Interactive, visual learning-based tool for hearing impaired children to improve language skills

2021 - 042

Status Document - 2

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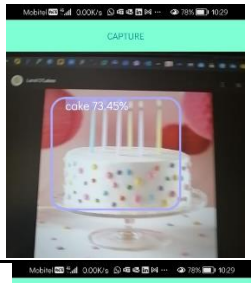
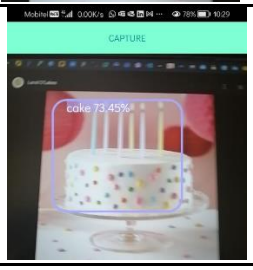
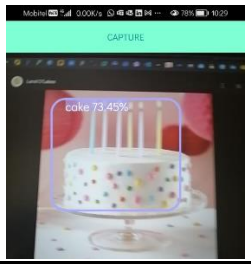
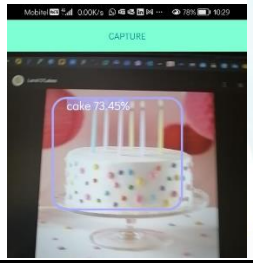
01. Test Results

Test Case Id	01
Test Case	Verify objects detected in the mobile app
Test Scenario	Verify the realtime objects show in camera show actual object names.
Input	Camera feed
Expected Output	
Actual Result	
Status (Pass/Fail)	Pass

Test Case Id	02
Test Case	Directing to relevant game after capturing the object
Test Scenario	Capture an object from the environment The relevant gaming environment should be loaded.
Input	Capture a cake image from the camera
Expected Output	

	
Actual Result	
Status (Pass/Fail)	Pass

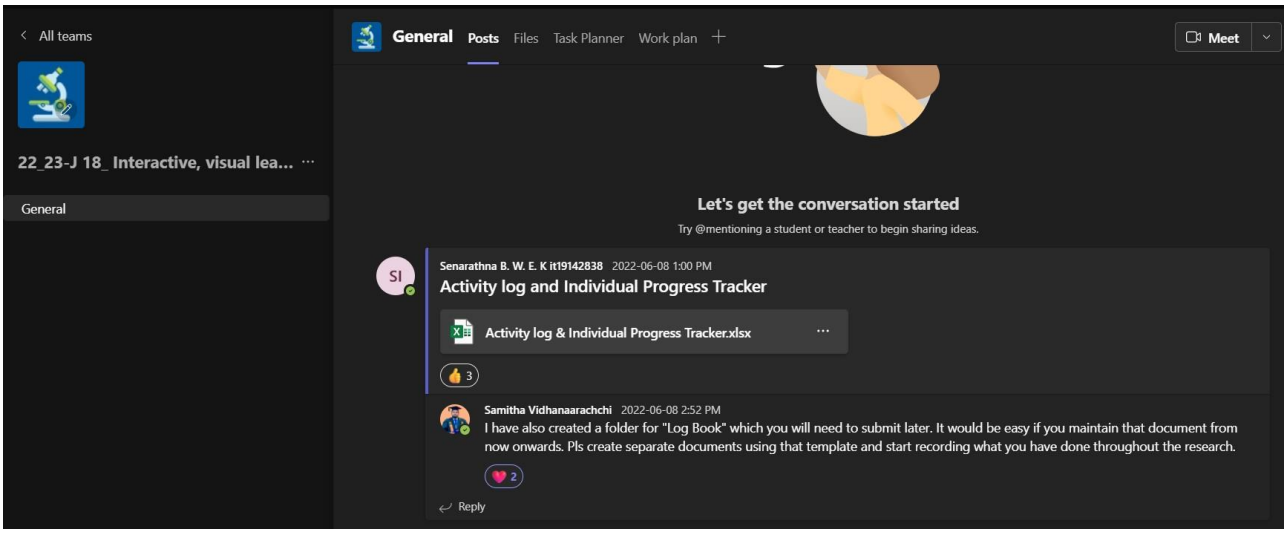
Test Case Id	03
Test Case	Checking detections from Siamese model
Test Scenario	Tested the model using
Input	

Expected Output	Classify the object as a bat
Actual Result	bat
Status (Pass/Fail)	Pass

Test Case Id	04
Test Case	Gamification testing
Test Scenario	Testing the drag and drop game with specific targets word order
Input	
Expected Output	Able to drag drop objects in specific targets with word order

Actual Result	
Status (Pass/Fail)	Pass

02. Screenshots of the chats in MS Teams

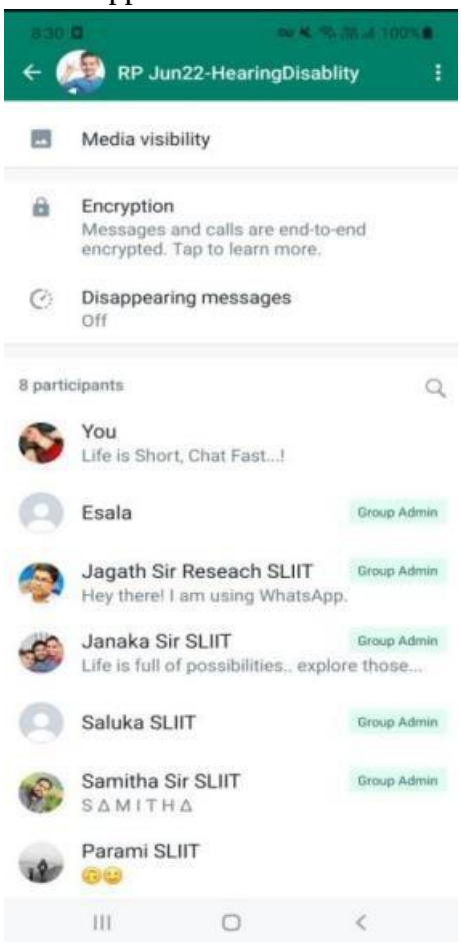


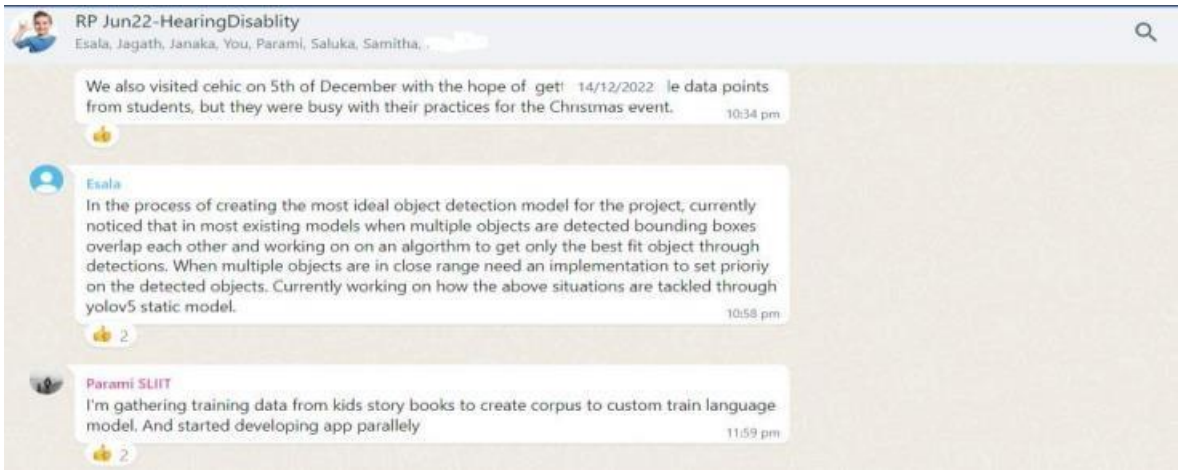
Creating the Teams group and adding individual progress tracker

