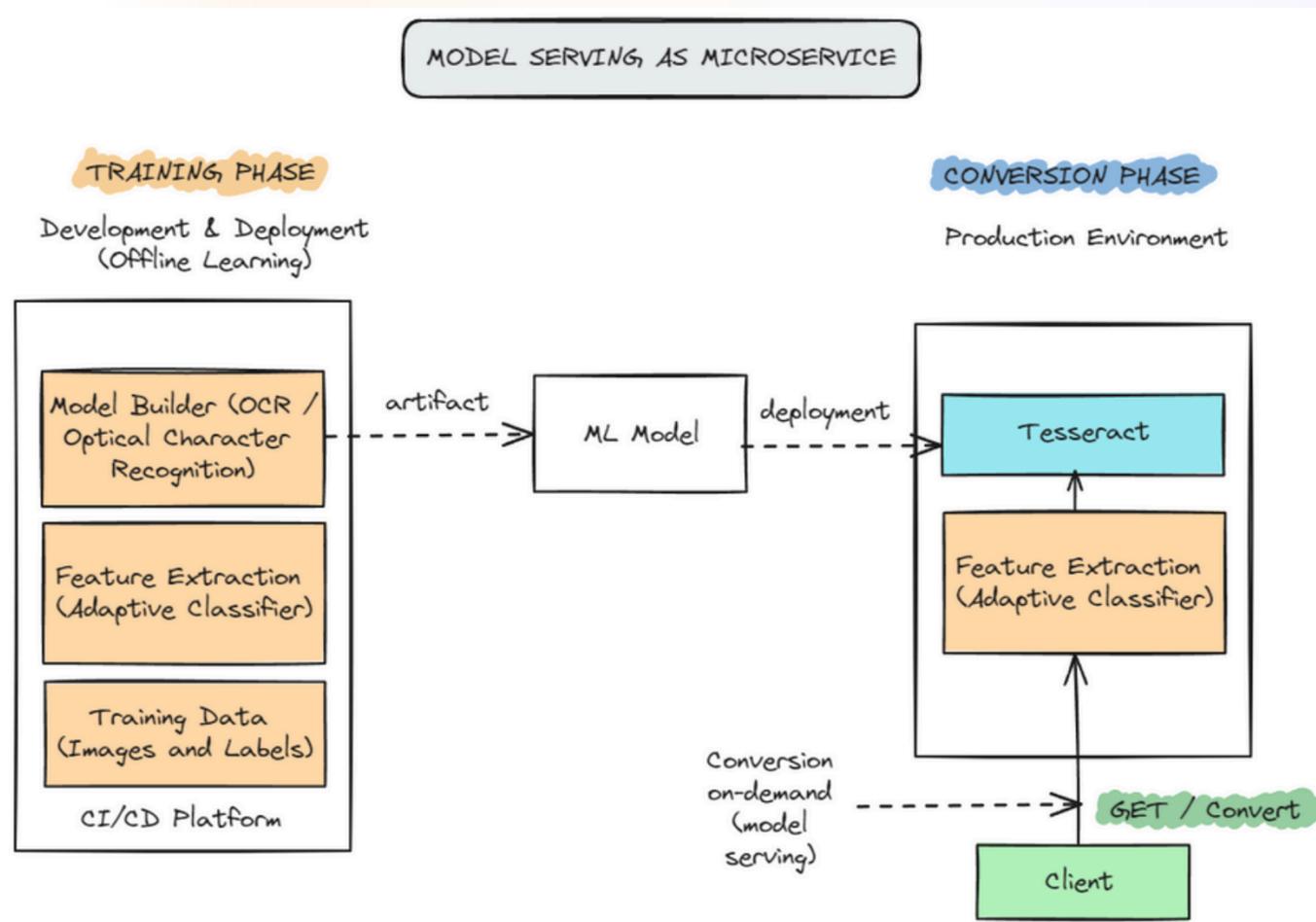
- **REST API** = meskipun gTTS adalah API yang disediakan google, tapi tidak termasuk dalam jenis REST API karena gTTS hanya berinteraksi dengan pustaka Python bukan langsung dengan REST API. gTTS mengirim teks dan menerima audio tanpa perlu mengetahui detail tentang bagaimana permintaan HTTP dibuat atau direspon oleh server sehingga bekerja sebagai API biasa.
- **Forecast** = model AI kami lebih mengarah pada konversi teks bacaan menjadi output suara, bukan memprediksi suatu output dari input yang dianalisa. Sehingga forecast kurang cocok dengan arsitektur ElderEase.
- **Batch Prediction** = model AI kami dipanggil untuk menjalankan tugas OCR pada gambar atau dokumen kapanpun diperlukan. Ini tidak terjadi secara batch processing, melainkan lebih mendekati on demand processing. Batch Prediction mengacu pada pemrosesan sejumlah besar data dalam satu operasi besar atau serentak, biasanya dilakukan pada data yang sudah dikumpulkan sebelumnya.

Machine Learning Pipelines

- **Real-Time Streaming Analysis** = sesuai namanya yaitu streaming yang artinya digunakan untuk aplikasi yang datanya dipantau terus menerus (kontinu). Program ini hanya memantau dan memproses data sesuai permintaan sehingga tidak sesuai.
- **Online Learning** = Model Tesseract yang sudah dilatih sebelumnya dan tidak dilengkapi dengan kemampuan untuk belajar atau beradaptasi dari data baru yang diproses. Model tersebut statis dan tidak melakukan update dari pengalaman baru.
- **Automated ML** = model AI ElderEase tidak melibatkan komponen AutoML karena menggunakan teknologi OCR dan TTS yang telah dikonfigurasi secara manual dan preset dengan teknik dan parameter yang telah ditentukan.

Oleh karena itu, model kami hanya cocok dengan 1 arsitektur pada model serving patterns tersebut yaitu microservices. Feature AI kami sederhana, yaitu konversi bacaan Indonesia menjadi output suara yang dapat didengar oleh lansia (target user).

