



Sri Lanka Institute of Information Technology

**DISTRIBUTED HEALTH CARE FRAMEWORK FOR
PATIENT HEALTH RECORD MANAGEMENT AND
PHARMACEUTICAL DIAGNOSIS**

Project ID: 2022-110

STATUS DOCUMENT

De Silva K.H.K.L. - IT19006994

Group Details

Supervisor: **Mr. Jeewaka Perera**

Co-Supervisor: **Ms. Laneesha Ruggahakotuwa**

Student Name	Student Number
Wickramarathna W.G.M.S.	IT19004778
De Silva K.H.K.L	IT19006994
Lekamalage U.L.V.M.	IT19111766
Chathuranga S.J	IT19043388

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1. Gantt Chart

Task Name	Project Timeline												
Description	Dec	Jan	Feb	March	April	May	June	July	August	Sep	Oct	Nov	Dec
Project Initiation													
Topic Registration (12th Dec 2021)													
Topic Evaluation (28th Dec 2021)													
Project Charter Submission (12th Jan 2022)													
Project Proposal Presentation (3rd Feb 2022)													
Project Phase													
System Planning													
Data Gathering													
Implementation Phase													
Software Installation													
Load document using OpenCV and PIL													
Pytesseract: Extract Text from Image													
Image to Text to Dataframe													
Draw Bounding Box around each word													
Extract Text and Data from Medical Documents													
Save data in CSV													
Labeling Data using manual BIO Tagging													
Spacy Training Data													
Cleaning Text, convert data into Spacy format													
Train Named Entity Recognition Model													
Predictions													
Develop Document Scanner Web App													
Host the Server													
Testing phase and Evaluation													
Project Status Document													
Final Presentation and Viva													
Final Report and Research Paper													
Final Evaluation													

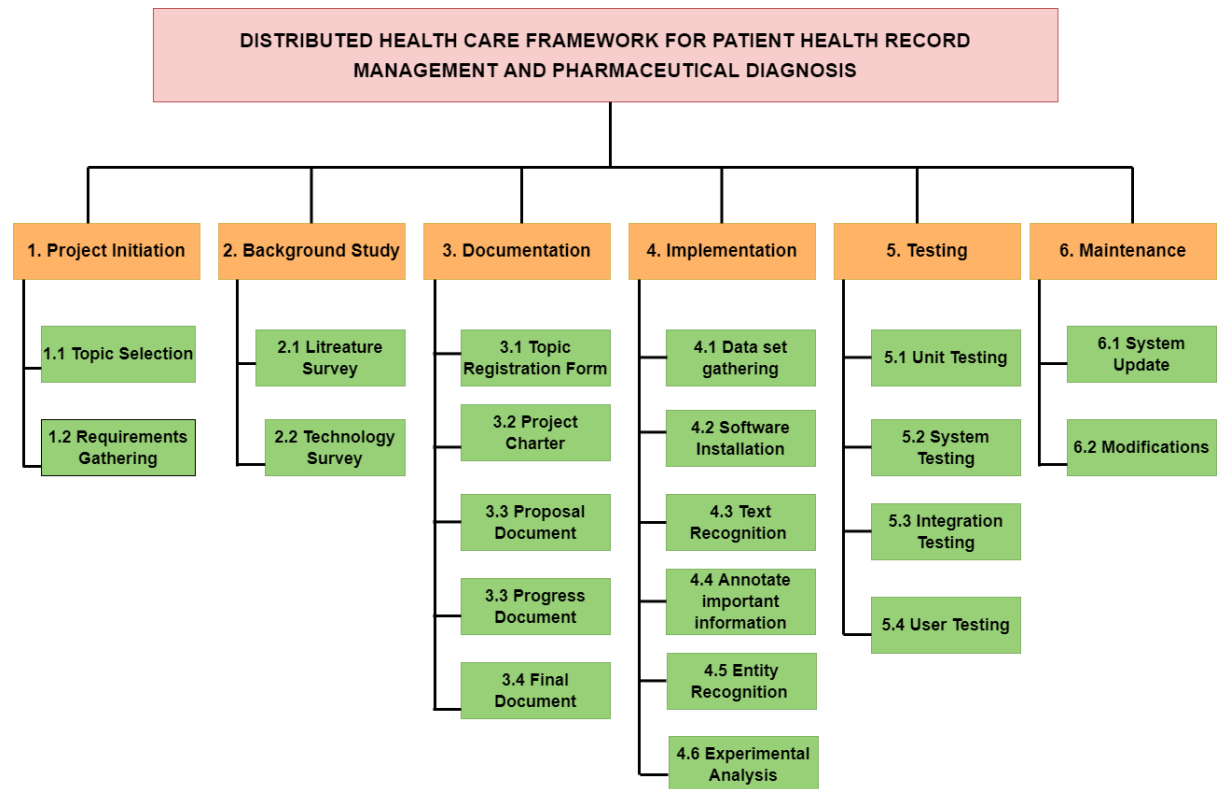


Completed



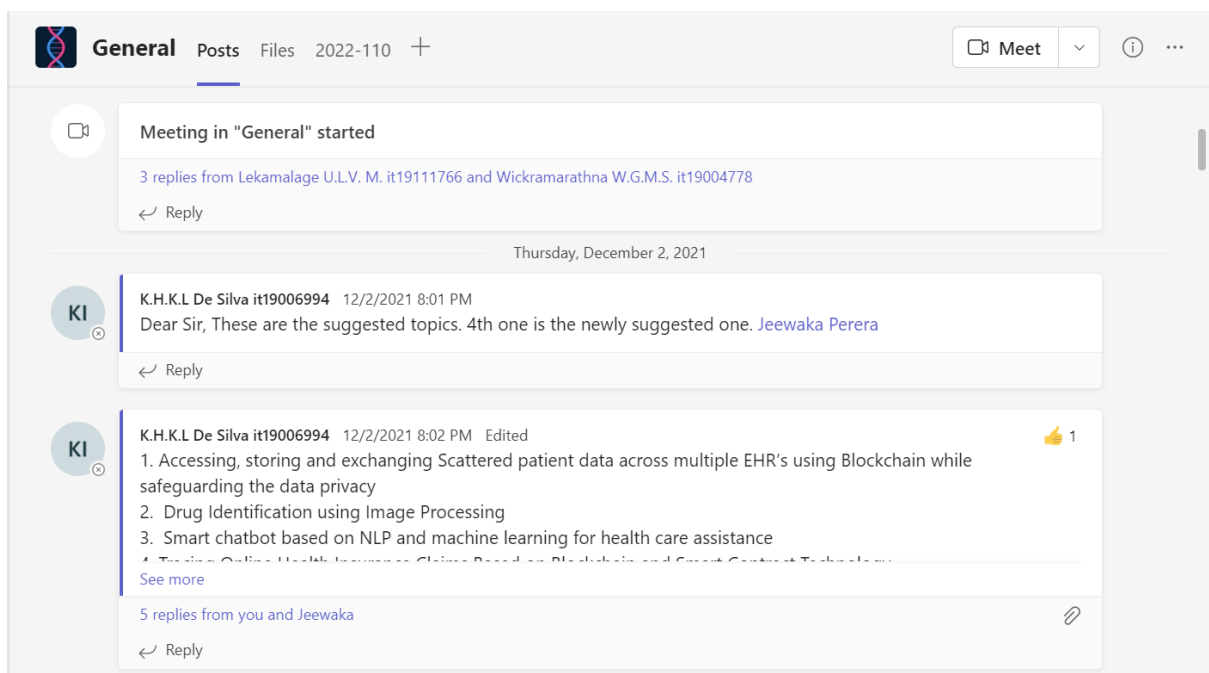
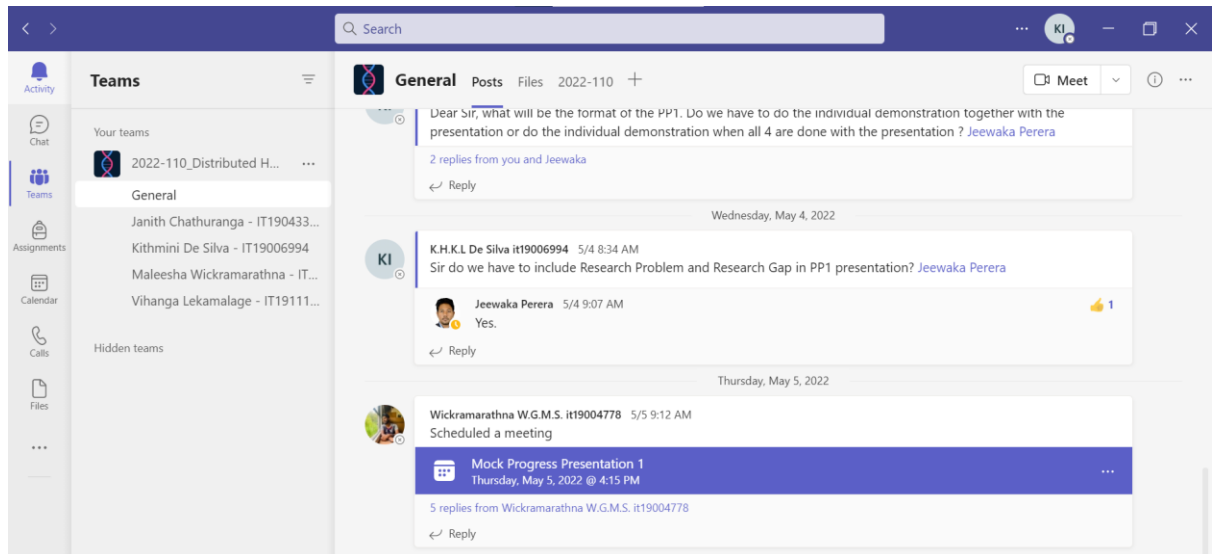
Incomplete

