

Automated Health Information System

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Eunice Lee 1



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Eunice Lee2





Introduction



Short introduction

Our project is aimed at transforming the way healthcare data is managed and accessed. It incorporates a handwritten text recognition module to enhance efficiency and accuracy in data entry.

Project's goal

- Develop an automated health information system incorporating **handwritten recognition model** to enhance data entry efficiency.
- Extend the system's web-based functionalities to seamlessly **integrate with a mobile application platform**.
- Implement a **handwritten recognition system** to allow healthcare professionals to input **handwritten notes and prescriptions instantly**.
- Ensure that **only authorized personnel** can access the system database





Next Steps of our Project

- 1. Finish Web Development :**
 - To be complete by the end of Week 7
- 2. Implement Image Processing with OpenCV :**
 - Estimated completion by Week 7
- 3. HTR Model Implementation :**
 - Target completion by Week 10
- 4. Begin Software Testing:**
 - Start at Week 10, focusing on system integration and user testing





Anticipated Further Issues

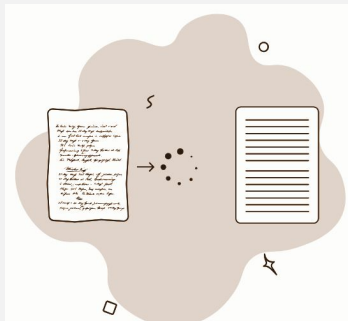


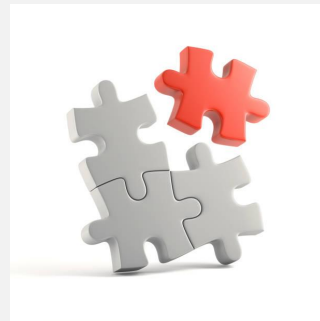
Image Cutting Model & HTR

Lack of prior experience may slow down the progress
Extensive research & learning required



Scalability

Ensure our system can handle large volumes of data efficiently



System Integration

Challenges in bringing different parts together smoothly

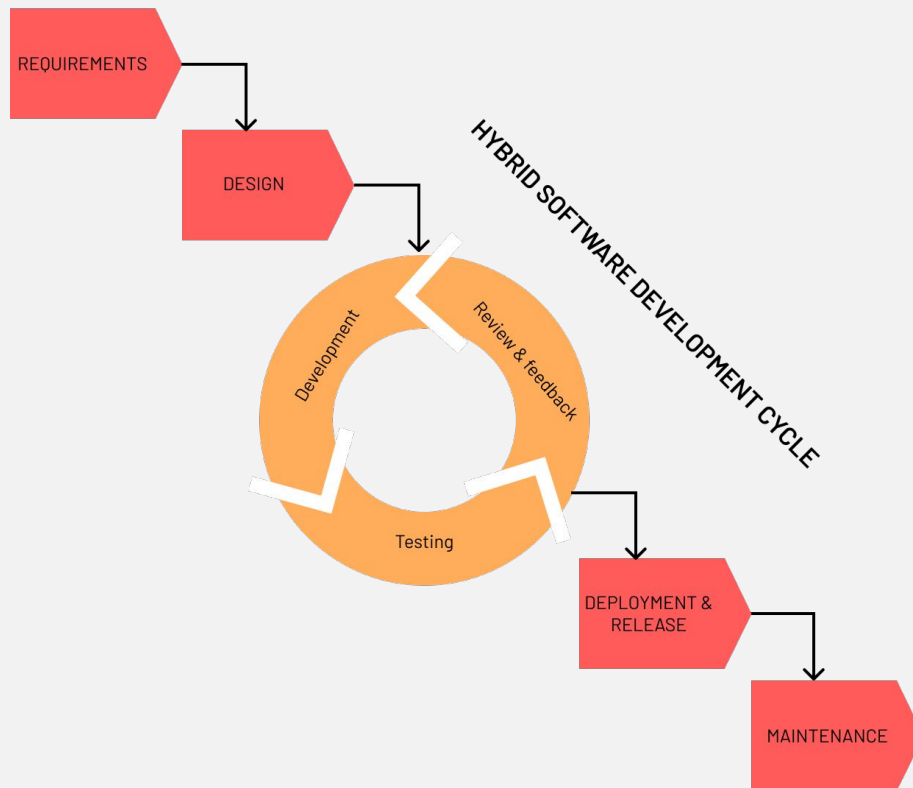




Software Development Methodologies

Hybrid Methodology

- Agile & Waterfall Methodologies
- Adapt to changes based on user feedback and evolving requirements
- Instead of rigidly following the entire Waterfall process, break the development cycle into smaller iterations