Daily standup meeting to track progress

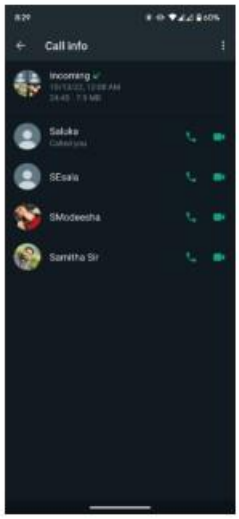
03. Screenshots from whatsapp

Whats app chat was created with including all the group members and the supervisors

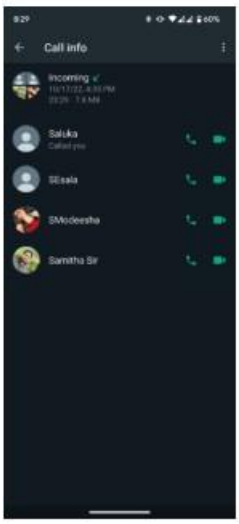



RP Jun22-HearingDisablity
Esala, Jagath, Janaka, You, Parami, Saluka, Samitha,
We also visited cehic on 5th of December with the hope of get 14/12/2022 le data points from students, but they were busy with their practices for the Christmas event.
10:34 pm
Esala
In the process of creating the most ideal object detection model for the project, currently noticed that in most existing models when multiple objects are detected bounding boxes overlap each other and working on on an algorthm to get only the best fit object through detections. When multiple objects are in close range need an implementation to set priority on the detected objects. Currently working on how the above situations are tackled through yolov5 static model.
10:58 pm
2
Parami SLIIT
I'm gathering training data from kids story books to create corpus to custom train language model. And started developing app parallely
11:59 pm
2

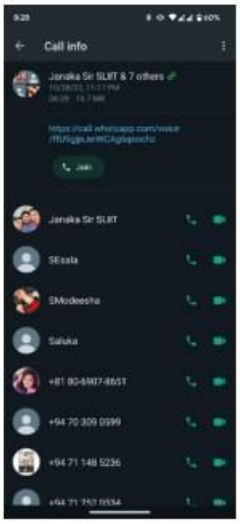
Call info
Outgoing
SEsala
SModeesha
Saluka
Samitha Sir