2. Work Breakdown Structure



3. Screenshots of MS Teams

3.1 SCRUM Meetings



General
Posts
Files
2022-110
+

Meet
▼
i
...

Monday, January 10, 2022

KI

K.H.K.L De Silva it19006994 1/10 2:17 PM Edited

Dear sir, In topic assessment the panel has requested to fix the grammar of the title "automatic patient record" (make more meaningful). Hence we changed the topic as: **Distributed Health Care Framework for Automatic Patient Health Record Management and Pharmaceutical Diagnosis** [Jeewaka Perera](#)

5 replies from you and Jeewaka

↩ Reply

Tuesday, January 11, 2022

Wickramarathna W.G.M.S. it19004778

1/10 7:56 PM

Sir, we are about to finish our charter document and coversheet, so can we arrange a meeting? [Jeewaka Perera](#) [Laneesha Ruggahakotuwa](#)

7 replies from Jeewaka and Wickramarathna W.G.M.S. it19004778

↩ Reply

General
Posts
Files
2022-110
+

Meet
▼
i
...

Saturday, January 29, 2022

Jeewaka Perera

1/28 12:12 PM

Sorry I cannot start at 9 am. Hope this is okay with you all. Please Let me know if this does not work

Mock Proposal Presentation - Health Care
...

Saturday, January 29, 2022 @ 9:30 AM

▼ Collapse all

- Meeting started
- Recording has started
- Recording has stopped. Saving recording...

Meeting
...

Recorded by: K.H.K.L De Silva it...

Meeting ended: 1h 37m

↩ Reply

Search

General Posts Files 2022-110 +

Meet

Thursday, February 3, 2022

Jeewaka Perera 2/3 8:40 AM
Scheduled a meeting

Meeting To Discuss Panel Comments
Thursday, February 3, 2022 @ 8:45 AM

Collapse all

- Meeting started
- Recording has started
- Recording has stopped. Saving recording...
- Meeting ended: 57m

Meeting
Recorded by: Chathuranga S. J. i...
54m 8s

Reply

Search

General Posts Files 2022-110 +

Meet

Tuesday, February 8, 2022

Wickramarathna W.G.M.S. it19004778 2/7 5:11 PM
Scheduled a meeting

Discussion about Blockchain
Tuesday, February 8, 2022 @ 2:00 PM

Collapse all

- Discussion about Blockchain started
- Recording has started
- Recording has stopped. Saving recording...
- Meeting ended: 40m 18s

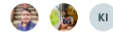
Meeting
Recorded by: Wickramarathna ...
26m 22s

Reply

Wednesday, April 6, 2022



Meeting in "General" ended:



Attendance report

Click here to download attendance report

← Reply



Wickramarathna W.G.M.S. it19004778 4/6 8:43 PM

https://teams.microsoft.com/l/meetup-join/19:meeting_NTQyMGYxNDAtOTZkYi00MTNLTg4ODgtNThkMDY5MTA1MWMx@thread.v2/0?context=%7B%22Tid%22:%2244e3cf94-19c9-4e32-96c3-14f5bf01391a%22,%22Oid%22:%2216564c04-dfe6-4871-af4d-c77102a0eea4%22%7D

← Reply

Monday, April 18, 2022



Wickramarathna W.G.M.S. it19004778 4/18 9:11 AM

Scheduled a meeting



Progress Review

Monday, April 18, 2022 @ 11:00 AM



▼ Collapse all



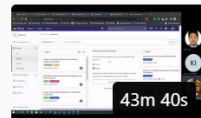
Progress Review started



Recording has started



Recording has stopped. Saving recording...



Meeting

Recorded by: Wickramarathna ...

43m 40s

This recording is set to expire. View or change the expiration date [here](#). [Learn more](#)



Meeting ended: 1h 11m

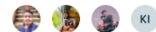


← Reply

Saturday, April 23, 2022



Meeting in "General" ended: 1h 19m

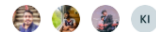


← Reply

Wednesday, April 27, 2022



Meeting in "General" ended: 1h 6m



← Reply

Tuesday, May 3, 2022

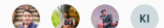


Meeting in "General" started

6 replies from Chathuranga S. J. it19043388, Wickramarathna W.G.M.S. it19004778, and Lekamalage U.L.V. M. it19111766



Meeting ended: 3h 22m



← Reply

Thursday, May 5, 2022



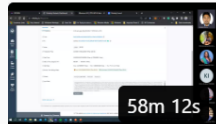
Wickramarathna W.G.M.S. it19004778 Thursday 9:12 AM
Scheduled a meeting



Mock Progress Presentation 1
Thursday, May 5, 2022 @ 4:15 PM



4 replies from Wickramarathna W.G.M.S. it19004778



Meeting

Recorded by: K.H.K.L De Silva it...



This recording is set to expire. View or change the expiration date [here](#). [Learn more](#)

Reply



Kithmini De Silva - IT19...

Posts

Files



Meet



Monday, April 18, 2022

KI

K.H.K.L De Silva it19006994 4/18 3:42 PM Edited

Sir, these are the list of tech stack and models that I will be using for the medical document scanner component. (as you asked me to confirm them by this week):

OpenCV(load the image), **Pytesseract**(text extraction), **Named Entity Recognition Model(NER) in Spacy for Entity extraction**. Please confirm whether I can proceed with these technologies. [Jeewaka Perera](#)

KI

K.H.K.L De Silva it19006994 4/18 3:44 PM

According to these technologies my component will be "**Medical Document Scanner for intelligently extract Text from data in Medical Documents using OCR and NER**"

Reply

Thursday, May 5, 2022

KI

K.H.K.L De Silva it19006994 4/23 8:22 PM Edited

Dear sir, in-order to train the Spacy model for the Medical Document scanner component I am not using a real data set but instead using the medical documents I collected from real patients and documents that I downloaded from the internet. Will it be okay? [Jeewaka Perera](#)



Jeewaka Perera 5/5 9:16 AM

That will be fine. Then use the real patient documents you connected to test the accuracy. IF the accuracy is low we'll try something else



1

Reply

Search

...