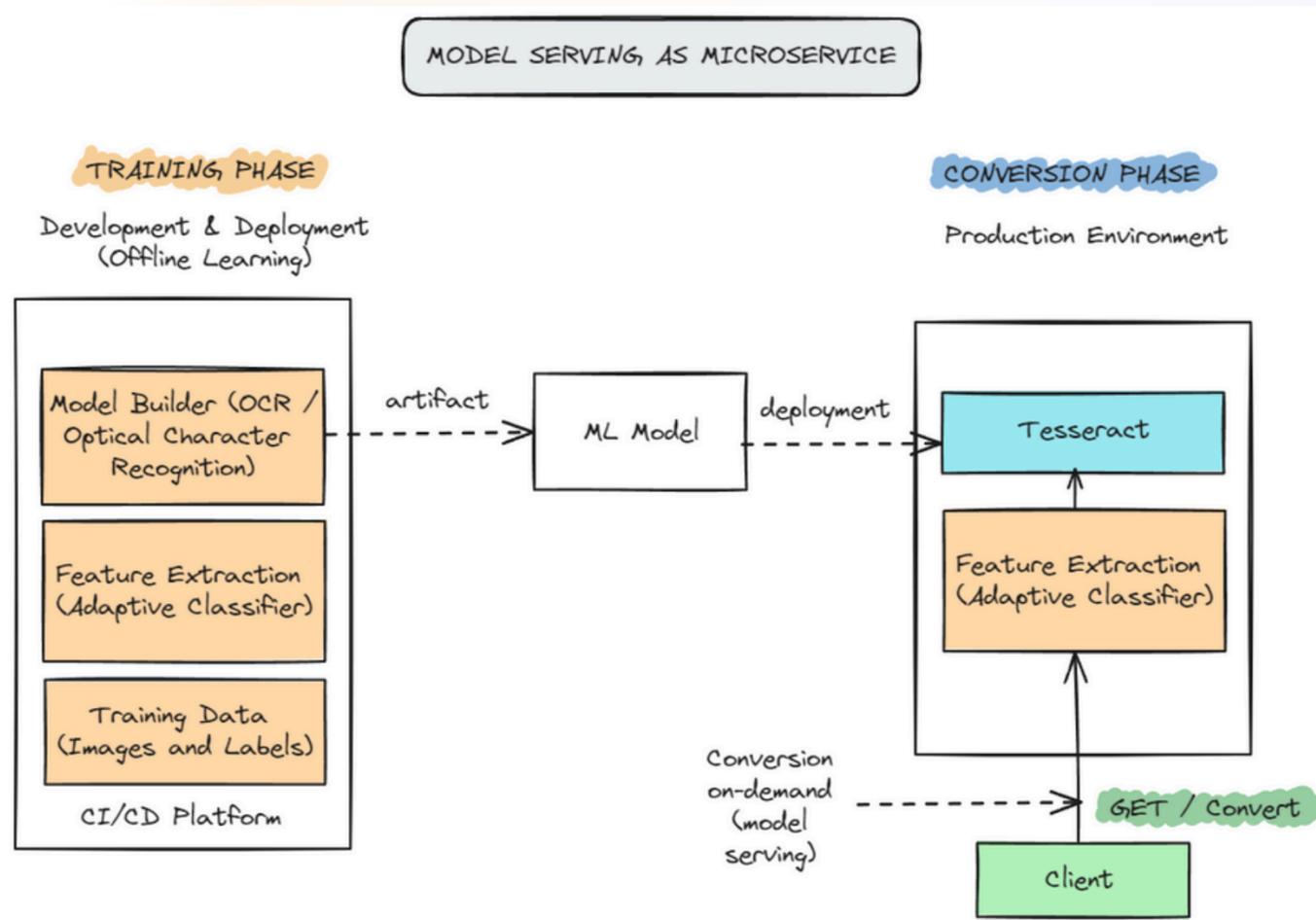
Machine Learning Pipelines



Pada fase pelatihan terdapat beberapa komponen, yaitu:

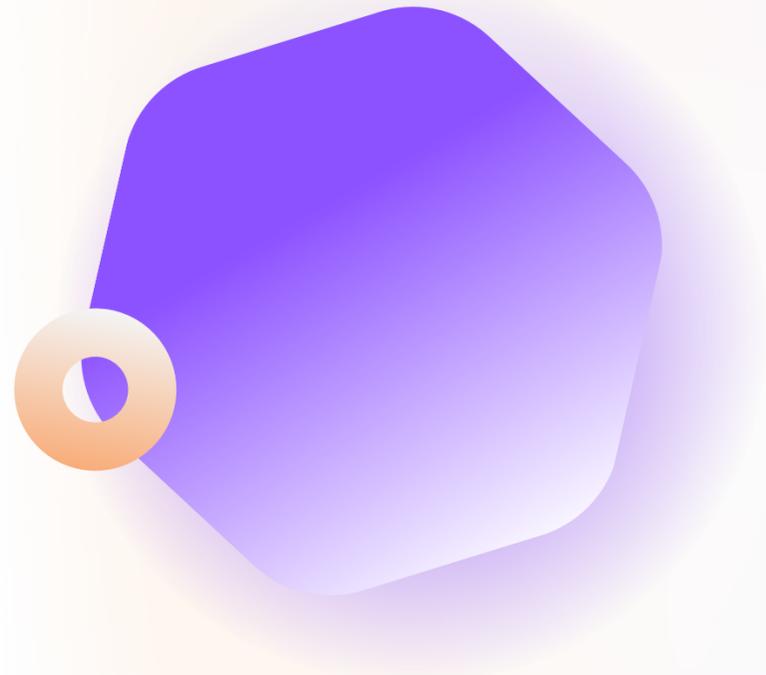
- Data latih yang terdiri dari gambar dan label yang digunakan untuk melatih model OCR. Label tersebut mewakili teks yang sesuai untuk setiap gambar yang digunakan sebagai input latihan.
- Setelah model dibuat, proses selanjutnya adalah ekstraksi fitur yang menggunakan classifier adaptif. Classifier ini menyesuaikan dan memperbaiki pengenalan berdasarkan fitur yang diekstraksi dari data.
- Model Builder (OCR / Optical Character Recognition) adalah komponen utama yang bertanggung jawab dalam membangun model OCR. Proses ini melibatkan pembuatan algoritma untuk mengenali karakter optik dari gambar.
- Hasil dari fase pelatihan adalah sebuah artifact (seperti file model yang dapat digunakan), yang kemudian di-deploy ke server atau infrastruktur yang akan menyajikan model tersebut.

Machine Learning Pipelines



Pada fase konversi terdapat beberapa komponen, yaitu:

- Klien mengirimkan gambar ke server untuk diubah menjadi teks melalui API yang disediakan oleh microservice.
- GET / Convert adalah endpoint API yang di expose sebagai bagian dari microservice. Endpoint ini menerima permintaan dari klien untuk mengkonversi gambar menjadi teks menggunakan model Tesseract yang di-deploy.
- Classifier adaptif di fase produksi ini menerapkan logika untuk menyesuaikan pengenalan berdasarkan karakteristik gambar masukan yang aktual.
- Di lingkungan produksi, Tesseract digunakan untuk menerapkan model OCR yang telah dilatih. Tesseract bertanggung jawab untuk pengenalan karakter dari gambar yang diberikan.