Issues and why methodology changed

Hybrid Methodology

- Original: Agile
- Now: Hybrid (Agile + Waterfall)
- Agile Iterative development took longer than expected. Frequent iterations and adjustments may extend project timelines than what it is required.
- Waterfall often requires specialized teams and roles for each phase and resource constraint but there is human and budget constraint





Team Management



DISCORD

Task Allocation	Task allocated based on team members' skills and familiarity with the task
	Team members' responsibility is noted down and saved in an Excel File
Communication Management	With team members: Accountability with frequent text and meetings
	With supervisor: Weekly Progress Status Summary Report is sent every Sunday to supervisor to assess in Discord
Issue Resolution	Seek other members for help after consulting with AI before seeking help from supervisor






Work Completed to Date

Health Information System

1. **Patient Component functionality:**
 - Register Patient
 - Patient List
 - Delete Patient Record
2. **Medicine Component functionality:**
 - Add Medication
 - List Medication
 - Delete Medication
3. **Functional Homepage Component**

Handwritten Text Recognition Model

1. **Pre Built HTR Model**
 - Testing in progress
2. **Image Cutting Model:**
 - Research in progress

	
Patient Patient functionality provides a comprehensive patient registration and management capabilities, including the ability to: <ul style="list-style-type: none">• Add new patient records• Delete existing patient information• Display each patient details• Update existing patient information	Medication Medication functionality provides a proper medicine record and management capabilities, including the ability to: <ul style="list-style-type: none">• Register/Add new medicine records• Delete existing medicine record• Display each medicine details• Update existing medicine information
Patient Registration	Medicine Registration
Patients Records	Medication Records
Update Patients	Update Medication
Alicia Quek Chik Wen	Foo Kai Yan





Software Demo: Landing / Homepage

Patient Component

- Register New Patient
- Show All Patient Records
- Update Existing Patient Data
- Delete Existing Patient

Appointment Component

- Schedule New Appointment between Physician and Patient
- Reschedule Existing Appointment
- Delete Existing Appointment

About Us section

The screenshot shows the MediCare landing page. At the top is the MediCare logo. Below it are four main components: Patient, Medication, Appointment, and Encounter/Consultation. Each component has a description, a list of features, and a table of actions. The Patient component includes a link to 'Alicia Quek Chik Wen'. The Medication component includes a link to 'Foo Kai Yan'. The Appointment component includes a link to 'Alicia Quek Chik Wen & Foo Kai Yan'. The Encounter/Consultation component includes a link to 'Alicia Quek Chik Wen & Foo Kai Yan'. At the bottom is an 'About Us' section with a mission statement and a footer with the text '© 2023 Built by: MDS02'.

MediCare

Patient
Patient functionality provides a comprehensive patient registration and management capabilities, including the ability to:

- Add new patient records
- Delete existing patient information
- Display each patient details
- Update existing patient information

Patient Registration
Patients Records
Update Patients
Alicia Quek Chik Wen

Medication
Medication functionality provides a proper medicine record and management capabilities, including the ability to:

- Register/Add new medicine records
- Delete existing medicine record
- Display each medicine details
- Update existing medicine information

Medicine Registration
Medication Records
Update Medication
Foo Kai Yan

Appointment
Appointment functionality provides a proper appointment scheduling function by:

- Schedule new appointment
- List all appointment
- Delete existing appointment
- Display each appointment details
- Update/Reschedule existing appointment information

Schedule Appointment
List All Appointment
Delete Appointment
Display Appointment
Update/Reschedule Appointment
Alicia Quek Chik Wen & Foo Kai Yan

Encounter/Consultation
Encounter/Consultation functionality provides a proper encounter/consultation session function by:

- Initiate encounter/consultation session
- List all encounter/consultation session
- Delete encounter/consultation session
- Display encounter/consultation session detail
- Update encounter/consultation session

Note that: Diagnosis and medication prescription will be given by physician and it will be done during each encounter/consultation session.