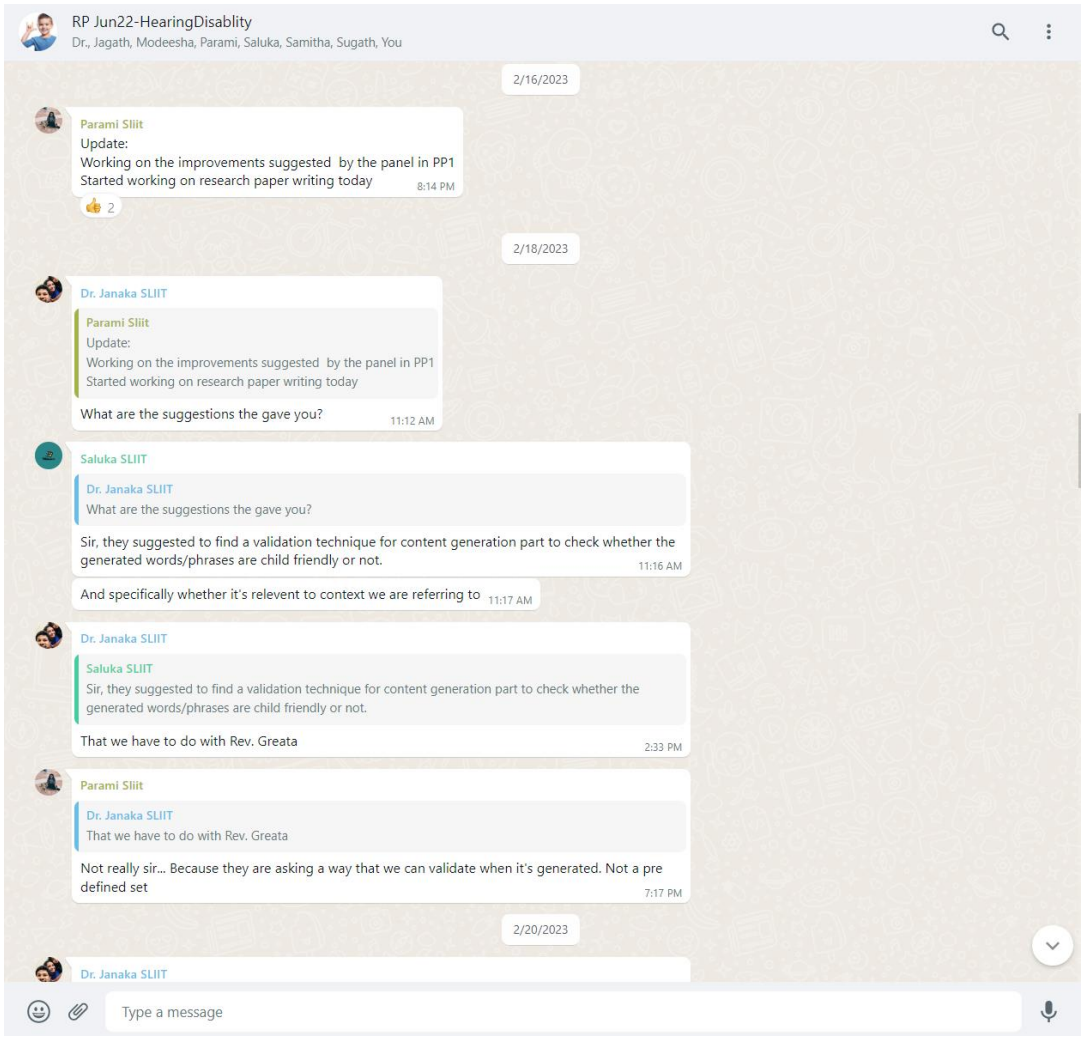

Call info
Incoming
Saluka
SEsala
SModeesha
Samitha Sir

Call info
Outgoing
SEsala
SModeesha
Saluka
Samitha Sir

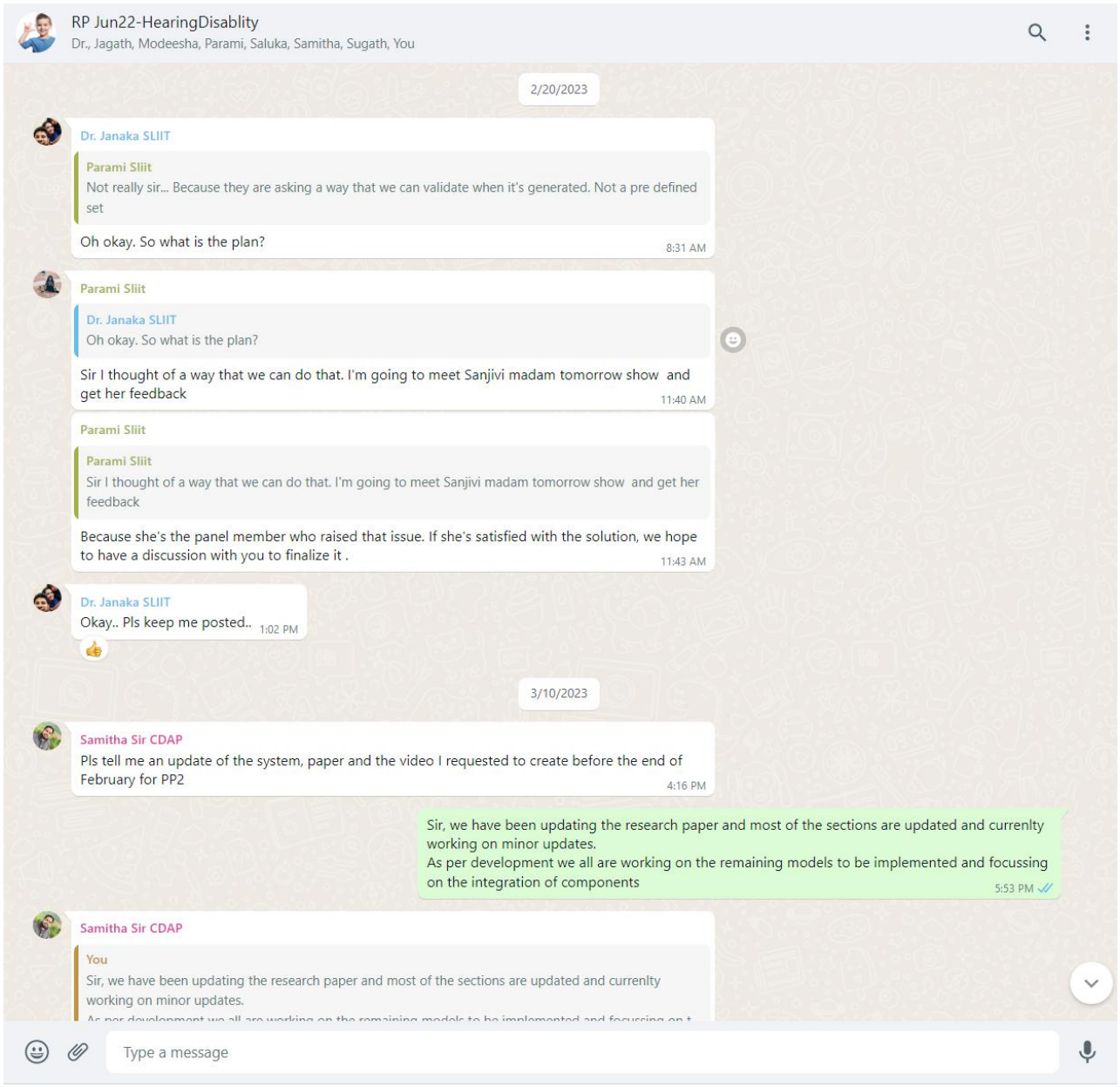

Call info
Incoming
Saluka
SEsala
SModeesha
Samitha Sir

Call info