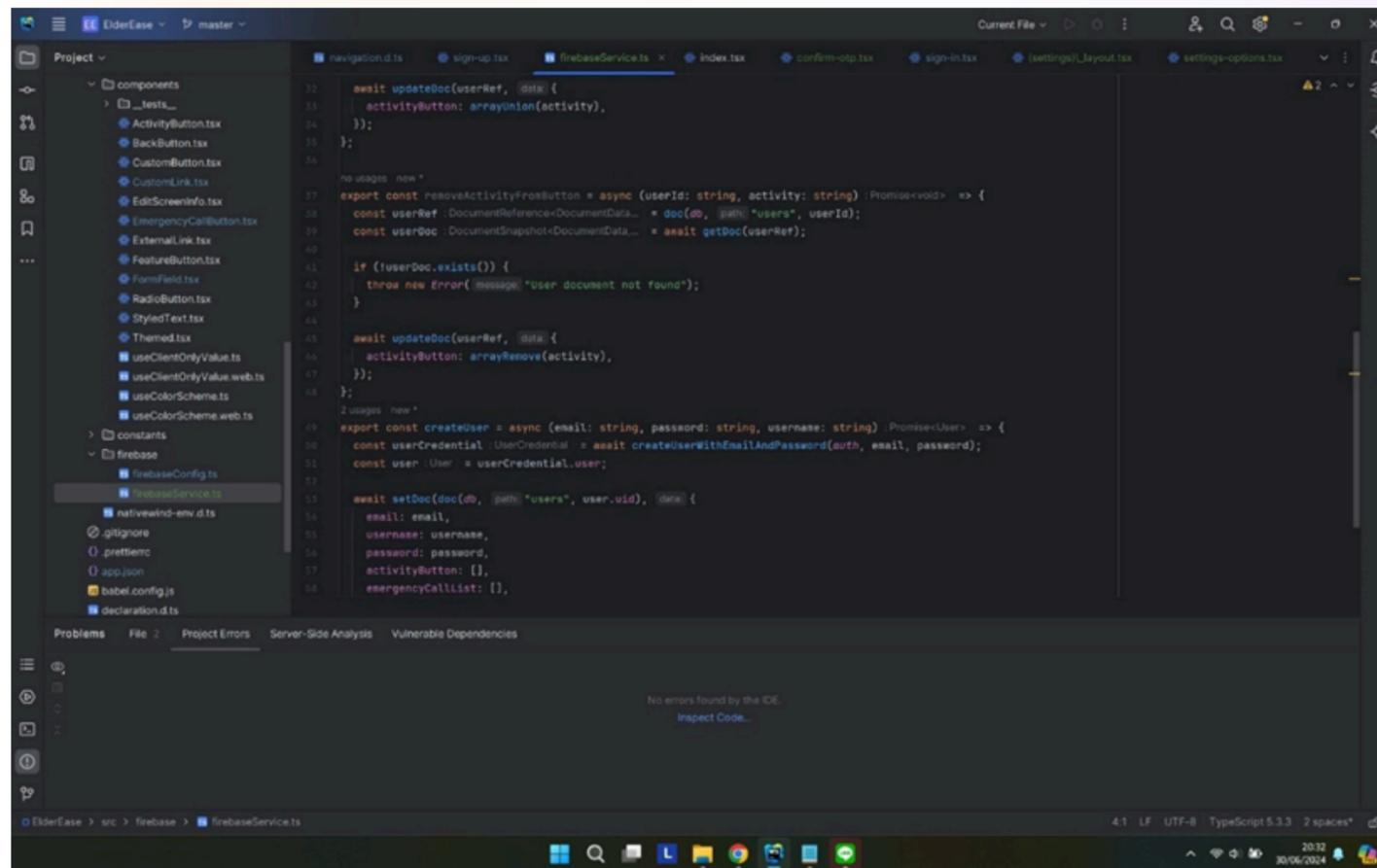


Front-End & Back-End

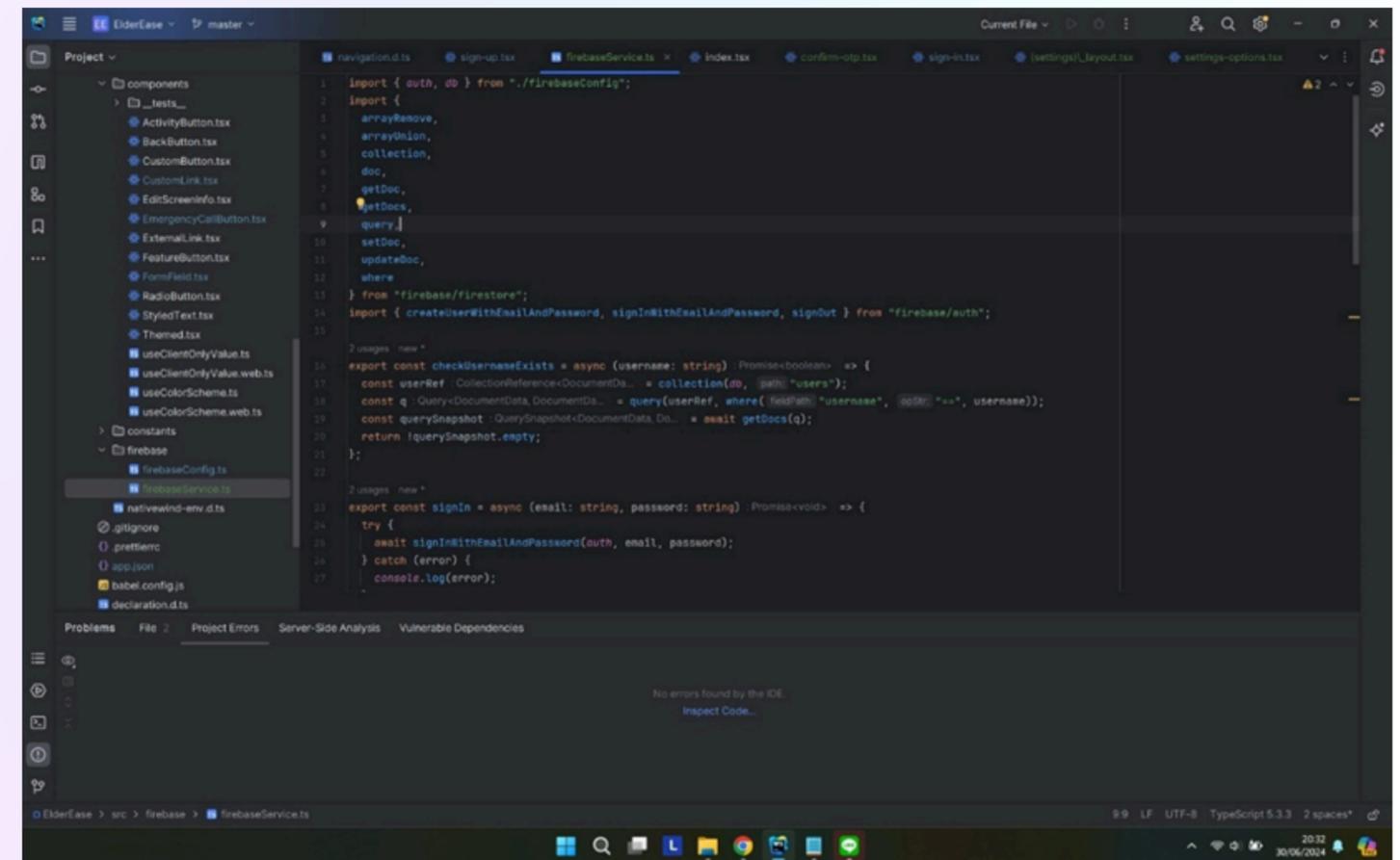


Front-End

Pada segmen front-end, aplikasi ini secara khusus diprogram untuk perangkat mobile menggunakan bahasa pemrograman React Native.