KI

—

□

×

General

Posts

Files

2022-110

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Meet

+

New

↓

↑

Upload

↓

↻

Sync

🔗

Copy link

↓

Download

🔗

Open in SharePoint

☰

All Documents

↓

Documents

>

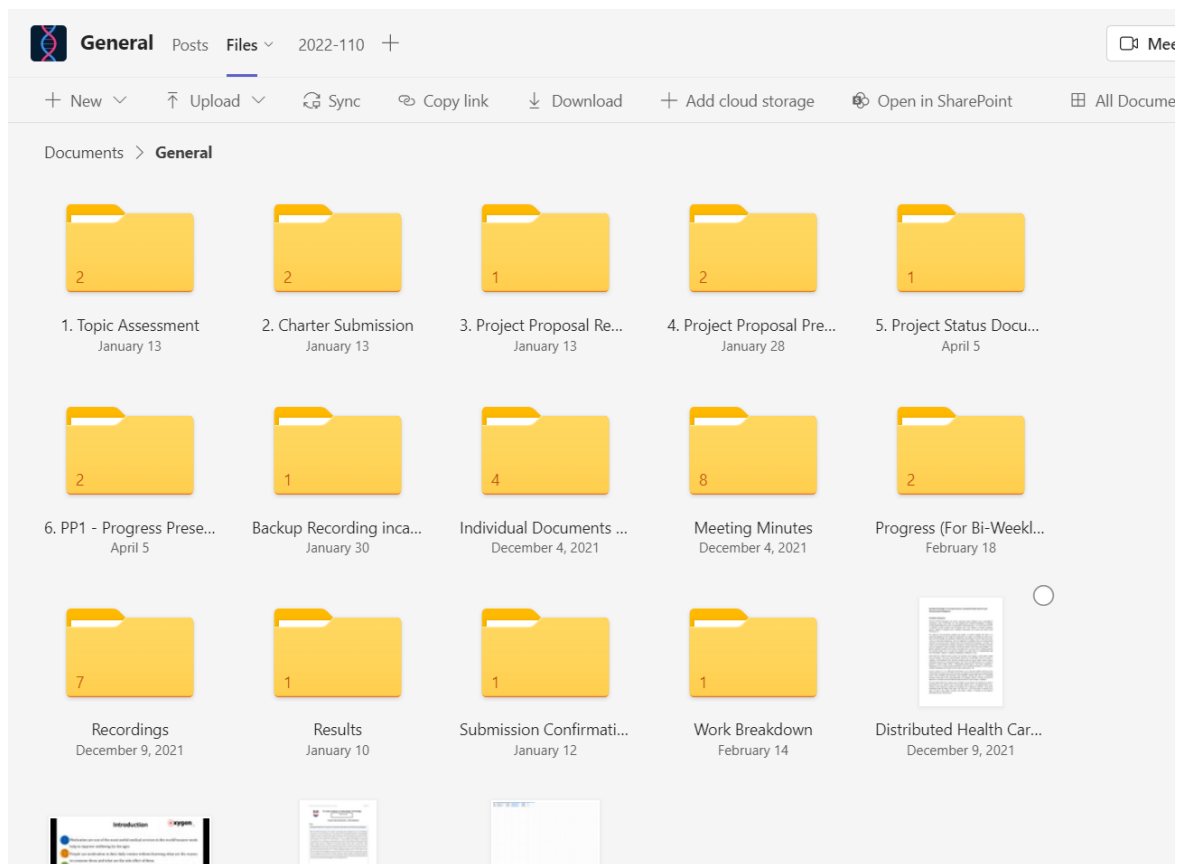
General

>


Meeting Minutes

	Modified	Name	Modified By
📁	April 7	Attendance Reports	K.H.K.L De Silva it1...
📄	February 28	03rd Feb 2022.docx	K.H.K.L De Silva it1...
📄	February 28	04th of Dec 2021.docx	K.H.K.L De Silva it1...
📄	February 28	07th Feb 2022.docx	K.H.K.L De Silva it1...
📄	February 28	09th of Dec 2021.docx	K.H.K.L De Silva it1...
📄	February 28	11th Jan 2022.docx	K.H.K.L De Silva it1...
📄	April 18	18th April 2022.docx	K.H.K.L De Silva it1...
📄	February 28	29th Jan 2022.docx	K.H.K.L De Silva it1...

3.2 Teams Shared Folder




3.3 Team Members




2022-110_Distributed Health Care Framework for Patient Health Record Managem...









Health Care Research Project

[Members](#) [Pending Requests](#) [Channels](#) [Settings](#) [Analytics](#) [Apps](#) [Tags](#)



 [Add member](#)

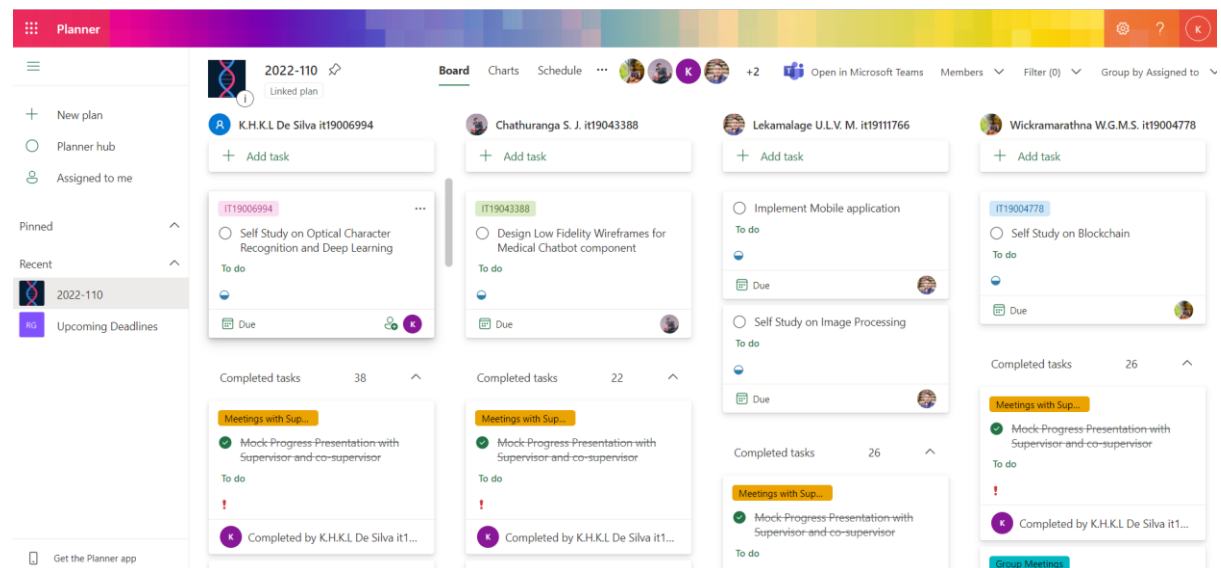
▼ **Owners (6)**

Name	Title	Location	Tags 	Role
 Wickramarathna W.G.M.S. it19...				Owner ▼
 Chathuranga S. J. it19043388				Owner ▼
 Laneesha Ruggahakotuwa	Assistant Lecturer	Malabe		Owner ▼
 Jeewaka Perera	Lecturer (Tenure Track)	Malabe		Owner ▼
 K.H.K.L De Silva it19006994				Owner ▼
 Lekamalage U.L.V. M. it19111...				Owner ▼