Incoming
SEsala
SModeesha
Saluka
Samitha Sir

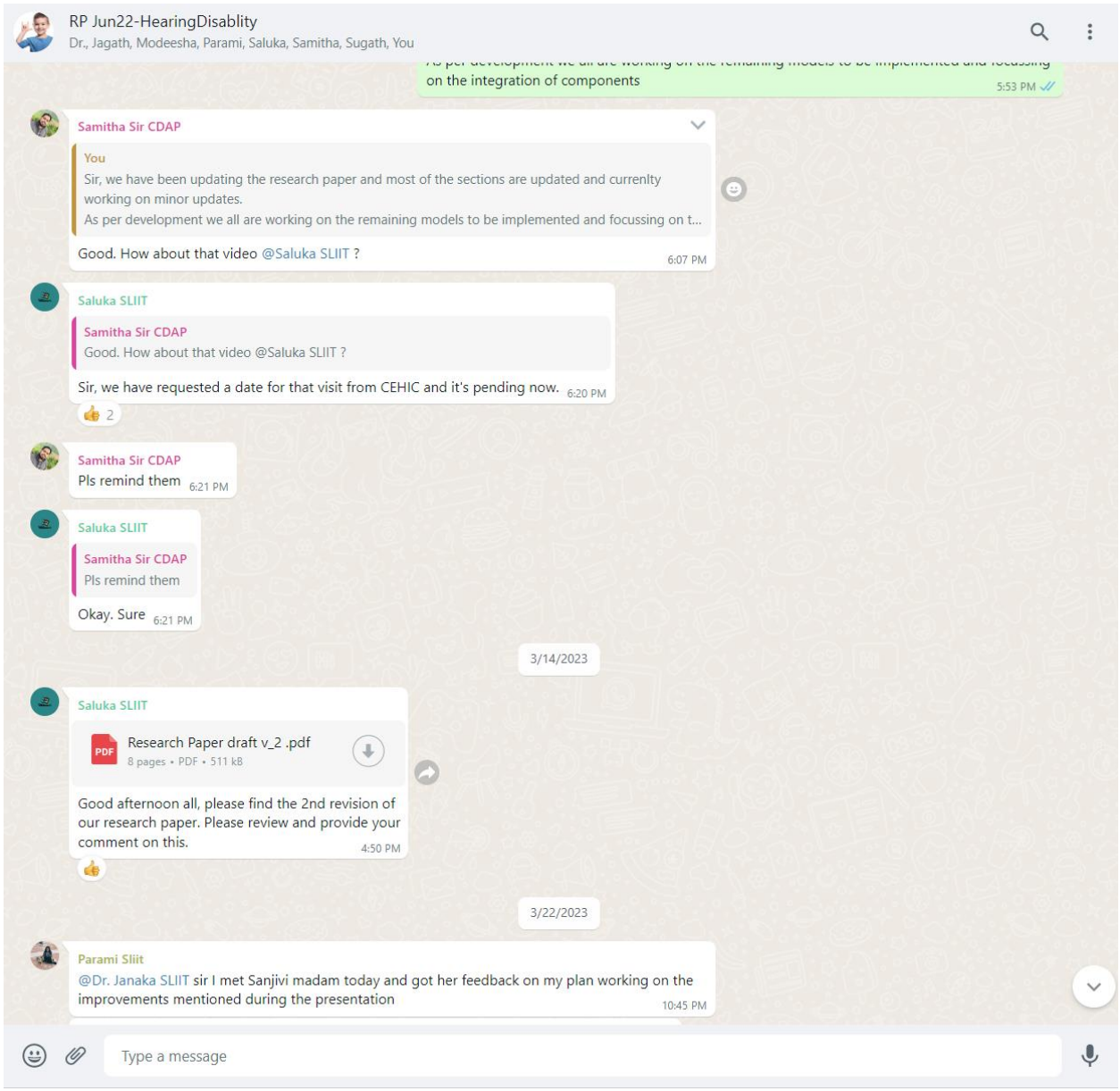

Call info
Janaka Sir SLIIT & 7 others
Join
Janaka Sir SLIIT
SEsala
SModeesha
Saluka



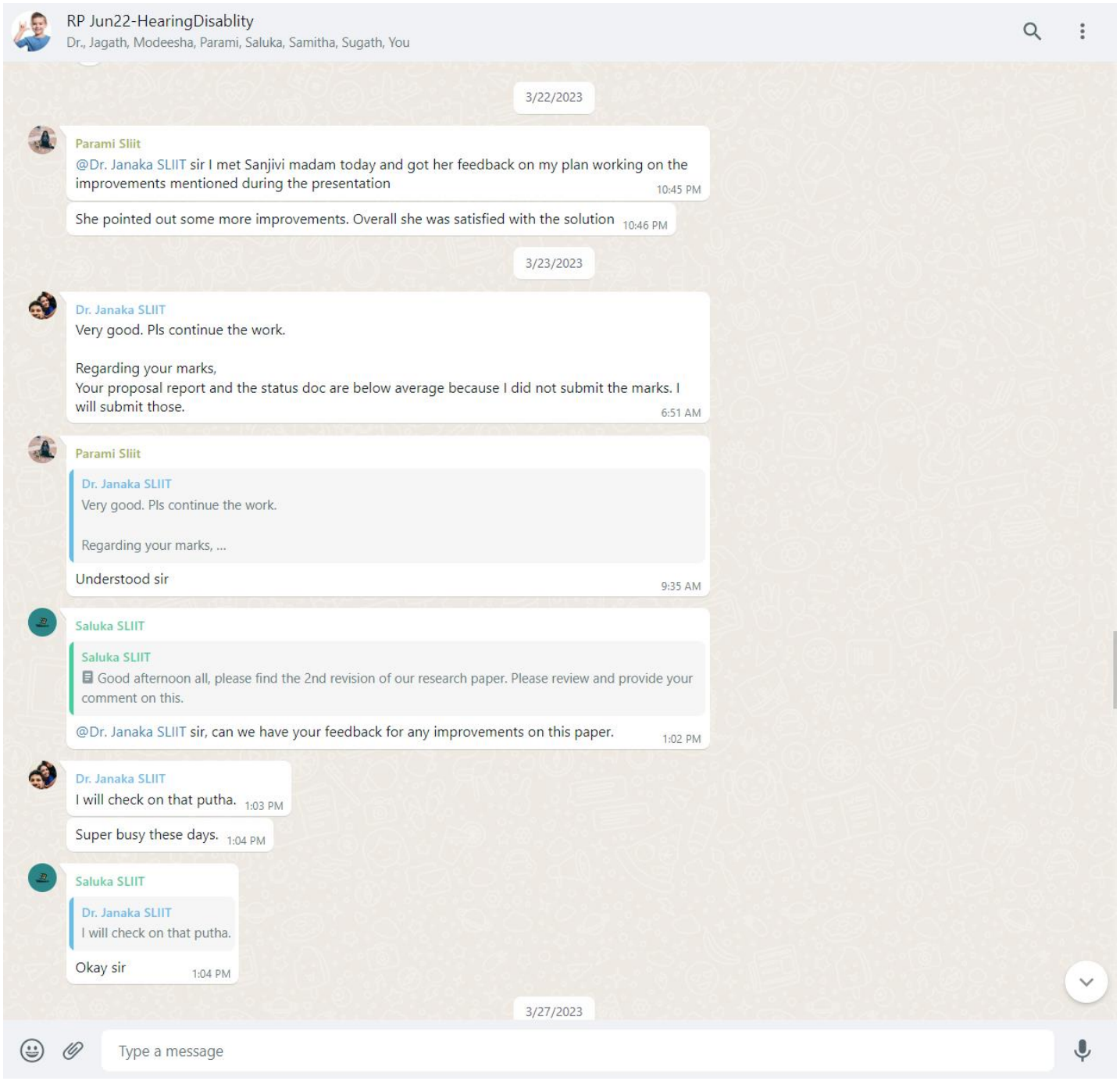
Getting feedback from supervisor after PP1