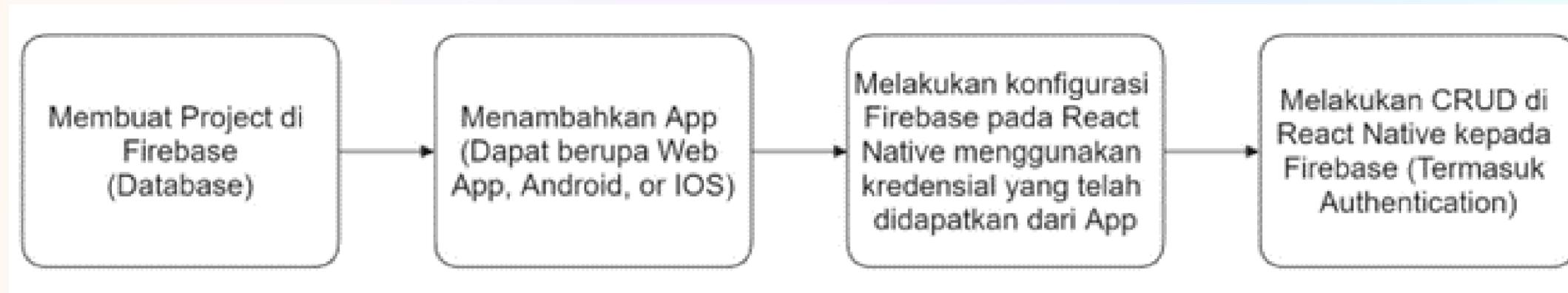


```
navigation.d.ts | sign-up.tsx | firebaseService.ts | index.tsx | confirm-otp.tsx | sign-in.tsx | (settings)_layout.tsx | settings-options.tsx
Project | components | ..._tests_ | ActivityButton.tsx | BackButton.tsx | CustomButton.tsx | CustomLink.tsx | EditScreenInfo.tsx | EmergencyCallButton.tsx | ExternalLink.tsx | FeatureButton.tsx | FormField.tsx | RadioButton.tsx | StyledText.tsx | Themed.tsx | useClientOnlyValue.ts | useClientOnlyValue.web.ts | useColorScheme.ts | useColorScheme.web.ts | constants | firebase | firebaseConfig.ts | firebaseService.ts | nativeWind-env.d.ts | .gitignore | .prettierrc | app.json | babel.config.js | declaration.d.ts
12 await updateDoc(userRef, {data: {
13   activityButton: arrayUnion(activity),
14 });
15 });
16
17 no usage new *
18 export const removeActivityFromButton = async (userId: string, activity: string): Promise<void> => {
19   const userRef: DocumentReference<DocumentData> = doc(db, {path: "users", userId});
20   const userDoc: DocumentSnapshot<DocumentData> = await getDoc(userRef);
21
22   if (!userDoc.exists()) {
23     throw new Error("User document not found");
24   }
25
26   await updateDoc(userRef, {data: {
27     activityButton: arrayRemove(activity),
28   }});
29 };
30
31 2 usages new *
32 export const createUser = async (email: string, password: string, username: string): Promise<User> => {
33   const userCredential = await createUserWithEmailAndPassword(auth, email, password);
34   const user = userCredential.user;
35
36   await setDoc(doc(db, {path: "users", user.uid}), {data: {
37     email: email,
38     username: username,
39     password: password,
40     activityButton: [],
41     emergencyCallList: [],
42   }});
43 };
44
45 Problems | File | Project Errors | Server-Side Analysis | Vulnerable Dependencies
No errors found by the IDE.
Inspect Code...
ElderCase > src > firebase > firebaseService.ts | 41 | LF | UTF-8 | TypeScript 5.3.3 | 2 spaces* | 20:32 | 30/06/2024
```



```
navigation.d.ts | sign-up.tsx | firebaseService.ts | index.tsx | confirm-otp.tsx | sign-in.tsx | (settings)_layout.tsx | settings-options.tsx
Project | components | ..._tests_ | ActivityButton.tsx | BackButton.tsx | CustomButton.tsx | CustomLink.tsx | EditScreenInfo.tsx | EmergencyCallButton.tsx | ExternalLink.tsx | FeatureButton.tsx | FormField.tsx | RadioButton.tsx | StyledText.tsx | Themed.tsx | useClientOnlyValue.ts | useClientOnlyValue.web.ts | useColorScheme.ts | useColorScheme.web.ts | constants | firebase | firebaseConfig.ts | firebaseService.ts | nativeWind-env.d.ts | .gitignore | .prettierrc | app.json | babel.config.js | declaration.d.ts
1 import { auth, db } from "../firebaseConfig";
2 import {
3   arrayRemove,
4   arrayUnion,
5   collection,
6   doc,
7   getDoc,
8   getDocs,
9   query,
10 } from "firebase/firestore";
11 import { setDoc, updateDoc, where } from "firebase/firestore";
12 import { createUserWithEmailAndPassword, signInWithEmailAndPassword, signOut } from "firebase/auth";
13
14 2 usages new *
15 export const checkUsernameExists = async (username: string): Promise<boolean> => {
16   const userRef: CollectionReference<DocumentData> = collection(db, {path: "users"});
17   const q: Query<DocumentData, DocumentData> = query(userRef, where("username", "not-equal", username));
18   const querySnapshot: QuerySnapshot<DocumentData, DocumentData> = await getDocs(q);
19   return !querySnapshot.empty;
20 };
21
22 2 usages new *
23 export const signIn = async (email: string, password: string): Promise<void> => {
24   try {
25     await signInWithEmailAndPassword(auth, email, password);
26   } catch (error) {
27     console.log(error);
28   }
29 };
30
31 Problems | File | Project Errors | Server-Side Analysis | Vulnerable Dependencies
No errors found by the IDE.
Inspect Code...
ElderCase > src > firebase > firebaseService.ts | 39 | LF | UTF-8 | TypeScript 5.3.3 | 2 spaces* | 20:32 | 30/06/2024
```

Back-End



Dalam pengembangan segmen back-end aplikasi ElderEase, kami memilih untuk menggunakan Firebase sebagai platform utama. Alur pengerjaannya sebagai berikut :

- Kami memulai dengan membuat proyek di Firebase, yang bertindak sebagai wadah utama untuk menyimpan semua data aplikasi serta mengatur layanan yang terkait seperti autentikasi pengguna, penyimpanan file, dan notifikasi real-time.
- Selanjutnya, kami menambahkan aplikasi ke dalam proyek tersebut agar lebih efisien bekerja pada versi aplikasi yang berbeda dari satu basis kode.
- Kemudian, kami melakukan konfigurasi Firebase dalam kode React Native yang melibatkan penggunaan kredensial yang telah diperoleh selama proses penambahan aplikasi, yang memastikan bahwa aplikasi kami dapat berkomunikasi secara aman dengan database Firebase.
- Terakhir, kami mengimplementasikan operasi CRUD (Create, Read, Update, Delete) dalam aplikasi React Native yang memungkinkan aplikasi untuk melakukan interaksi data yang efektif. Kami juga mengintegrasikan fitur autentikasi Firebase, yang memungkinkan pengelolaan pengguna yang aman dan personalisasi pengalaman pengguna.

Back-End

```
1 // IMPORT the functions you need FROM the SDKs you need
2 IMPORT "firebase/auth";
3 IMPORT "firebase/firestore";
4 IMPORT {initializeApp} FROM "firebase/app";
5 IMPORT {getReactNativePersistence, initializeAuth} FROM "firebase/auth";
6 IMPORT {getFirestore} FROM "@firebase/firestore";
7 IMPORT AsyncStorage FROM "@react-native-async-storage/async-storage";
8 // TODO: ADD SDKs FOR Firebase products that you want TO use
9 // https://firebase.google.com/docs/web/setup#available-libraries
10
11 const firebaseConfig = {
12   apiKey: "",
13   authDomain: "",
14   projectId: "",
15   storageBucket: "",
16   messagingSenderId: "",
17   appId: "",
18 };
19
```

```
20 const firebaseApp = initializeApp(firebaseConfig);
21 const AUTH = initializeAuth(firebaseApp, {
22   persistence: getReactNativePersistence(AsyncStorage),
23 });
24 const db = getFirestore(firebaseApp);
25
26 export { firebaseApp, AUTH, db };
27
```

Dengan menggunakan Firebase sebagai back-end, ElderEase dapat memanfaatkan skalabilitas cloud dan efisiensi yang tinggi, memastikan bahwa aplikasi tetap responsif dan dapat diandalkan bahkan dengan peningkatan jumlah pengguna.



Software Testing



Test Document (1)

Test Document ini merujuk pada User Story dengan ID 1, yakni “As an elderly, I want to read texts easily, so that I can know the context of texts.”

ID	1
Summary	<i>Testing with purposes to test the quality and performance of the <u>ElderEase's</u> main feature to detect a text. The user will direct the camera toward the specific target. Text will be detected by the camera that is supported by AI. Then, the output will be generated in the form of audio that can be heard by the user.</i>
Pre-Conditions	<i>Users only need to open the application and launch the feature.</i>
Steps	<ol style="list-style-type: none">1. Launch the <i>feature</i> within the tested apps.2. Accept the <u>permission</u> to use a local camera.3. Direct the camera into a specific text.4. Click a button to capture the image.5. The picture will be sent to a <i>back-end server</i> (Flask).6. <i>Back-end</i> will be processed picture and return the transcription result.7. The transcription result will be generated into audio.
Post-Conditions	<i>The user simply presses the "<u>Selesai</u>" button to return to the homepage to its original condition, or user can also press the back button several times to return to the initial condition.</i>
Expected Results	<i>AI will verify the picture. If the apps can detect the text successfully, therefore the output in the form of audio is able to be heard by the user.</i>
Actual Results	<i>Image captured and text successfully detected. Then AI successfully transcribe the detected text to audio.</i>
Status	Success

Test Document (1)

Test Document ini merujuk pada User Story dengan ID 1, yakni “As an elderly, I want to read texts easily, so that I can know the context of texts.”