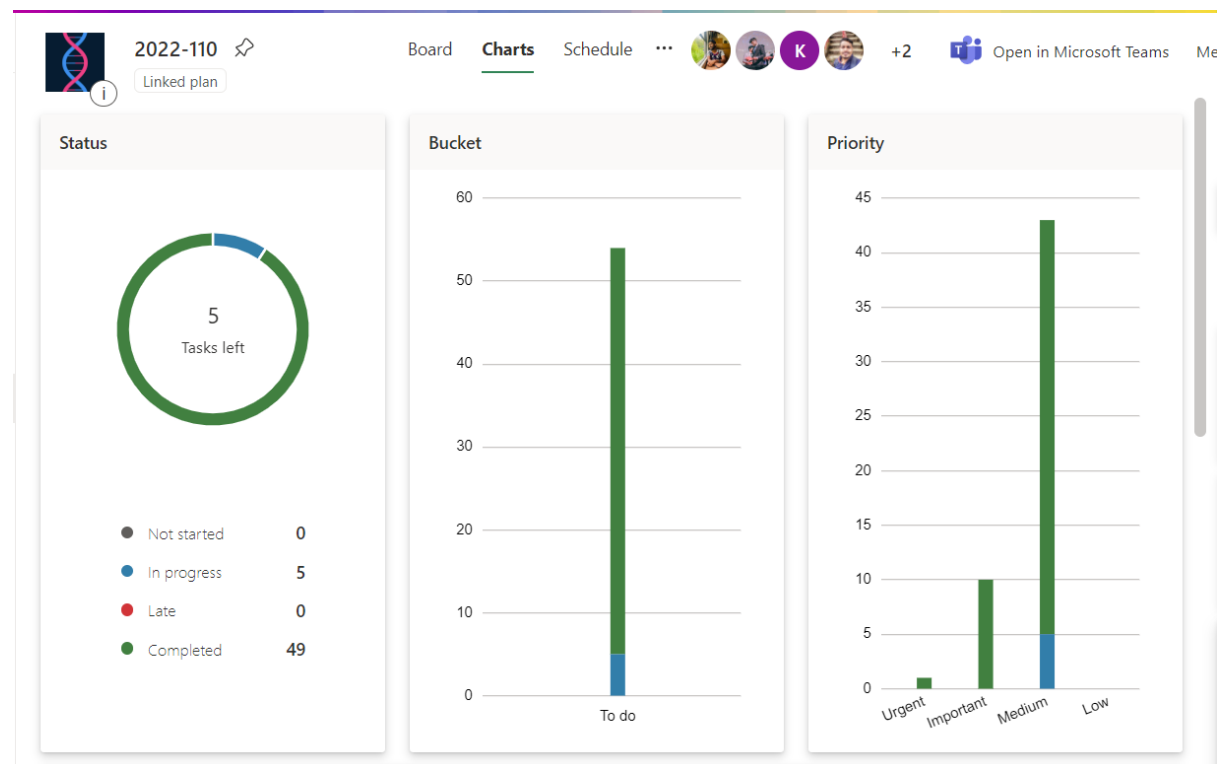
► **Members and guests (0)**

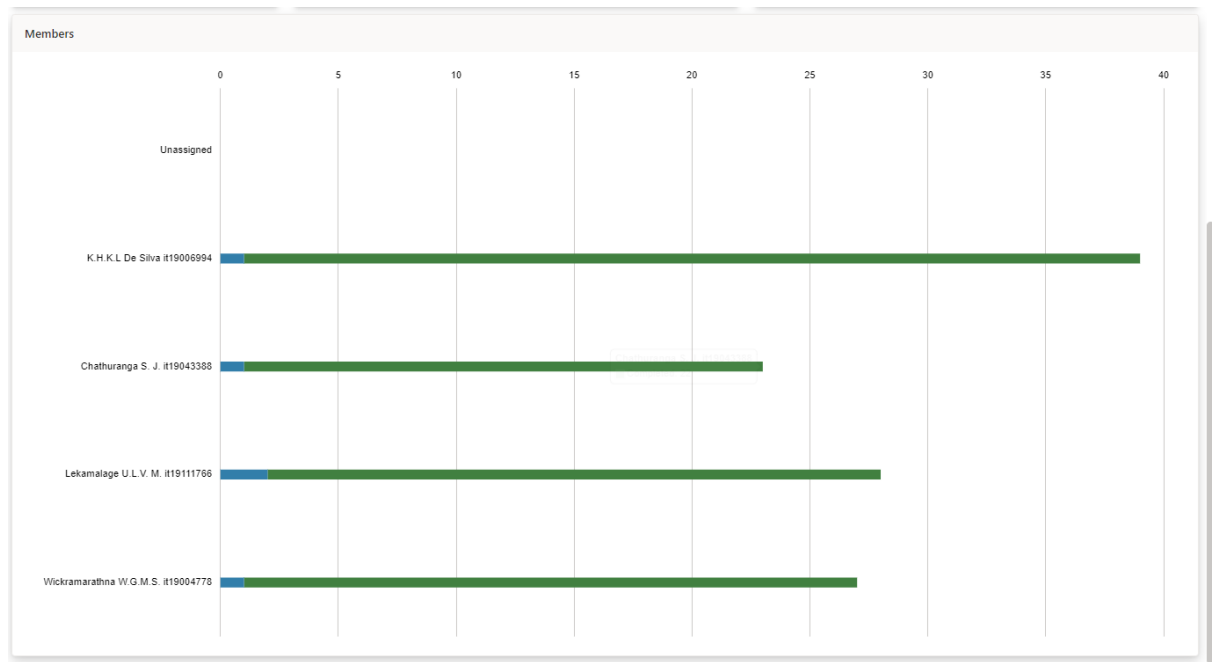
4. Screenshots of Teams Planner

4.1 Teams Board



4.2 Teams Chart Overview





5. Screenshots of GitLab

5.1 Project Overview

The screenshot shows the GitLab Project Overview page for project 2022-110. The left sidebar contains navigation links: Project overview, Details, Activity, Releases, Cycle Analytics, Repository, Issues (3), Merge Requests (0), CI / CD, Operations, Wiki, Snippets, and Settings. The main content area displays the project name '2022-110' with a lock icon and Project ID 1085. It shows 69 Commits, 7 Branches, 0 Tags, and 5.1 MB Files. A merge commit 'Merge branch 'IT19004778' into 'dev'' by Wickramaratna W.G.M.S.IT19004778 is highlighted. Below this, there are buttons for README, Add LICENSE, Add CHANGELOG, Add CONTRIBUTING, Enable Auto DevOps, and Add Kubernetes cluster. A table lists the project's components:

Name	Last commit	Last update
Backend	blockchain component added	4 days ago
mobile-app	initialize mobile app project	1 week ago
webapp	blockchain component added	4 days ago

5.2 Members

The screenshot shows the GitLab Members page for project 2022-110. The left sidebar contains navigation links: Repository, Issues (3), Merge Requests (0), CI / CD, Operations, Wiki, Snippets, Settings, General, Members, Integrations, Repository, CI / CD, and Operations. The main content area displays the 'Existing members and groups' section. It shows a list of members with their names, email addresses, and roles. The members are sorted by Name, ascending.

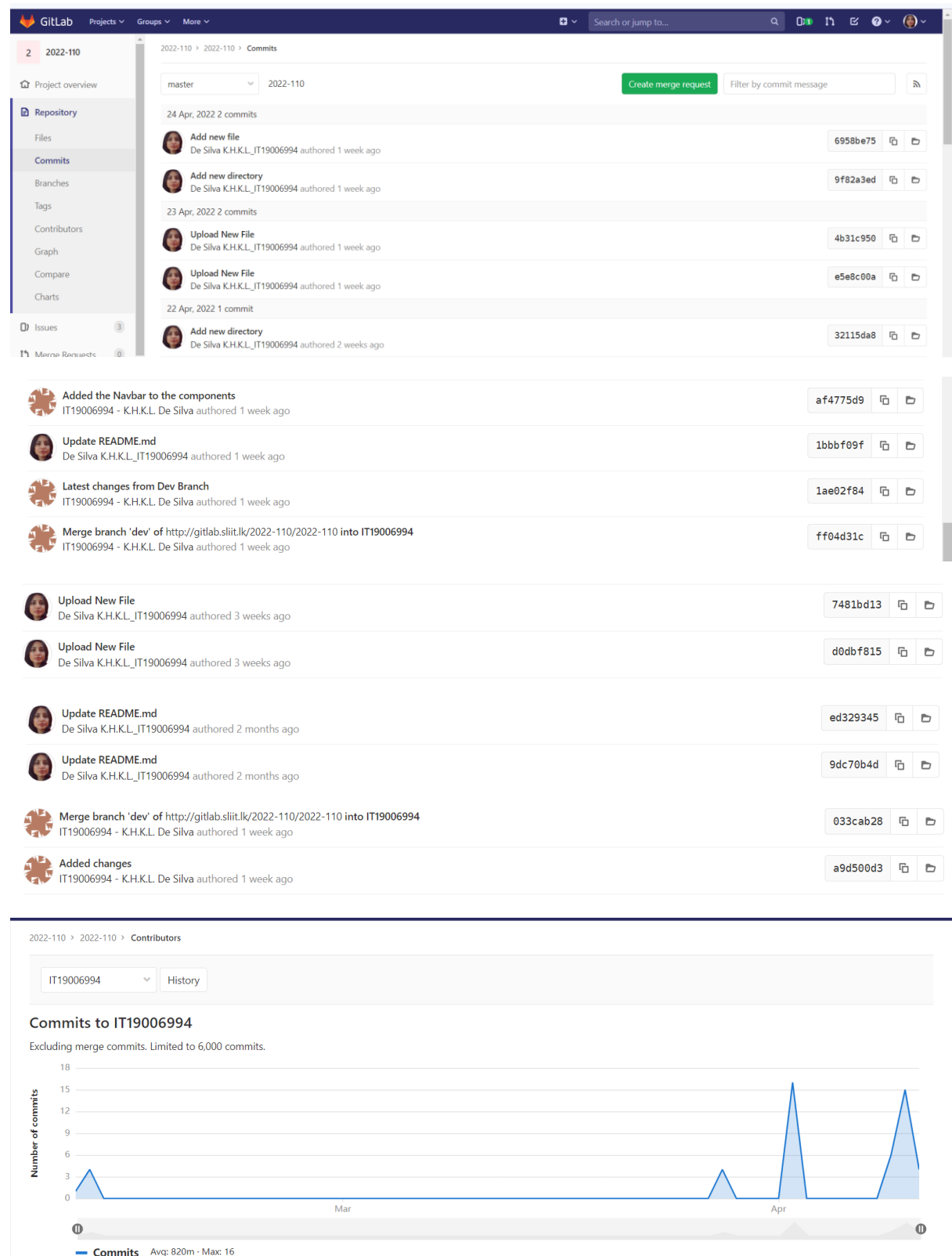
Name	Email	Role
Chathuranga.S.J	@IT19043388_Chathuranga_S_J - 2022-110	Owner
De Silva K.H.K.L.	@DesilvaK.H.K.L.IT19006994	Owner
Jeevaka Perera	@jeevaka.p - 2022-110	Owner
Lanisha Ruggahakotuwa	@Lanisha94 - 2022-110	Developer
Lekamalage U.L.V.M.	@IT19111766_Lekamalage_U_L_V_M - 2022-110	Owner
RP Team	@RPTeam - 2022-110	Reporter
Wickramaratna W.G.M.S.	@WickramaratnaW.G.M.S.IT19004778 - 2022-110	Owner