Initiate Encounter/Consultation
List all Encounter/Consultation
Delete Encounter/Consultation
Display Encounter/Consultation
Update Encounter/Consultation
Alicia Quek Chik Wen & Foo Kai Yan

About Us
At Medicare Clinic, our mission is simple: to enhance lives through personalized healthcare.
We believe that everyone deserves access to high-quality medical services, and we strive to make a positive impact on the health and well-being of our community.

© 2023 Built by: MDS02

Clinic Banner

Medication Component

- Register New Medicine
- Show all Medication Records
- Update Existing Medicine Records
- Delete Existing Medication


Encounter Component

- Start Encounter
- Modify Encounter Details (Includes Diagnosis and Prescription)
- Delete Existing Encounter





Software Demo: Patient - Add / Delete / List All



Patient Registration Form

Fill in the Patient details and Click Submit to register a new patient.

Name

Enter first name

Enter last name

Date of Birth

dd/mm/yyyy

Gender

☐ Female

☐ Male

Nationality

Enter nationality

Identification Number (IC)

Enter Identification Number

Marital Status

Contact Number

Example: 0123456789

E-mail

myname@example.com

Address

Enter Street Address

City

Enter City

State

Enter State

Postal / Zip Code

Enter postal/zip code

Emergency Contact

Patient

Patient functionality provides a comprehensive patient registration and management capabilities, including the ability to:

- Add new patient records
- Delete existing patient information
- Display each patient details
- Update existing patient information

Patient Registration

Patients Records

Update Patients

[Alicia Quek Chik Wen](#)

Patient Record List

ID	First Name	Last Name	Identification Number	View Details	Edit	Delete
PSQ-7980	Eunice Wen Jing	Lee	30106574876	Details	Update	Delete
PTR-3893	Jesse San Gene	Yow	30809456789	Details	Update	Delete
PBF-8359	Josh Tim Burton	Wesley	11220539463	Details	Update	Delete
PTD-9498	Kai Yan	Foo	234567890	Details	Update	Delete
PNP-5206	Alicia Chik Wen	Quek	31003345678	Details	Update	Delete
PPW-7357	Bat Man	Wayne	30809456789	Details	Update	Delete





Software Demo: Medication - Add / Delete / List All

Medication

Medication functionality provides a proper medicine record and management capabilities, including the ability to:

- Register/Add new medicine records
- Delete existing medicine record
- Display each medicine details
- Update existing medicine information

Medicine Registration

Medication Records

Update Medication

[Foo Kai Yan](#)



Add Medication

Fill in new medication details & click submit

Name:

Route Of Admission:

Medication Concentration:

Medication Volume:

Add Medication

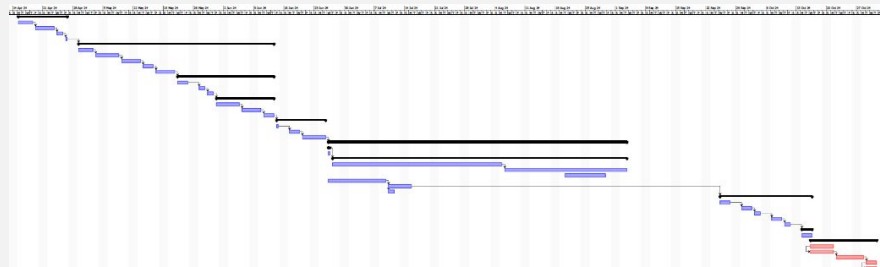
Load Medication

ID	Name	Route of Admission	Concentration	Volume	Actions	Delete
MXR-8274	Xyzal Levocetirizine	Oral	50	100	View Medication Detail	Delete Medication
MBB-3961	Panadol	Oral	5	30	View Medication Detail	Delete Medication
MFA-3151	Lexapro	Oral	10	100	View Medication Detail	Delete Medication