ID	1
Summary	The test evaluates the <i>ElderEase</i> app's functionality when the camera fails to detect text. It aims to ensure that the app adequately informs the <i>user</i> of the failure and prompts for new input.
Pre-Conditions	<i>Users</i> only need to open the application and launch the <i>feature</i> .
Steps	<ol style="list-style-type: none">1. Launch the <i>feature</i> within the tested apps.2. Accept <u>the permission</u> to use a local camera.3. Direct the camera into a specific text.4. Click a button to capture the image.5. The picture will be sent to a <i>back-end server</i> (Flask).6. If the image detection is failed, then the apps will generate an output in the form of pop-up message to inform the <i>user</i> to recapture the clear images.
Post-Conditions	The <i>user</i> simply presses the "Coba Lagi" button and press the back button to return to the homepage to its original condition.
Expected Results	The AI that cannot detect any text from the image will show the pop-up message so the <i>user</i> can re-capture the image and wait until the <i>user</i> sends a new and clear input.
Actual Results	The application shows pop up message because unable to detect any text from image so the <i>user</i> can try again.
Status	Success

Test Document (1)

Test Document ini merujuk pada User Story dengan ID 1, yakni “As an elderly, I want to read texts easily, so that I can know the context of texts.”

ID	1
Summary	<i>Testing with purposes to test the quality and performance of the <u>ElderEase's</u> main feature to detect a text from image obtained from the gallery. The system will direct the <i>user</i> to the gallery to select a photo whose text will be predicted and then converted into speech so that the <i>user</i> can hear it.</i>
Pre-Conditions	<i>Users only need to open the application and launch the feature.</i>
Steps	<ol style="list-style-type: none">1. Launch the <i>feature</i> within the tested apps.2. Accept the <u>permission</u> to use a local camera.3. Click the image icon to enter the <i>user</i> gallery.4. Select the photo that <u>user want</u> to use.5. Arrange the image according to your needs (can be cropped, rotated or mirrored).6. The picture will be sent to a <i>back-end server</i> (Flask).7. <i>Back-end</i> will be processed picture and return the transcription result.8. The transcription result will be generated into audio.
Post-Conditions	<i>The user simply presses the "<u>Selesai</u>" button to return to the homepage to its original condition, or <i>user</i> can also press the back button several times to return to the initial condition.</i>
Expected Results	<i>AI will verify the picture. If the apps can detect the text successfully, therefore the output in the form of audio is able to be heard by the <i>user</i>.</i>
Actual Results	<i>Image uploaded and text successfully detected. Then AI successfully transcribed the detected text to audio.</i>
Status	Success

Test Document (2)

Test Document ini merujuk pada User Story dengan ID 2, yakni “As an elderly, I want to communicate with my family easily, so that I can have a conversation with them and tell them my desires.”

ID	2
Summary	This test is aimed at checking whether the daily <i>shortcut</i> button <i>feature</i> can work properly. In the test, the <i>user</i> will enter the application, then press the button according to the desired word. The system will then display output in the form of the sound of the word.
Pre-Conditions	<i>Users</i> only need to open and enter the application.
Steps	<ol style="list-style-type: none">1. Enter the application.2. Select the button according to <i>user's</i> needs.3. Press the desired button so that the system can display sound output.
Post-Conditions	The <i>user</i> does not need to do anything to return to the original condition, because after the button is pressed, the system will not play the sound again. So, automatically every time the <i>user</i> presses a button, the system will return to its original state.
Expected Results	The output in the form of sound originating from the converted word will be played clearly.
Actual Results	The sound was successfully played and heard clearly by the target <i>user</i> .
Status	Success

Test Document (3)

Test Document ini merujuk pada User Story dengan ID 3, yakni “As an elderly, I want to call the emergency contacts easily, so that I can ask for help when I have an emergency situation.”

ID	3
Summary	This test is to evaluate whether the <i>emergency call shortcut</i> button works properly. Succeeds in notifying the <i>user's</i> emergency contact.
Pre-Conditions	<i>User</i> opens the application, and make sures they are logged in. The emergency contacts <u>have to be configured</u> prior.
Steps	<ol style="list-style-type: none">1. Enter <i>ElderEase</i> application.2. Click the “<u>Telepon Darurat</u>” button.3. Select the emergency contact.4. Choose an application to call the contact.5. The screen is directed to the call screen.
Post-Condition	After finishing the call, the <i>user</i> will automatically exit the <i>ElderEase</i> application.
Expected Results	It will call the corresponding emergency contact and show the call screen.
Actual Results	The emergency contact successfully called, and the <i>user</i> is directed to the call screen.
Status	Success



Review



Elderly's Review



Nenek Berinisial L

Aplikasinya sangat membantu, terutama fitur emergency call. Ingin menelepon jadi lebih mudah karena sudah diarahkan.



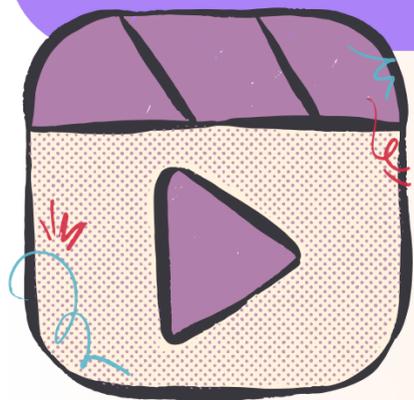
Nenek Berinisial N

Aplikasi menarik, kalau ingin baca tulisan hanya perlu menggunakan kamera kemudian dibacakan. Tapi, tulisannya agak kurang kelihatan, mungkin warnanya bisa digelapkan dan tulisannya dibesarkan.

Demo Video

Demo video dari setiap fitur ElderEase dapat ditonton secara langsung melalui slide berikutnya ataupun dengan mengakses link di bawah ini :

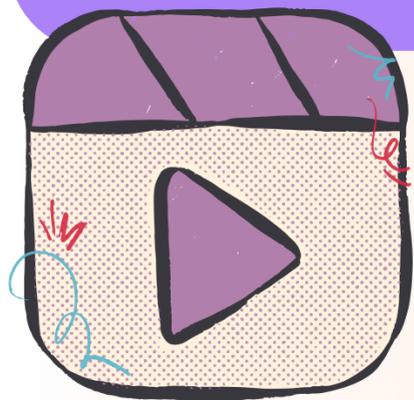
<https://drive.google.com/drive/folders/1B-wjOilFeeD1T3LbLpan61RqYLgF7dEr>