5.3 README file with Project Details

Backend	blockchain component added	4 days ago
mobile-app	initialize mobile app project	1 week ago
webapp	blockchain component added	4 days ago
README.md	Update README.md	1 week ago

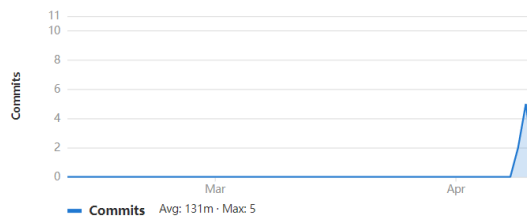
README.md
<h3>2022-110</h3> <hr/> <h2>Distributed Health Care Framework for Patient Health Record Management and Pharmaceutical Diagnosis.</h2> <hr/> <h3>Main Objective</h3> <hr/> <p>Solving healthcare issues during COVID-19 by providing a healthcare framework for automatically storing patients' records protecting users' privacy while providing healthcare services like a virtual assistant for pharmaceutical diagnosis for people staying at home conducting social distancing.</p> <h3>Main Research Questions</h3> <hr/> <p>No Healthcare institution in Sri Lanka has a registered population, and the patient's medical records are kept by the health service or doctor who is treating the patient for a specific disease, as it is in most care settings. As a result, many caregivers are unable to communicate effectively, resulting in poor care coordination. Many research institutes are working on finding solutions for healthcare issues that occur during a pandemic and EHR (Electronic Health Record) systems are becoming more popular. Accessing scattered patient data across several EHRs, however, remains a challenge. In most countries, it is very difficult for individuals to access electronic health records since most of the medical documents such as lab test reports, prescriptions from hospitals are in printed format and it's time-consuming and error-prone when manually entering data and converting them to EHR. Therefore, the practical approach to extracting structured data from printed medical records remains a challenge. Not only that the third most common cause of death is not the disease, but medical error therefore, there should be a solution for the patient to get all the information about the tablets, their usage, side effects, etc. while staying at home. The Healthcare domain is in a need of a conversational agent to give reminders to take medication on time. No such distributed health care service providing framework has yet been implemented to provide healthcare solutions during the COVID-19 while securely storing patient data across several EHRs.</p> <h3>Individual Research question</h3> <hr/> <p>IT19004778: EHR (Electronic Health Record) systems are becoming more popular to share patient details between hospitals but accessing scattered data across several EHRs while safeguarding patient privacy remains a challenge</p> <p>IT19006994: Most of these medical records and documents are in printed format and manually entering those into EHR systems is time-consuming and error-prone.</p> <p>IT19111766: Pharmaceutical error is a critical healthcare problem, but it is even riskier to visit doctors for pharmaceutical diagnosis during a pandemic.</p> <p>IT19043388: The Healthcare domain is in a need of a conversational agent to give reminders to take medication on time.</p> <h3>Individual Objectives</h3> <hr/> <p>IT19004778: To protect patients' data privacy while tracking/sharing healthcare records with healthcare professionals.</p> <p>IT19006994: To scan and extract relevant data from Patient Medical Documents using Deep Learning while preventing human errors that cause when manually entering data.</p> <p>IT19111766: To identify Drugs using Image Processing and extracting pharmaceutical data such as its side effects, dosage, etc.</p> <p>IT19043388: The Healthcare domain is in a need of a conversational agent to give reminders to take medication on time and give appropriate responses according to prescription.</p>

5.4 Git Commits



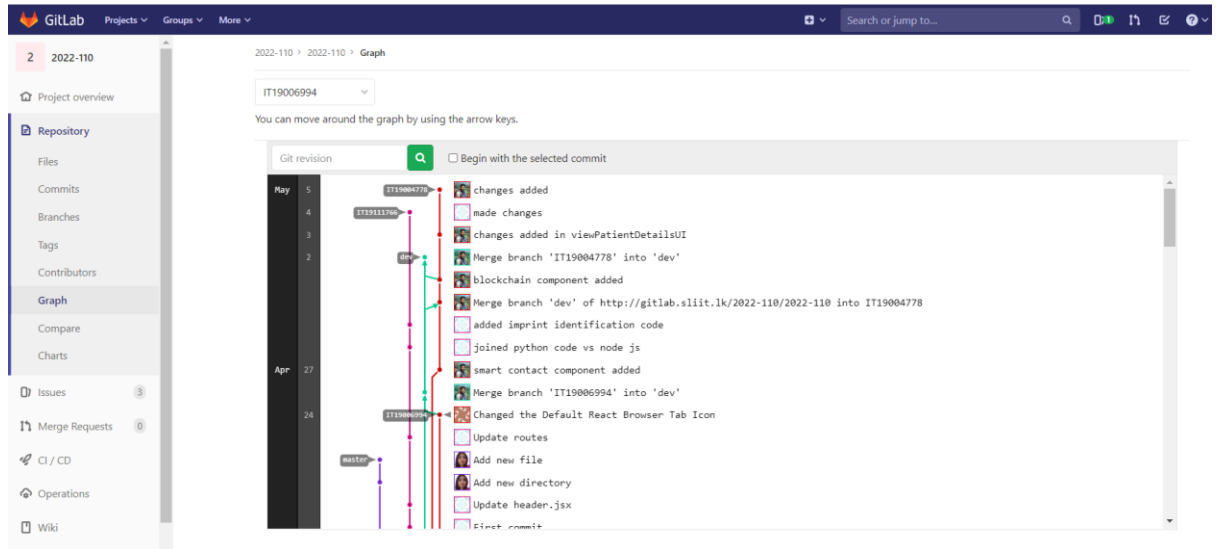
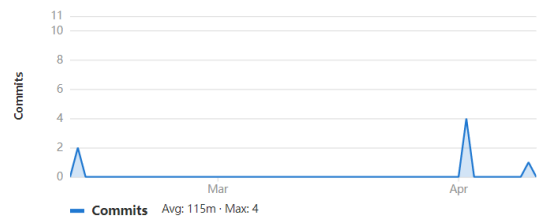
IT19006994 - K.H.K.L. De Silva

8 commits (87925569+it19006994@users.noreply.github.com)

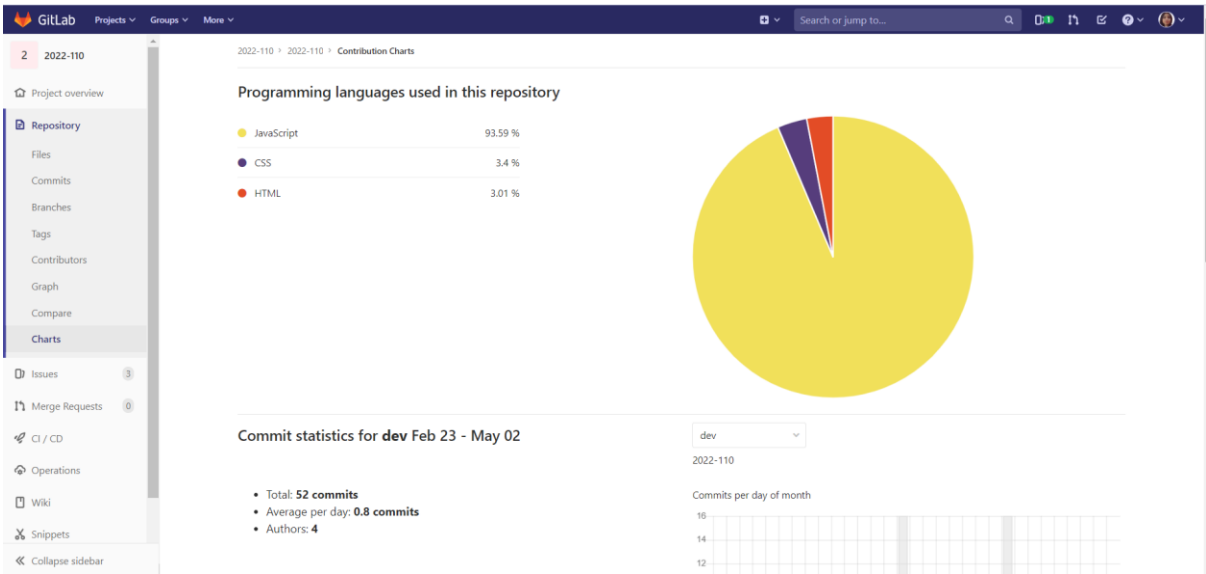


De Silva K.H.K.L._IT19006994

7 commits (it19006994@my.sliit.lk)