Overview of Progress Relative to Original Plan

		Name	Duration	Start	Finish	Predecessors
1		Project Initialization	10 days	4/15/24 8:00 AM	4/26/24 5:00 PM	
2		Research on the project topic	4 days	4/15/24 8:00 AM	4/18/24 5:00 PM	
3		Define project objectives and project scope	3 days	4/19/24 8:00 AM	4/23/24 5:00 PM	2
4		Identify limitations and potential risk	2 days	4/24/24 8:00 AM	4/25/24 5:00 PM	3
5		Discuss the project with team members and supervisor	1 day	4/26/24 8:00 AM	4/26/24 5:00 PM	4
6	🟡	Research and Planning	34 days	4/29/24 8:00 AM	6/13/24 5:00 PM	5
7	🟡	Study current existing health information system	4 days	4/29/24 8:00 AM	5/2/24 5:00 PM	
8		Investigate on existing handwritten recognition tools	4 days	5/3/24 8:00 AM	5/8/24 5:00 PM	7
9		Find related and/or relevant dataset	3 days	5/9/24 8:00 AM	5/13/24 5:00 PM	8
10		Find machine learning model	3 days	5/14/24 8:00 AM	5/16/24 5:00 PM	9
11		Plan integration strategy	3 days	5/17/24 8:00 AM	5/21/24 5:00 PM	10
12		Initial Design Concept	17 days	5/22/24 8:00 AM	6/13/24 5:00 PM	11
13		Gather User Requirements	3 days	5/22/24 8:00 AM	5/24/24 5:00 PM	
14		Identify functional requirements	2 days	5/27/24 8:00 AM	5/28/24 5:00 PM	13
15		Identify technical requirements	2 days	5/29/24 8:00 AM	5/30/24 5:00 PM	14
16		Design project architecture	10 days	5/31/24 8:00 AM	6/13/24 5:00 PM	15
17		Design web-based health information system	4 days	5/31/24 8:00 AM	6/5/24 5:00 PM	
18		Design Handwritten Recognition Module	3 days	6/6/24 8:00 AM	6/10/24 5:00 PM	17
19		User Interface Design	3 days	6/11/24 8:00 AM	6/13/24 5:00 PM	18
20	🟡	Project Proposal	8 days	6/14/24 8:00 AM	6/26/24 5:00 PM	19
21		Create Project Overview	1 day	6/14/24 8:00 AM	6/14/24 5:00 PM	
22		Create Project Management Plan	3 days	6/17/24 8:00 AM	6/19/24 5:00 PM	21
23		Create Project Methodology	4 days	6/20/24 8:00 AM	6/25/24 5:00 PM	22
24	🟡	Project Implementation	50 days	6/26/24 8:00 AM	9/3/24 5:00 PM	23
25		Setup development environment	1 day	6/26/24 8:00 AM	6/26/24 5:00 PM	
26		Install required software	1 day	6/26/24 8:00 AM	6/26/24 5:00 PM	
27		Implement Web-based System	49 days	6/27/24 8:00 AM	9/3/24 5:00 PM	25
28		Backend Development	28 days	6/27/24 8:00 AM	8/5/24 5:00 PM	
29		Frontend Development	21 days	8/6/24 8:00 AM	9/3/24 5:00 PM	28
30	🟡	Implement Image Processing Model	8 days	8/20/24 8:00 AM	8/29/24 5:00 PM	
31		Integrate Handwritten text recognition	10 days	6/26/24 8:00 AM	7/9/24 5:00 PM	
32		Implement the web-based system to be compatible with...	4 days	7/10/24 8:00 AM	7/15/24 5:00 PM	31
33		Combine web application with HTR Model	2 days	7/18/24 8:00 AM	7/11/24 5:00 PM	31
34	🟡	Testing and Evaluation	16 days	9/25/24 8:00 AM	10/16/24 5:00 PM	32
35		Conduct Unit Testing	3 days	9/25/24 8:00 AM	9/27/24 5:00 PM	
36		Perform Integration Testing	3 days	9/30/24 8:00 AM	10/2/24 5:00 PM	35
37		User Acceptance Testing	2 days	10/3/24 8:00 AM	10/4/24 5:00 PM	36
38		Monitor system performance	3 days	10/7/24 8:00 AM	10/9/24 5:00 PM	37
39		Address User Feedback	2 days	10/10/24 8:00 AM	10/11/24 5:00 PM	38
40		Regular maintenance	3 days	10/14/24 8:00 AM	10/16/24 5:00 PM	39
41		Bug Fixing and Issue Resolution	3 days	10/14/24 8:00 AM	10/16/24 5:00 PM	
42	🟡	Project Presentation	12 days	10/16/24 8:00 AM	10/31/24 5:00 PM	
43	🟡	Prepare User Guide	4 days	10/16/24 8:00 AM	10/21/24 5:00 PM	
44		Complete code documentation	4 days	10/16/24 8:00 AM	10/21/24 5:00 PM	43SS
45		Generate Project Report	5 days	10/22/24 8:00 AM	10/28/24 5:00 PM	44
46		Prepare project presentation slides	3 days	10/29/24 8:00 AM	10/31/24 5:00 PM	45
47		Create speaker notes	3 days	10/29/24 8:00 AM	10/31/24 5:00 PM	46SS