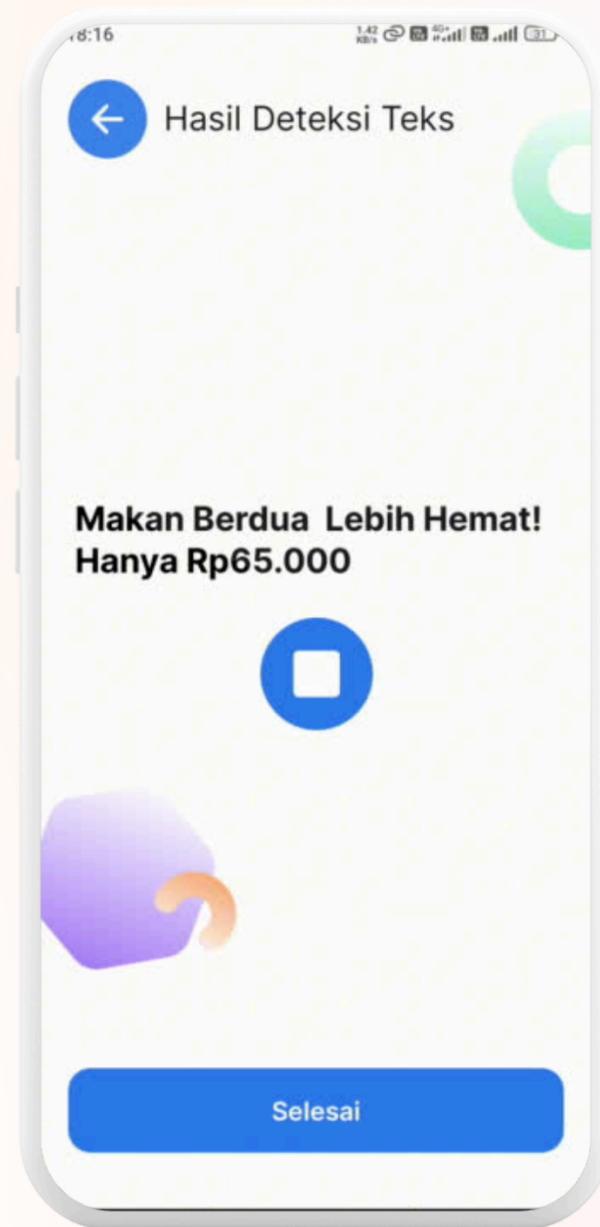
Presentation Video

Presentasi video demo dari setiap fitur ElderEase dapat ditonton secara langsung melalui link di bawah ini :

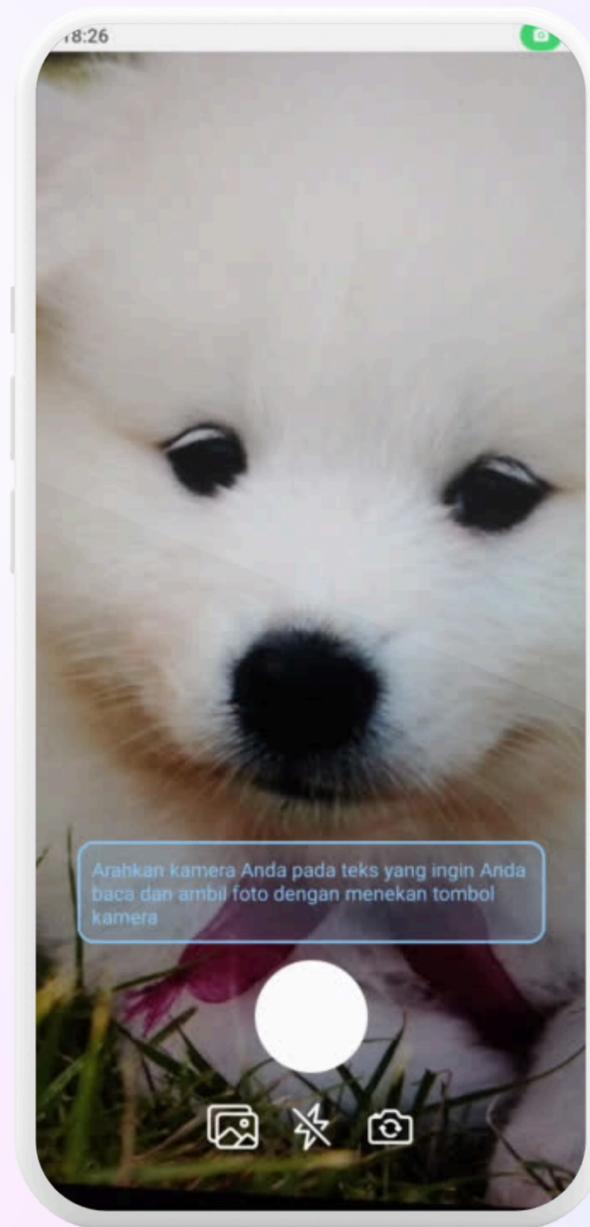
<https://drive.google.com/file/d/1h03jpYKogBO3XzVswf0LkcMfMXC-qmiH/view?usp=sharing>



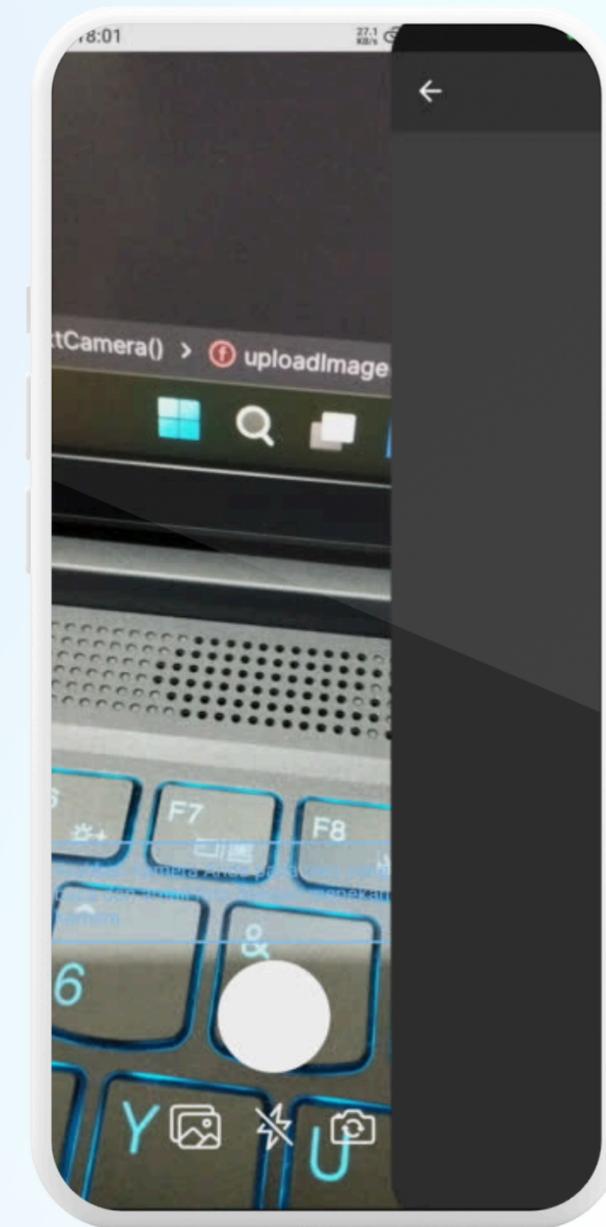
Demo Video



Demo fitur Text-to-Speech dengan text yang diperoleh dari tangkapan kamera.