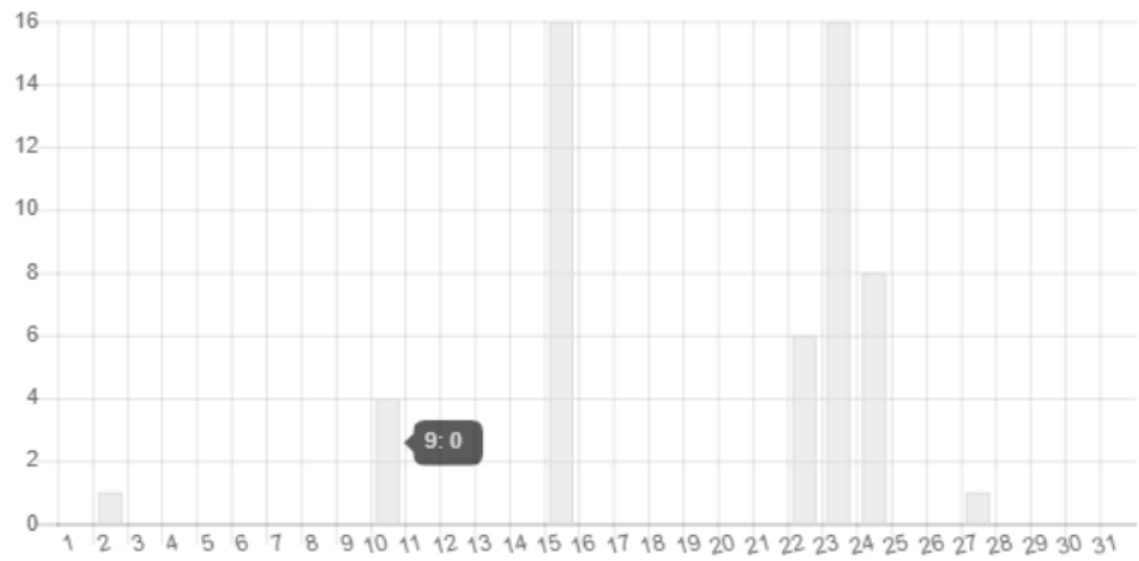
5.5 Git Charts



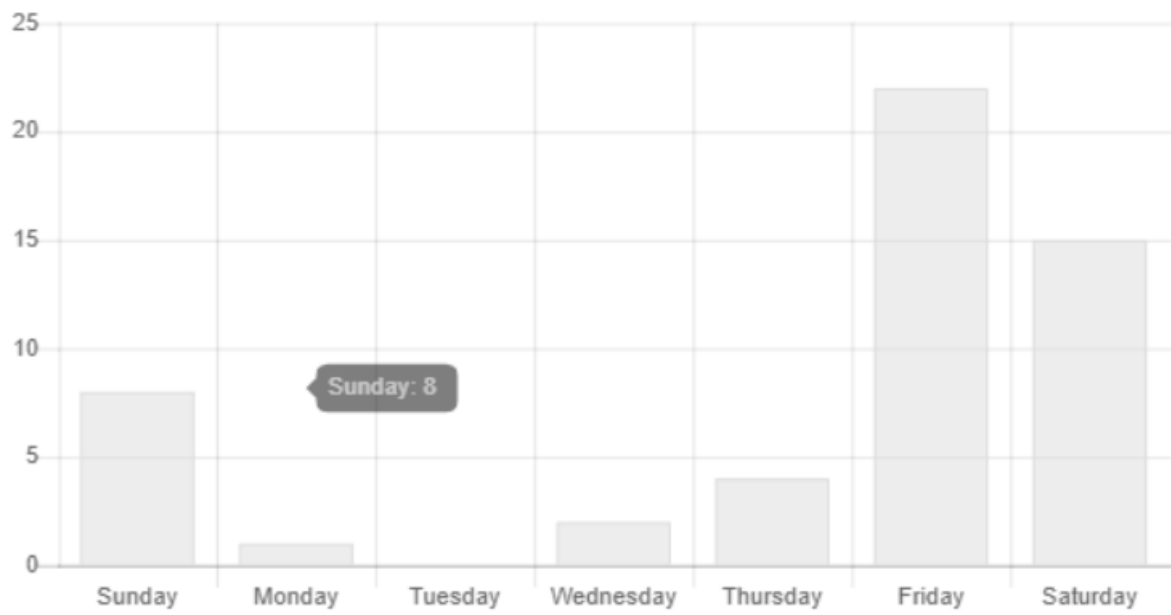
dev

2022-110

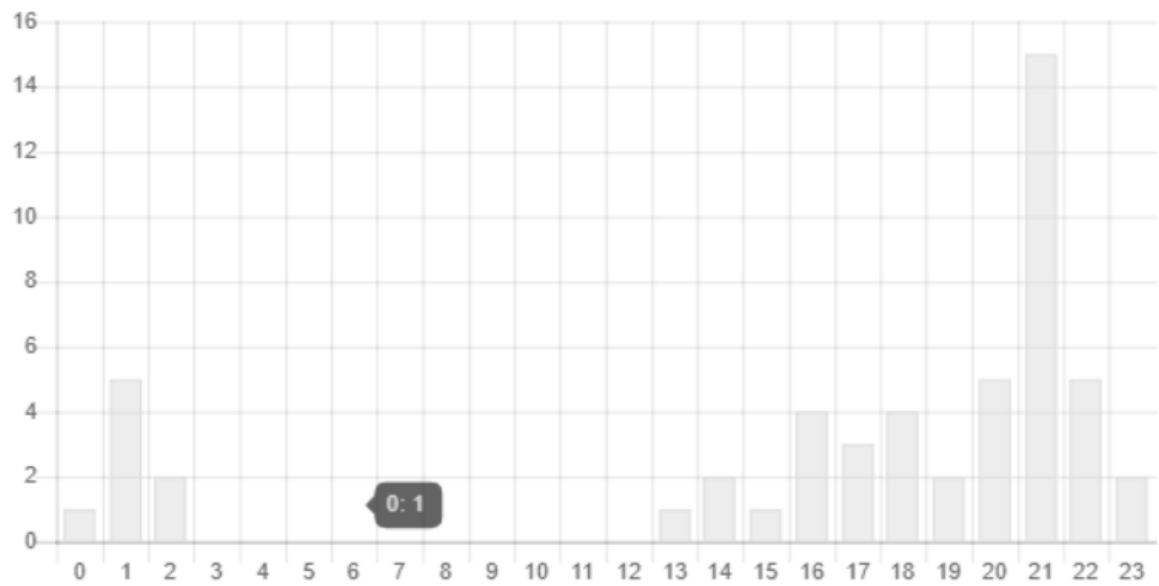
Commits per day of month



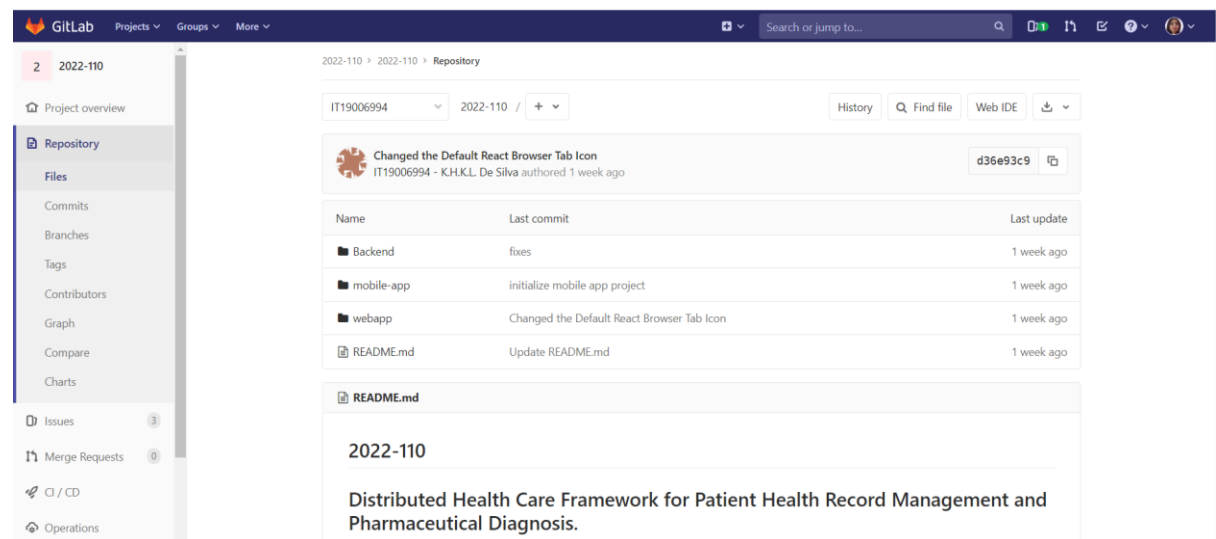
Commits per weekday



Commits per day hour (UTC)