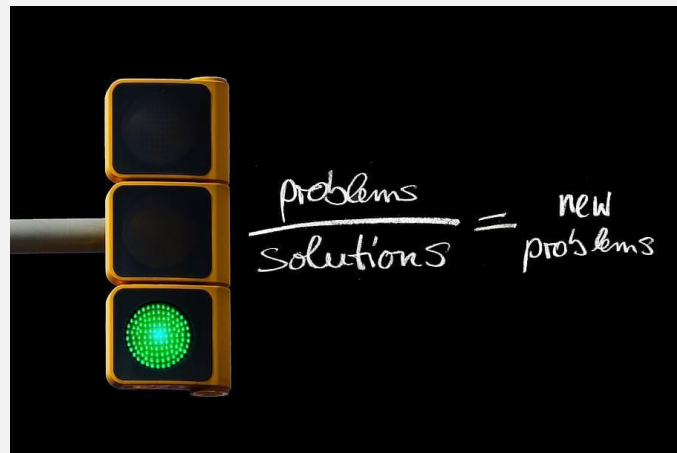
- Slight delay in starting date for web development
- Issue with Handwritten Text Recognition (HTR)
- Minor adjustments were needed.
- Overall progress is going according to plan.





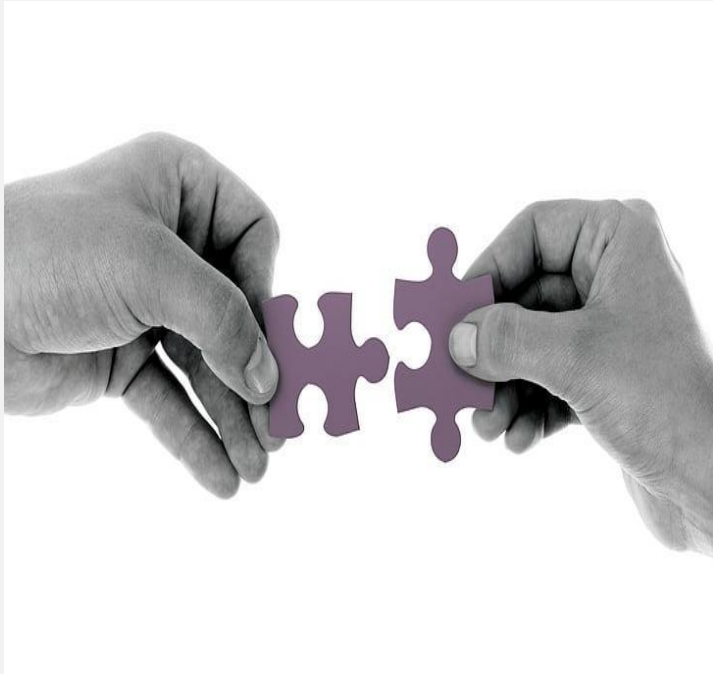
Problems and Setbacks

- Early challenges with the Handwritten Text Recognition (HTR) system.
- Teammate Inavailability
- Hardware Malfunction
- Project Delays





Steps taken taken to resolve da problems



- Reallocate tasks among team members
- Reschedule timetables and set deadlines
- GitHub Backups
- Testing new pre-built HTR model (in progress)





Thank You



Any Question?