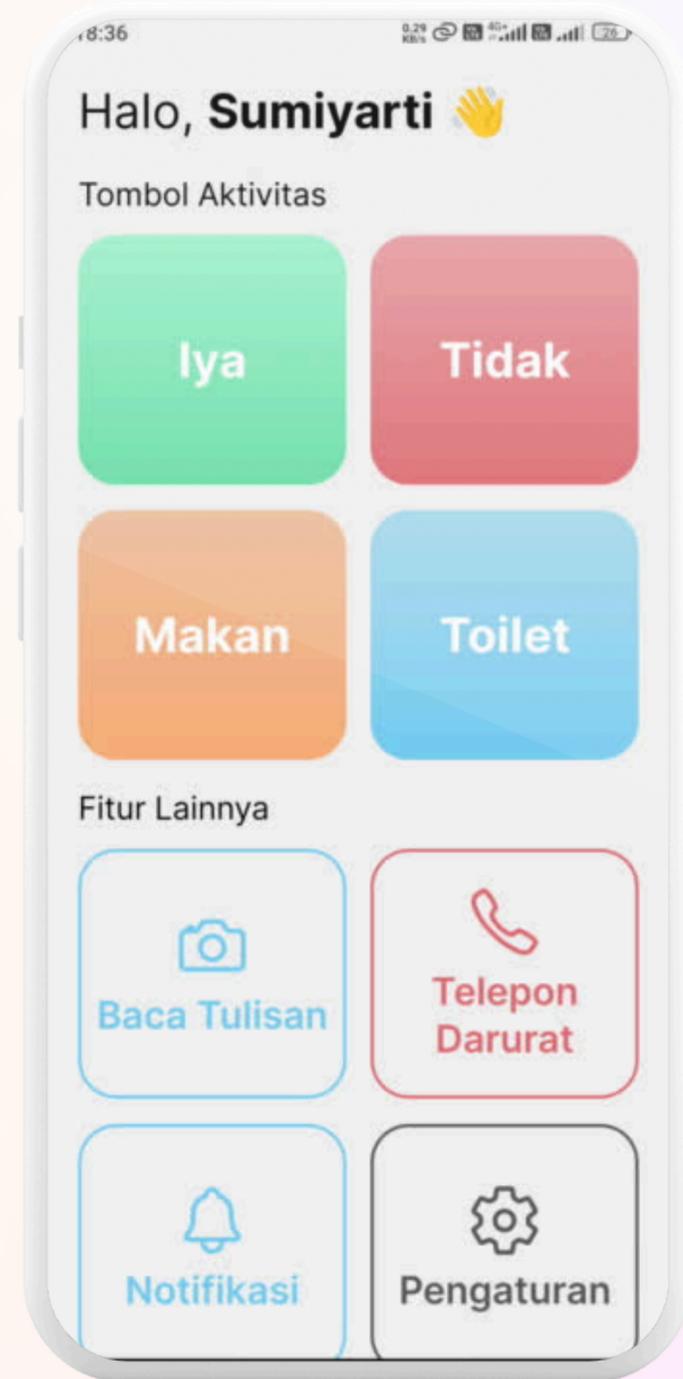


Demo fitur Text-to-Speech ketika tidak ada text yang terdeteksi.



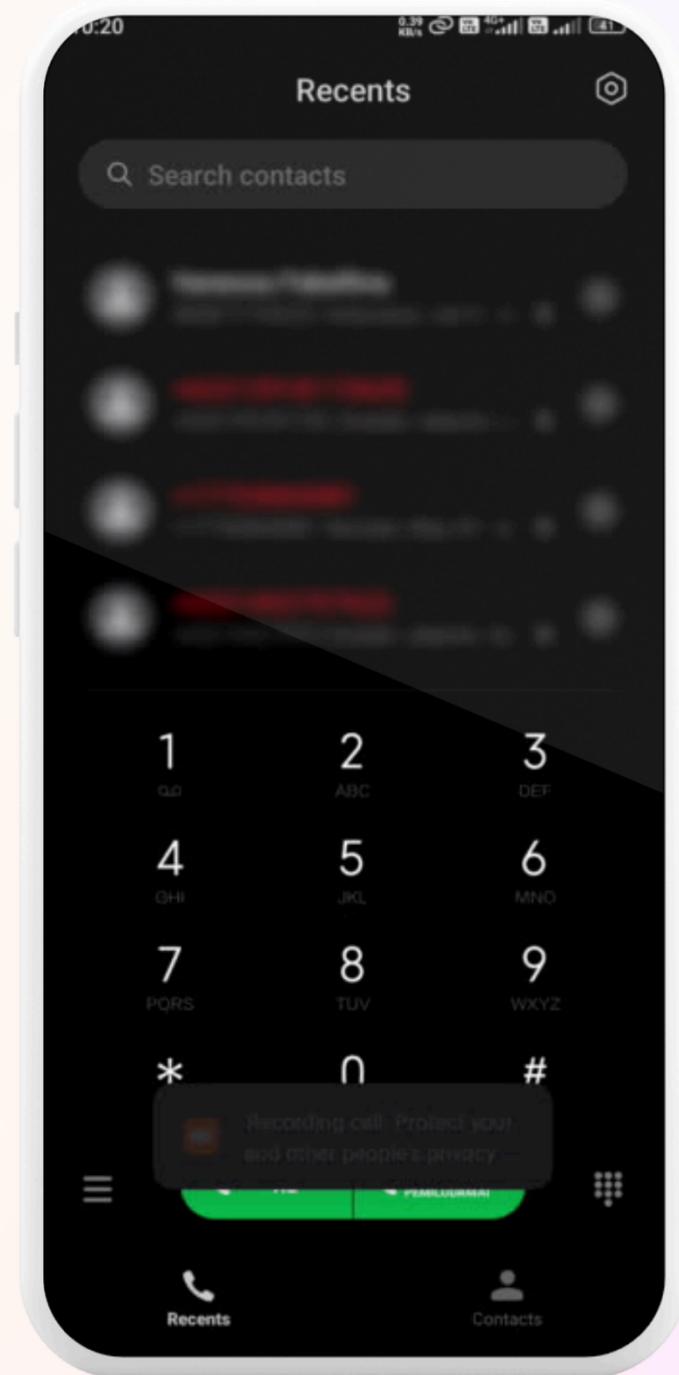
Demo fitur Text-to-Speech dengan text yang diperoleh melalui gambar dari Gallery.

Demo Video



Demo fitur Daily Word Shortcut Button dengan 4 kata yang paling umum diucapkan, yakni “Iya”, “Tidak”, “Makan”, dan “Toilet”.

Demo Video



Demo fitur Emergency Call untuk memudahkan user dalam menghubungi keluarga / kerabat / kontak tertentu untuk membantu user dalam keadaan darurat.