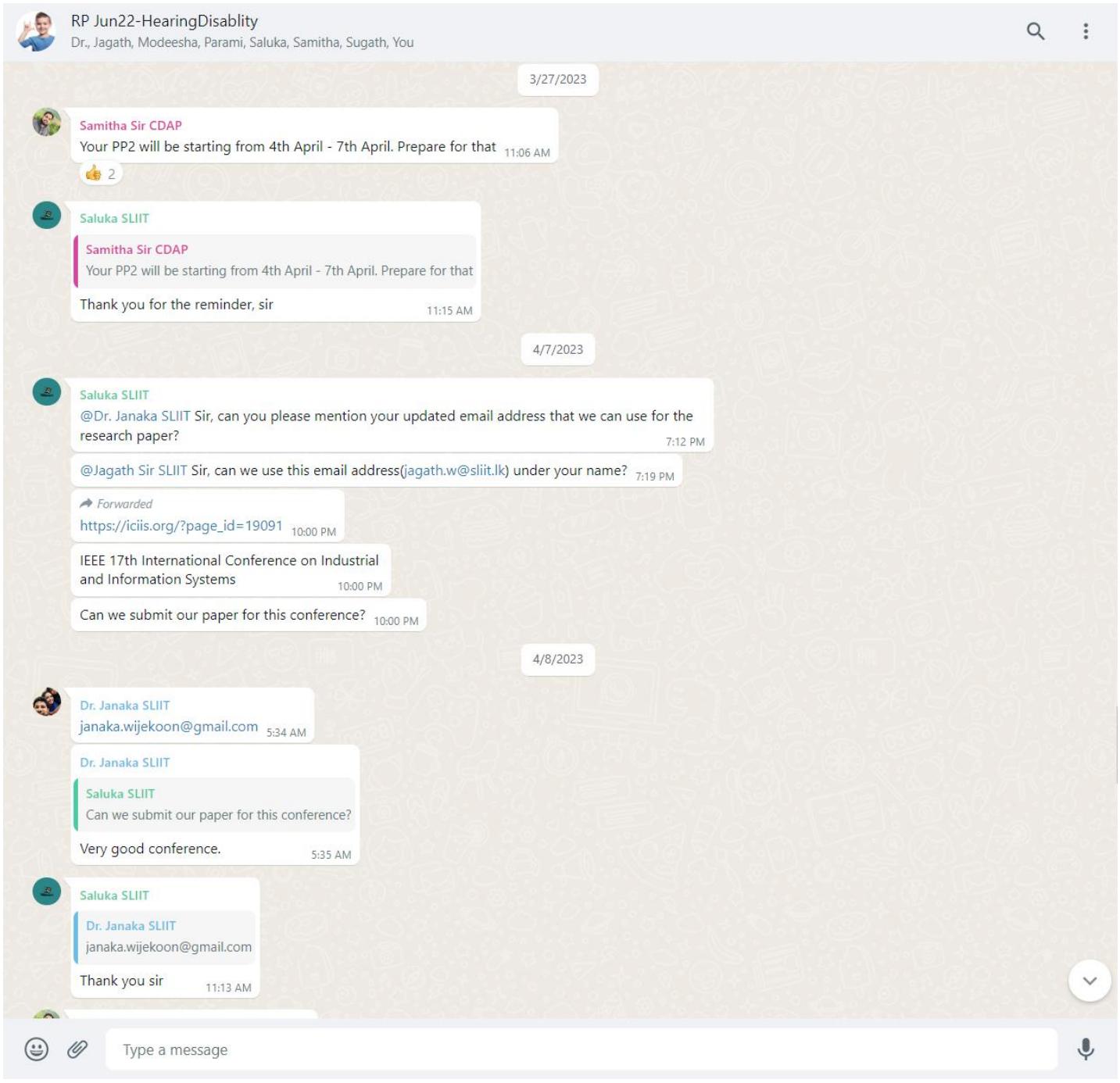


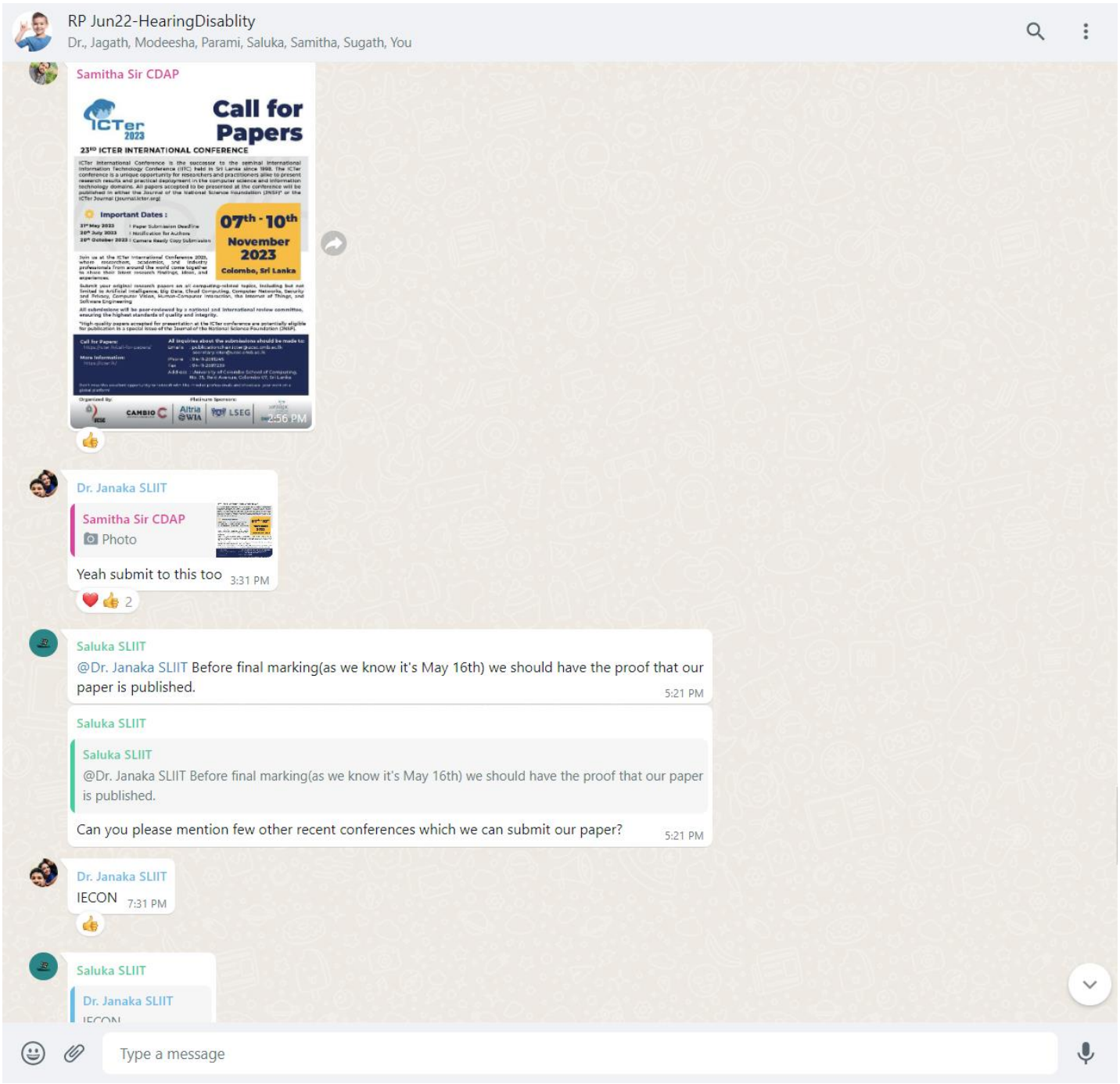
Providing updates to supervisor



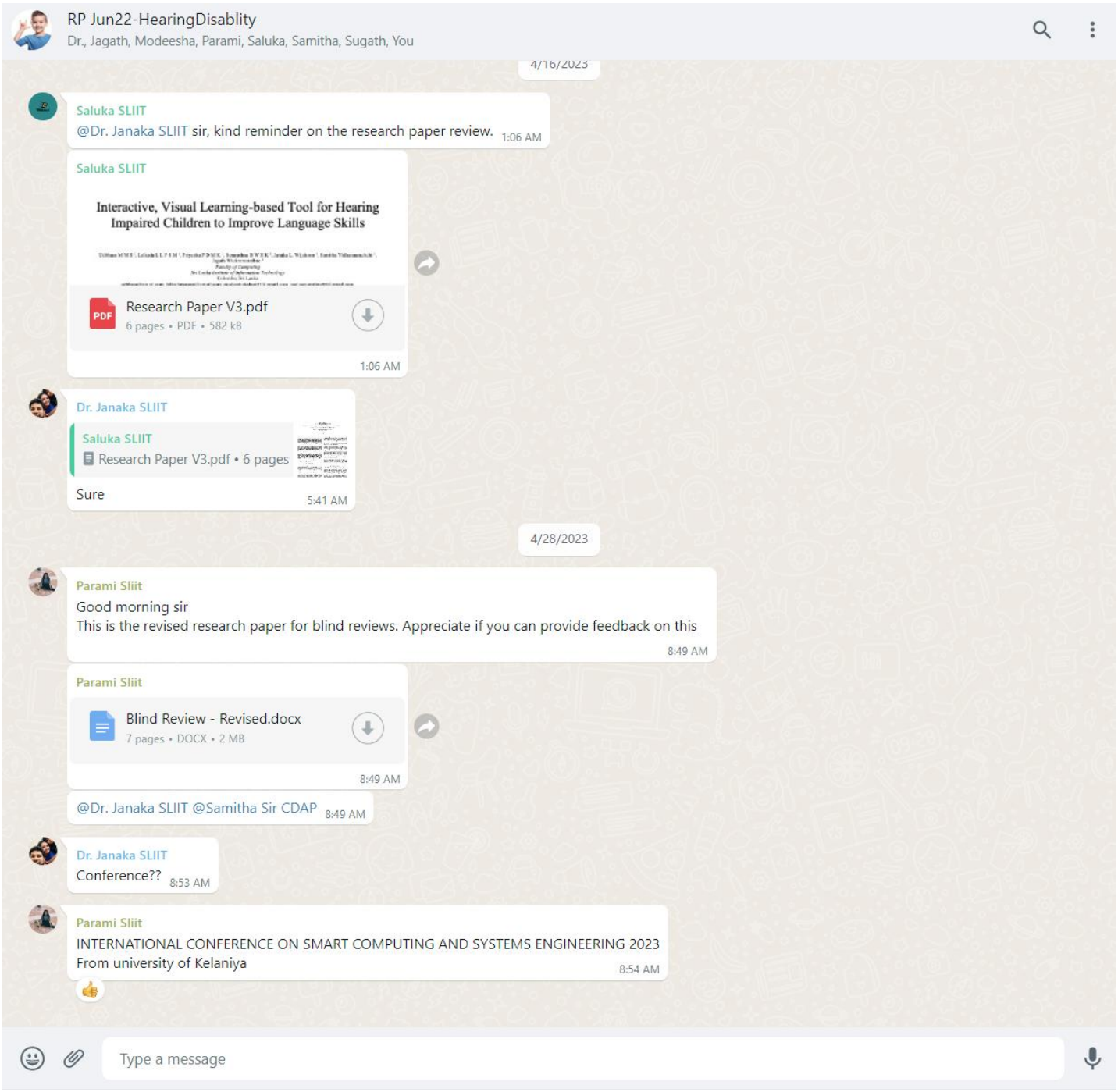
Getting the feedback from supervisor to the research paper


RP Jun22-HearingDisablity
Dr., Jagath, Modeesha, Parami, Saluka, Samitha, Sugath, You
3/22/2023
Parami Sliit
@Dr. Janaka SLIIT sir I met Sanjivi madam today and got her feedback on my plan working on the improvements mentioned during the presentation
10:45 PM
She pointed out some more improvements. Overall she was satisfied with the solution 10:46 PM
3/23/2023
Dr. Janaka SLIIT
Very good. Pls continue the work.
Regarding your marks,
Your proposal report and the status doc are below average because I did not submit the marks. I will submit those.
6:51 AM
Parami Sliit
Dr. Janaka SLIIT
Very good. Pls continue the work.
Regarding your marks, ...
Understood sir
9:35 AM
Saluka SLIIT
Saluka SLIIT
Good afternoon all, please find the 2nd revision of our research paper. Please review and provide your comment on this.
@Dr. Janaka SLIIT sir, can we have your feedback for any improvements on this paper.
1:02 PM
Dr. Janaka SLIIT
I will check on that putha. 1:03 PM