5.6 Folder Structure

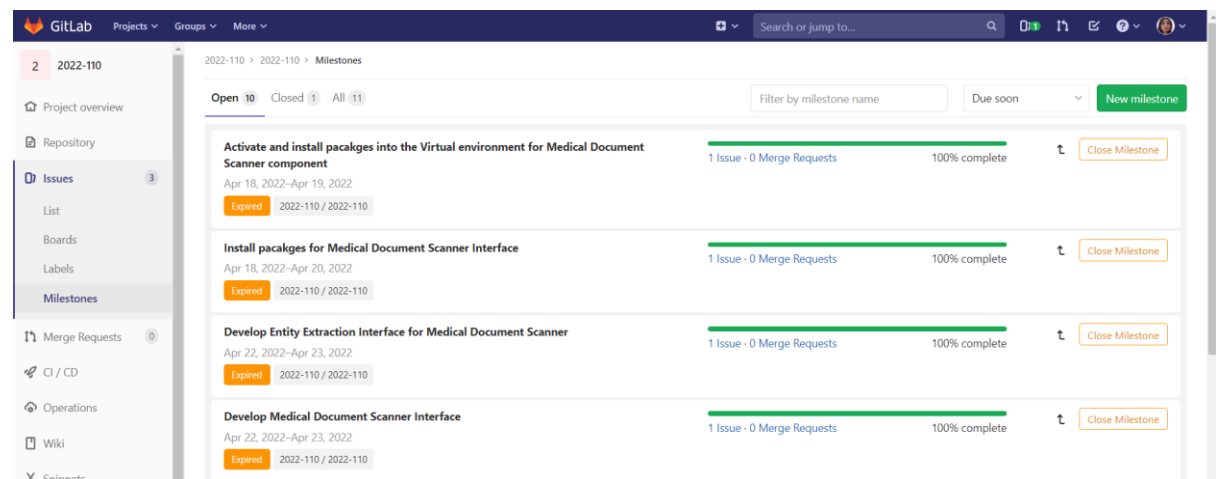


The screenshot shows the GitLab repository page for the project 2022-110. The left sidebar contains navigation links: Project overview, Repository, Files, Commits, Branches, Tags, Contributors, Graph, Compare, Charts, Issues (3), Merge Requests (0), CI / CD, and Operations. The main content area displays the repository details for IT19006994. A commit titled "Changed the Default React Browser Tab Icon" by K.H.K.L. De Silva is shown. Below the commit, a table lists the files in the repository:

Name	Last commit	Last update
Backend	fixes	1 week ago
mobile-app	initialize mobile app project	1 week ago
webapp	Changed the Default React Browser Tab Icon	1 week ago
README.md	Update README.md	1 week ago

Below the table, the README.md file is displayed, showing the project title: "Distributed Health Care Framework for Patient Health Record Management and Pharmaceutical Diagnosis."

5.7 Milestones



The screenshot shows the GitLab Milestones page for the project 2022-110. The left sidebar contains navigation links: Project overview, Repository, Issues (3), List, Boards, Labels, Milestones, Merge Requests (0), CI / CD, Operations, Wiki, and Snippets. The main content area displays the milestones for the project. The milestones are listed as follows:

Milestone Name	Open	Closed	All	Filter by milestone name	Due soon	New milestone
Activate and install packages into the Virtual environment for Medical Document Scanner component	1 Issue - 0 Merge Requests	100% complete	Close Milestone			
Install packages for Medical Document Scanner Interface	1 Issue - 0 Merge Requests	100% complete	Close Milestone			
Develop Entity Extraction Interface for Medical Document Scanner	1 Issue - 0 Merge Requests	100% complete	Close Milestone			
Develop Medical Document Scanner Interface	1 Issue - 0 Merge Requests	100% complete	Close Milestone			

6. Task Output / Progress – 50%

- Install required software
- Data set gathering
- Load Medical Documents using OpenCV

original

CONFIDENTIAL LABORATORY REPORT
Member of Clinical and Laboratory Standards Institute, U.S.A.

ASIRI LABORATORIES
A Southcoast Clinical Company

REFERENCE No. : 30 0037 11/08/19
SAMPLE DATE & TIME : 11/08/2019 08:45
REPORT DATE & TIME : 11/08/2019 10:51
PATIENT : MRS. KITHIRINI
REFERRED BY :
TEST/PROFILE : COMPLETE BLOOD COUNT

AGE : 21 Y
AHH7805 / AHH2008865

TEST RESULT FLAG REFERENCE VALUE

TOTAL WHITE CELL COUNT 5.9 10⁹/L 4.0 - 11.0

DIFFERENTIAL COUNT

NEUTROPHILS 37.5 % 2.2 L 40%-85% (2.0-7.0)
LYMPHOCYTES 50.0 % 3.0 H 20%-40% (1.0-3.0)
MONOCYTES 5.9 % 0.4 0%-10% (0.2-1.0)
EOSINOPHILS 6.4 % 0.4 H 0%-06% (0.02-0.5)
BASOPHILS 0.2 % 0.0 <0.1%-02% (0.02-0.1)

HAEMOGLOBIN AND RBC PARAMETERS

HAEMOGLOBIN 12.2 g/dL 13.0 - 14.0
RED BLOOD CELLS 4.20 10¹²/L 3.8 - 4.8
MEAN CELL VOLUME 84.3 fL 76.0 - 96.0
REDUCED CELL HAEMOGLOBIN 29.4 L/L (%) 26.0 - 44.0
M.C.H. CONCENTRATION 29.0 pg 27.0 - 33.0
RED CELLS DISTRIBUTION WIDTH 19.3 % 12.0 - 15.0
PLATELET COUNT 250 10⁹/L 150 - 400

Page 1 of 1

- Extract Text from Image using Pytesseract

jupyter DocumentScanner Last Checkpoint: 04/18/2022 (autosaved)

File Edit View Insert Cell Kernel Widgets Help

Trusted Python 3 (ipykernel)

Run Code

Extract Text from Image

```
In [6]: text_cv = pytesseract.image_to_string(img_cv)
```

```
In [7]: print(text_cv)
```

CLINICAL CHEMISTRY

OPD/PELAWATTE

30 0039 11/08/19
AGE : 48 Y

11/08/2019 08:45
11/08/2019 11:37 ahh6570 / AHH2008865

REFERENCE No.
SAMPLE DATE & TIME
REPORT DATE & TIME

PATIENT MRS. JANAKI
REFERRED BY
TEST/PROFILE ; LIPID PROFILE

- Convert Image to Text to Data frames

Out[12]:

	level	page_num	block_num	par_num	line_num	word_num	left	top	width	height	conf	text
0	1	1	0	0	0	0	0	0	1082	1600	-1	
1	2	1	1	0	0	0	45	40	139	17	-1	
2	3	1	1	1	0	0	45	40	139	17	-1	
3	4	1	1	1	1	0	45	40	139	17	-1	
4	5	1	1	1	1	1	45	40	139	17	38	Wwwasirihealth.com
5	2	1	2	0	0	0	687	103	40	51	-1	
6	3	1	2	1	0	0	687	103	40	51	-1	
7	4	1	2	1	1	0	687	103	40	24	-1	
8	5	1	2	1	1	1	687	103	40	24	95	
9	4	1	2	1	2	0	697	127	16	27	-1	

- Draw Bounding Box around each word
- Extract Text and Data from Medical Documents
- Save Data in CSV
- Labelling data manually using BIO Tagging