GitHub



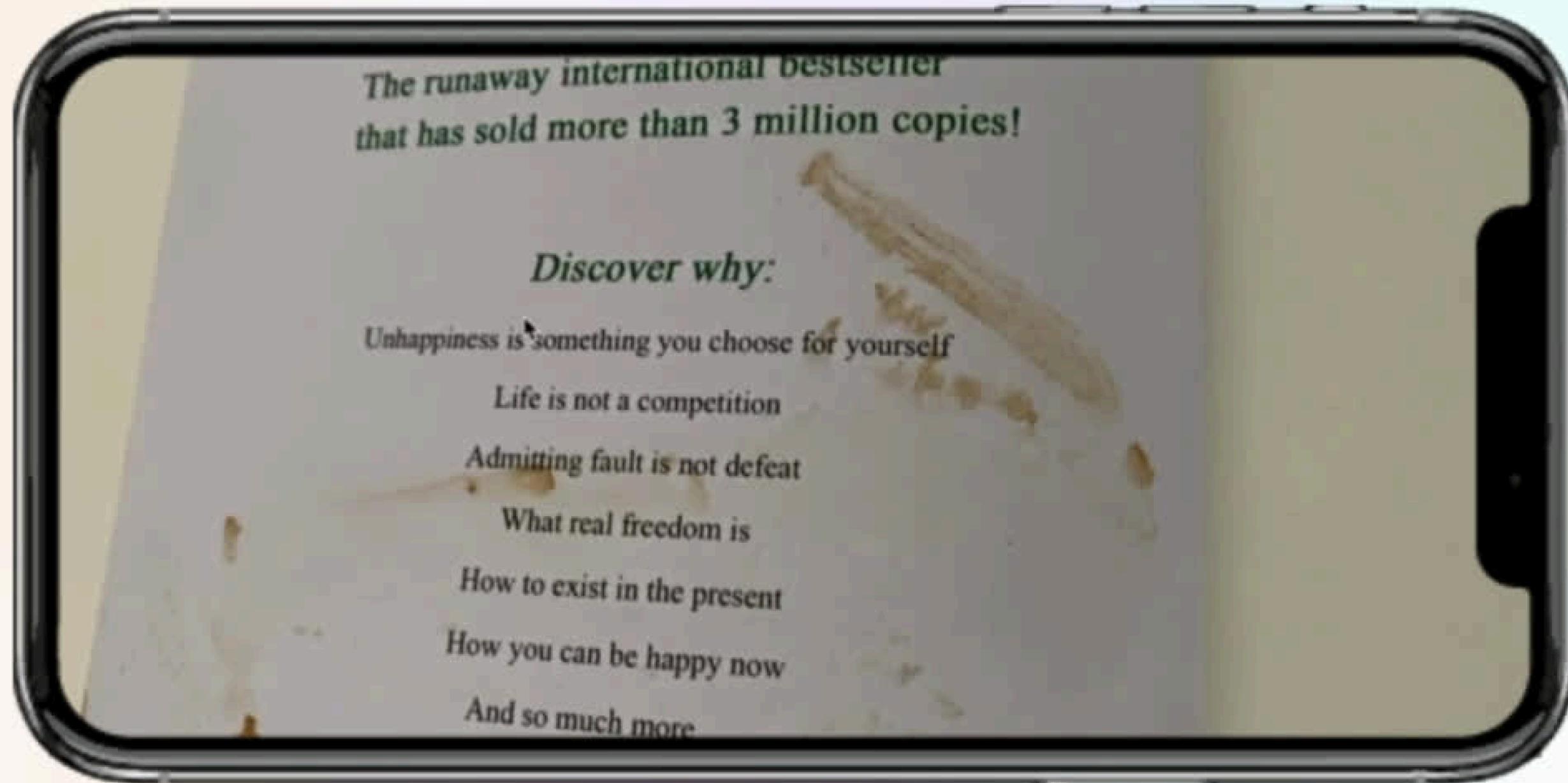
Link GitHub

Source Code dari tugas AoL yang dikerjakan dapat diakses melalui link GitHub berikut ini :

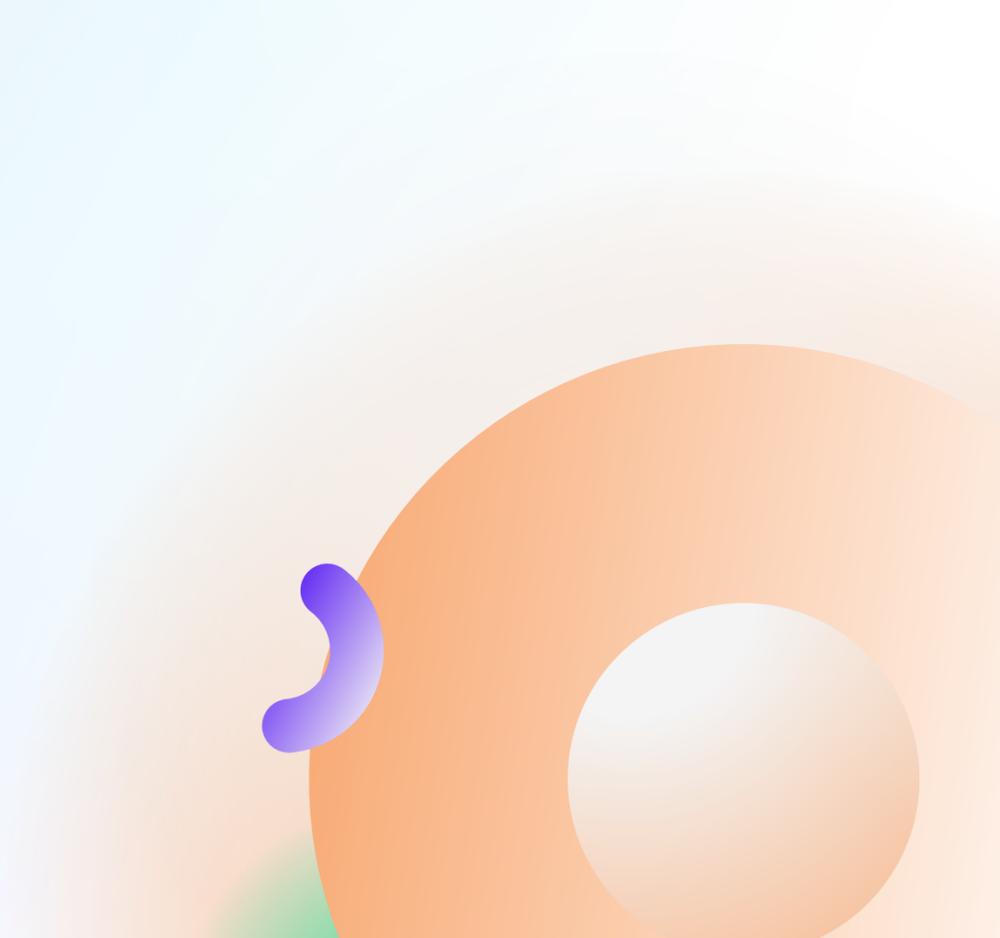
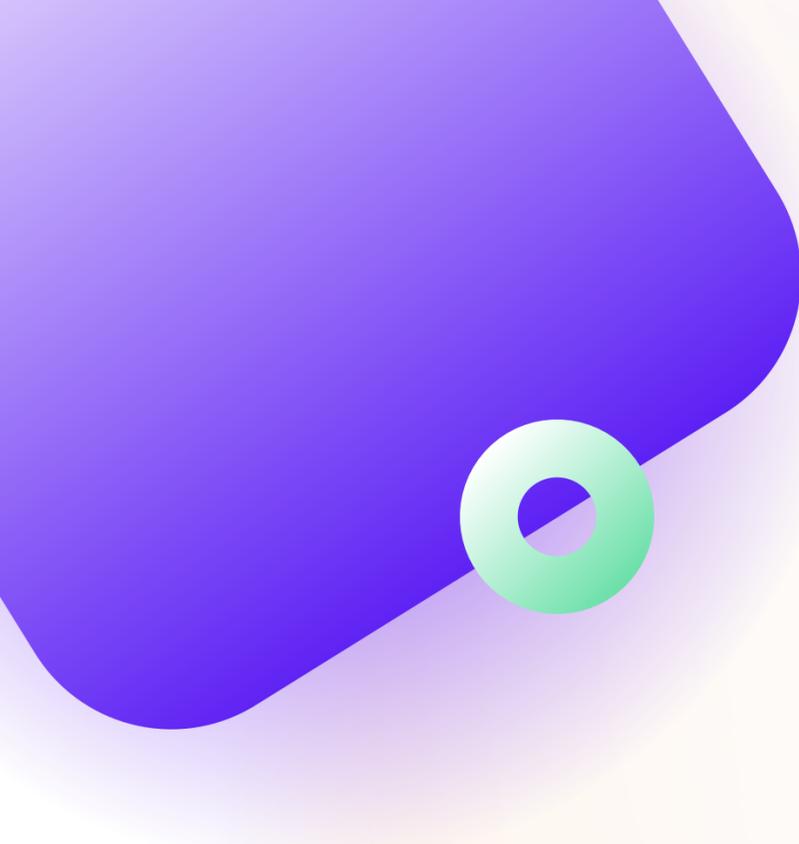
<https://github.com/carissaf/ElderEase>



ElderEase AI's Feature :



<https://drive.google.com/file/d/1wvr6JZtbqFyLVwaQvjf5rEbiajzIBFq6/view?usp=sharing>



Terima Kasih