Super busy these days. 1:04 PM
Saluka SLIIT
Dr. Janaka SLIIT
I will check on that putha.
Okay sir
1:04 PM
3/27/2023
Type a message


RP Jun22-HearingDisablity
Dr., Jagath, Modeesha, Parami, Saluka, Samitha, Sugath, You
3/27/2023
Samitha Sir CDAP
Your PP2 will be starting from 4th April - 7th April. Prepare for that
11:06 AM
2
Saluka SLIIT
Samitha Sir CDAP
Your PP2 will be starting from 4th April - 7th April. Prepare for that
Thank you for the reminder, sir
11:15 AM
4/7/2023
Saluka SLIIT
@Dr. Janaka SLIIT Sir, can you please mention your updated email address that we can use for the research paper?
7:12 PM
@Jagath Sir SLIIT Sir, can we use this email address(jagath.w@sliit.lk) under your name?
7:19 PM
Forwarded
https://iciis.org/?page_id=19091
10:00 PM
IEEE 17th International Conference on Industrial and Information Systems
10:00 PM
Can we submit our paper for this conference?
10:00 PM
4/8/2023
Dr. Janaka SLIIT
janaka.wijekoon@gmail.com
5:34 AM
Dr. Janaka SLIIT
Saluka SLIIT
Can we submit our paper for this conference?
Very good conference.
5:35 AM
Saluka SLIIT
Dr. Janaka SLIIT
janaka.wijekoon@gmail.com
Thank you sir
11:13 AM
Type a message