AutoSave Off		MedicalDocuments.csv					
File		Home Insert Page Layout Formulas Data Review View					
Cut Copy Paste Format Painter		Calibri 11 A [^] A ^v B I U Font Color Background Color					
Clipboard		Font					
POSSIBLE DATA LOSS		Some features might be lost if you save this workbook in the cloud					
	A	B	C	D	E	F	G
637	103.jpeg	26/10/202	O				
638	103.jpeg	:	O				
639	103.jpeg	Gut	O				
640	103.jpeg	ods)	O				
641	103.jpeg	+	O				
642	103.jpeg	aul	O				
643	103.jpeg	26/10/202	B-DATE				
644	103.jpeg	:	O				
645	103.jpeg	a	O				
646	103.jpeg	que	O				
647	103.jpeg	2	O				
648	103.jpeg	SM	O				
649	103.jpeg	26	B-AGE				
650	103.jpeg	Y	I-AGE				
651	103.jpeg	:	O				
652	103.jpeg	Chemistry	B-TEST				
653	103.jpeg	Unit	I-TEST				
654	103.jpeg	Ref.	O				
655	103.jpeg	Range	O				
656	103.jpeg	Glycated	B-RESULT				
657	103.jpeg	Haemoglo	I-RESULT				
658	103.jpeg	(HbA1c)	I-RESULT				
659	103.jpeg	5.4	I-RESULT				
660	103.jpeg	%	I-RESULT				
661	103.jpeg	4.5	O				
662	103.jpeg	-5.7	O				
663	103.jpeg	Normal	O				
664	103.jpeg	Range	O				
665	103.jpeg	5.8	O				
666	103.jpeg	-	O				

- Train Spacy Model using Training Data
- Cleaning Text by removing white spaces and unwanted special characters
- Convert Data into Spacy format
- Train Named Entity Recognition Model
- Develop Named Entity Recognition Pipeline

predictions

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****AUTOMATED COUNT****

**** OPD/PELAWATTE ****

REFERENCE NO. : 30 0037 11/08/19
SAMPLE DATE & TIME : 11/08/2019 08:41
REPORT DATE & TIME : 11/08/2019 09:51
PATIENT : MS KITHMINI
REFERRER BY :
TEST/PROFILE : COMPLETE BLOOD COUNT

AGE : 21

AAH7805 / AAH200865

TEST	RESULT	FLAG	REFERENCE VALUE
DIFFERENTIAL COUNT			
TOTAL WHITE CELL COUNT	5.9	10 ⁹ /L	4.0 - 11.0
DIFFERENTIAL COUNT			
NEUTROPHILS	37.5	%	40%-80% (2.0-7.0)
LYMPHOCYTES	50.0	%	20%-40% (1.0-3.0)
MONOCYTES	5.9	%	02%-10% (0.2-1.0)
EOSINOPHILS	6.4	%	01%-06% (0.02-0.5)
BASOPHILS	0.2	%	<0.1%-02% (0.02-0.1)
HAEMOGLOBIN AND RBC PARAMETERS			
HAEMOGLOBIN	12.2	g/dL	11.0 - 14.0
RED BLOOD CELLS	4.20	10 ¹² /L	3.8 - 4.8
MEAN CELL VOLUME	84.3	fL	76.0 - 96.0
HAEMATOCRIT	35.4	L/L(%)	36.0 - 44.0
MEAN CELL HAEMOGLOBIN	29.0	pg	27.0 - 33.0
M.C.H. CONCENTRATION	34.5	g/dL	32.0 - 36.0
RED CELLS DISTRIBUTION WIDTH	13.3	%	12.0 - 15.0
PLATELET COUNT	250	10 ⁹ /L	150 - 400

Page 1 of 1

jupyter Final_predictions Last Checkpoint: 05/05/2022 (unsaved changes)

File Edit View Insert Cell Kernel Widgets Help Trusted Python 3 (ipykernel)

```
In [1]: import cv2
import Predictions as pred

In [2]: img = cv2.imread('./data/17.jpeg')


cv2.namedWindow('original',cv2.WINDOW_NORMAL)
cv2.imshow('original',img)
cv2.waitKey(0)
cv2.destroyAllWindows()


In [3]: img_results, entities = pred.getPredictions(img)


print(entities)
cv2.namedWindow('predictions',cv2.WINDOW_NORMAL)
cv2.imshow('predictions',img_results)
cv2.waitKey(0)
cv2.destroyAllWindows()

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181 kirula road narahenpita colombo 05 t. 94 11 452 33557 f. 94 11 452 335866 e. prtbasasiri tk automated count oppdelawatte 30 0
037 110819 11082019 0841 age 21 y 11082019 1051 ahh7805 ahh2006865 ms. kithmini reference no. sample date time report date time
patient referred by testprofile complete blood count a test result flag reference value total white cell count 5.9 109/L 4.0 1
1.0 differential count neutrophils 37.5 2.2 4080 2.07.0 lymphocytes 50.0 3.0 2040 1.03.0 monocytes 5.9 0.4 02810 0.21.0 eosinop
hils 6.4 0.4 h 0106 0.020.5 basophils 0.2 0.0 0.18028 0.020.1 haemoglobin and rbc parameters haemoglobin 12.2 gdl 11.8 14.8 red
blood cells 4.20 107121 3.8 4.8 mean cell volume 84.3 fl 76.0 96.0 haematocrit 35.4 118 l 36.0 44.0 mean cell haemoglobin 29.0
pg 27.0 33.0 m.c.h. concentration 34.5 gdl 32.0 36.0 red cells distribution width 13.3 12.0 15.0 platelet count 250 1091 150 40
0 page 1 of 1
{'AGE': ['21y'], 'DATE': ['11082019'], 'PATIENTNAME': ['Ms Kithmini'], 'TEST': ['Complete Blood Count'], 'RESULT': ['Total Whit
e Cell Count 5.9 10', 'Neutrophils 37.5', 'Lymphocytes 50.0 3.0', 'Monocytes 5.9', 'Eosinophils 6.4 0.4', 'Basophils 0.2 0.0',
'Parameters Haemoglobin 12.2 Gdl', 'Red Blood Cells', 'Mean Cell Volume 84.3 Fl', 'Haematocrit', 'Mean Cell Haemoglobin 29.0 P
g', 'Concentration 34.5 Gdl', 'Red Cells Distribution Width 13.3', 'Platelet Count 250'], 'COMMENTS': []}]
```

- Developed Frontend Interfaces








Scan the Medical Documents

Medical Document Scanner is a free online OCR(Optical Character Recognition) service and can analyze the text in the image you upload. The function of OCR is to help digitize documents in a timely manner and fashion. Instead of retyping files or manually typing out text within image files, you can use OCR to automatically scan and recognize text within your image or your scanned document.

Select an Image


Wrap Document and Extract Text




LABORATORY REPORT

Name: **Ana Betz** Patient ID: PAC001
Date: 2011-08-25 08:32 Age: 25y 10m 26d Sex: Female
Doctor: Cameron Cordara Test ID: B165AAF4

COMPLETE BLOOD COUNT			
Test Name	Result	Normal Range	Units
Hemoglobin	12	11.0 - 16.0	g/dL






Hemoglobin	12	11.0 - 16.0	g/dL
RBC	3.3	3.5-5.50	10 ⁶ /uL
HCT	36	37.0-50.0	%
MCV	83	82-95	f
MCH	28	27-31	pg
MCHC	33	32.0-36.0	g/dL
RDW-CV	12	11.5-14.5	%
RDW-SD	44	35-56	f
WBC	6.7	4.5-11	10 ³ /uL
NEU%	60	40-70	%
LYM%	30	20-45	%
MON%	8	2-10	%
EOS%	2	1-6	%
BAS%	0	0-2	%
LYM#	2	1.5-4.0	10 ³ /uL
GRA#	4.7	2.0-7.5	10 ³ /uL
PLT	256	150-450	10 ³ /uL
ESR	2	Up to 15	mm/hr


Digitally signed by
Dr. Cameron Cordara
GNU Public Key : 644311F4
Test id : B165AAF4

1
Choose File
Choose an Image file from the device

2
Upload Image
Upload the selected Image for scanning

3
Wrap Document and Extract Text
Click on wrap document button to extract text





BAS%	0	0-2	%	BAS%	0	0-2	%
LYM#	2	1.5-4.0	10 ³ /uL	LYM#	2	1.5-4.0	10 ³ /uL
GRA#	4.7	2.0-7.5	10 ³ /uL	GRA#	4.7	2.0-7.5	10 ³ /uL
PLT	256	150-450	10 ³ /uL	PLT	256	150-450	10 ³ /uL
ESR	2	Up to 15	mm/hr	ESR	2	Up to 15	mm/hr

Digitally signed by
Dr. Cameron Cordara
 GNU Public Key : E44311F4
 Test id : B165AAAF4

Digitally signed by
Dr. Cameron Cordara
 GNU Public Key : E44311F4
 Test id : B165AAAF4

	Entities	Extracted Text
<input type="checkbox"/>	Patient Name	
<input type="checkbox"/>	Test/Profile	
<input type="checkbox"/>	Age	
<input type="checkbox"/>	Report Date & Time	
<input type="checkbox"/>	Reference No.	
<input type="checkbox"/>	Test	
<input type="checkbox"/>	Test	

Save Details