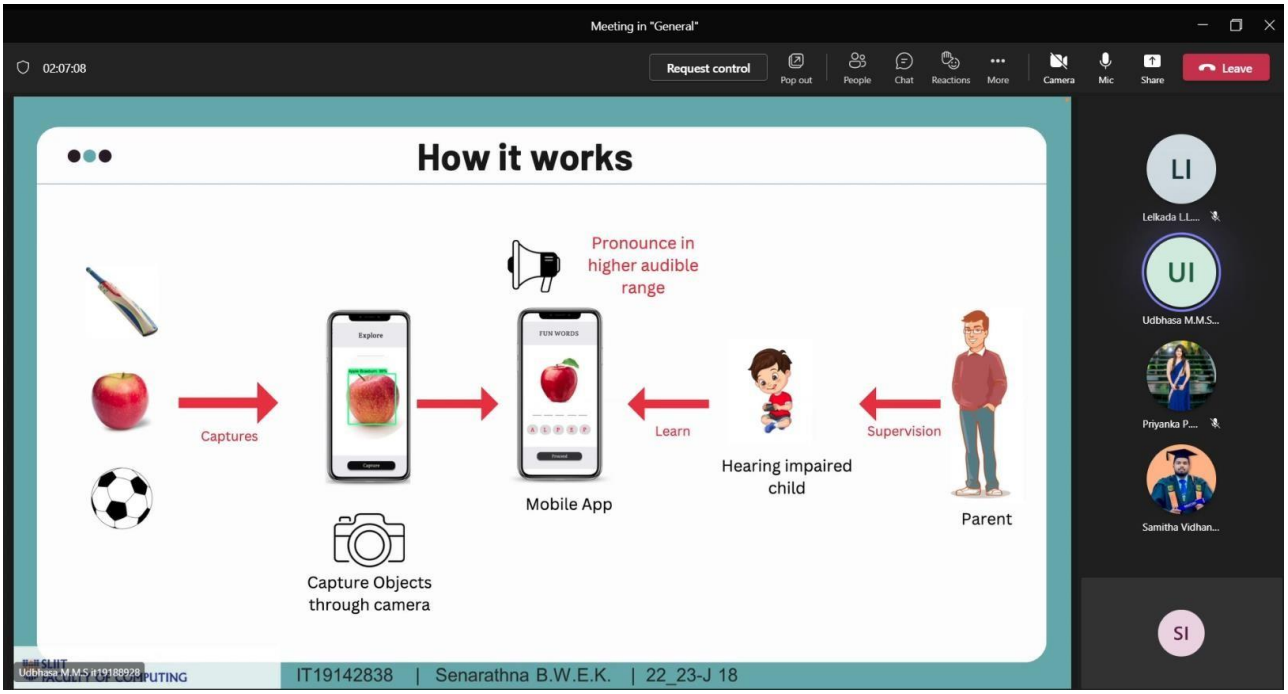


Having discussions about conferenced with the supervisor

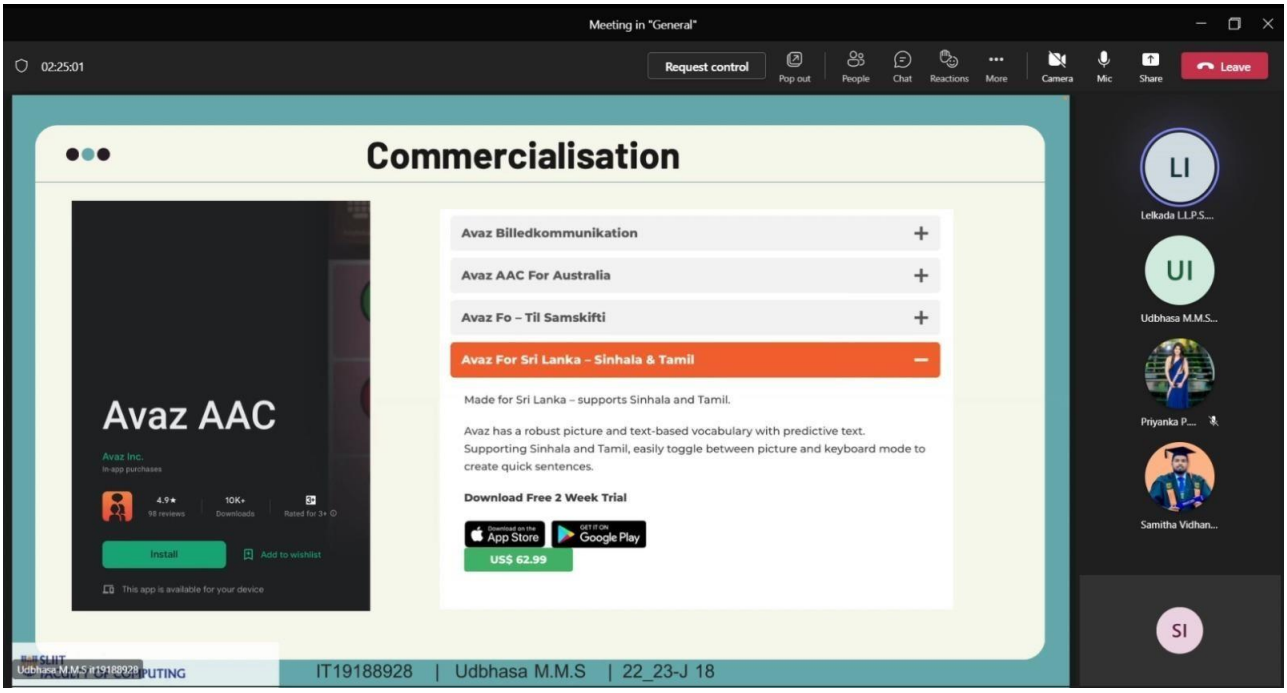


Whatsapp call screenshots

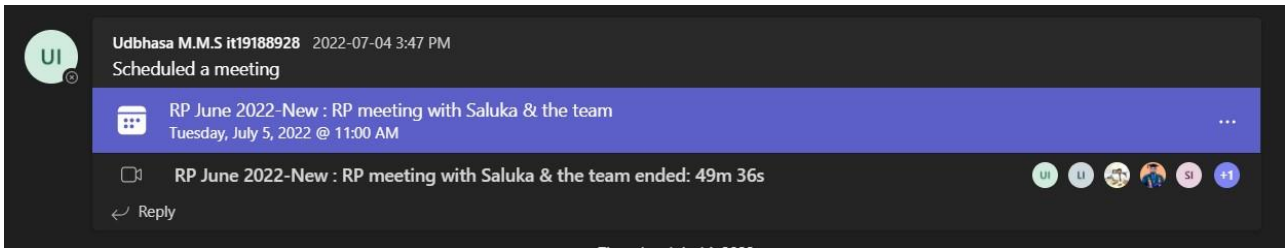
Screenshots of the calls in MS Teams



Meeting with the Co-supervisor

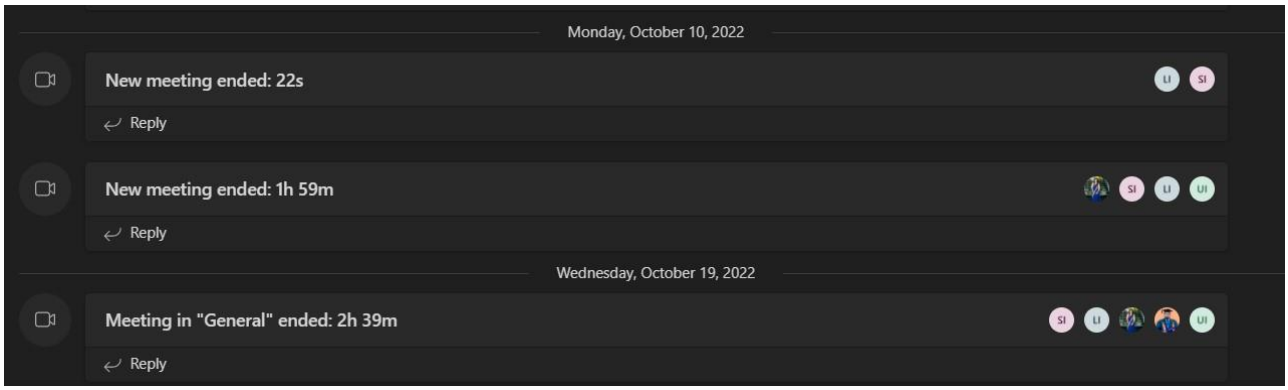


Meeting with co-supervisor 2

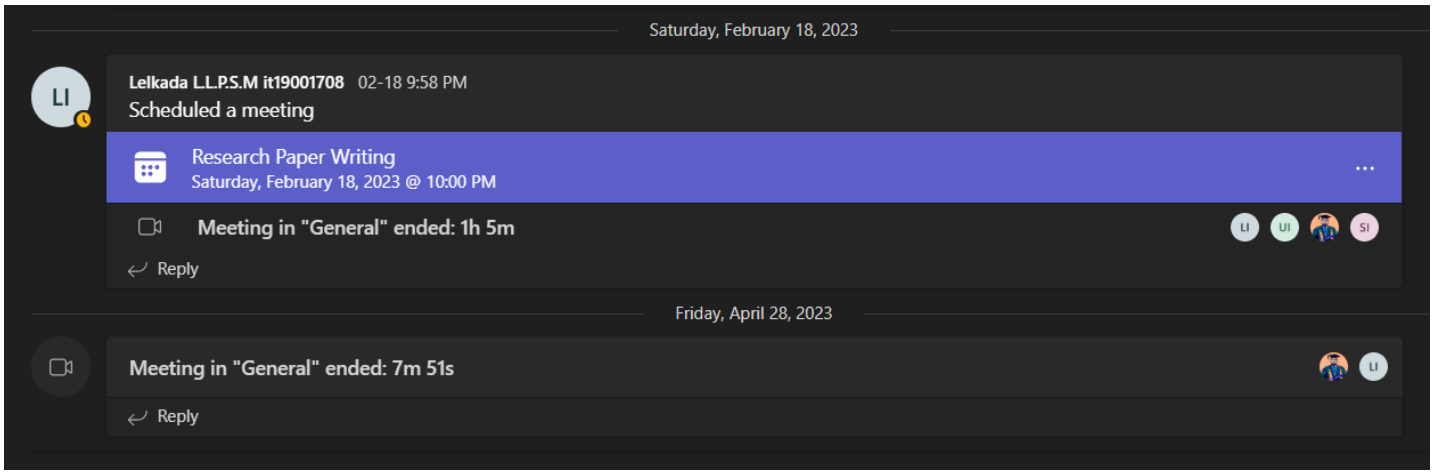


Meeting with the Supervisor

Meeting taken before field visits



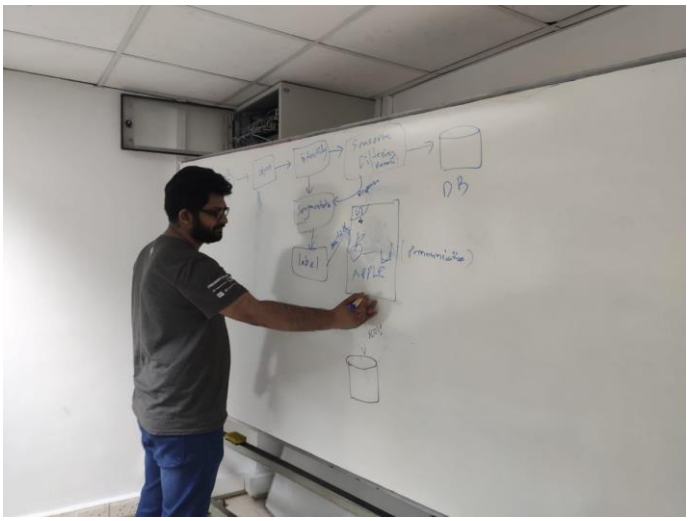
Teams calls



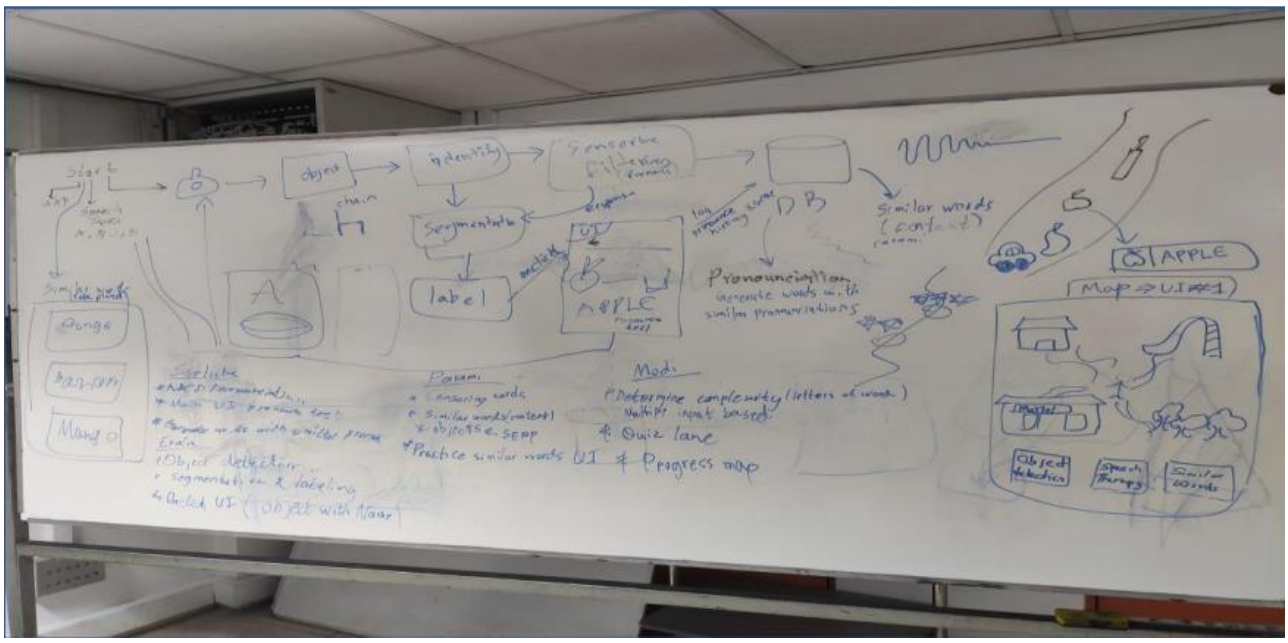
Research paper Discussion with the Supervisor

04. Physical Meeting

Meeting with the Supervisor



Meeting to Plan the integration points of the application.



Brain storming diagram

05. Task Outputs

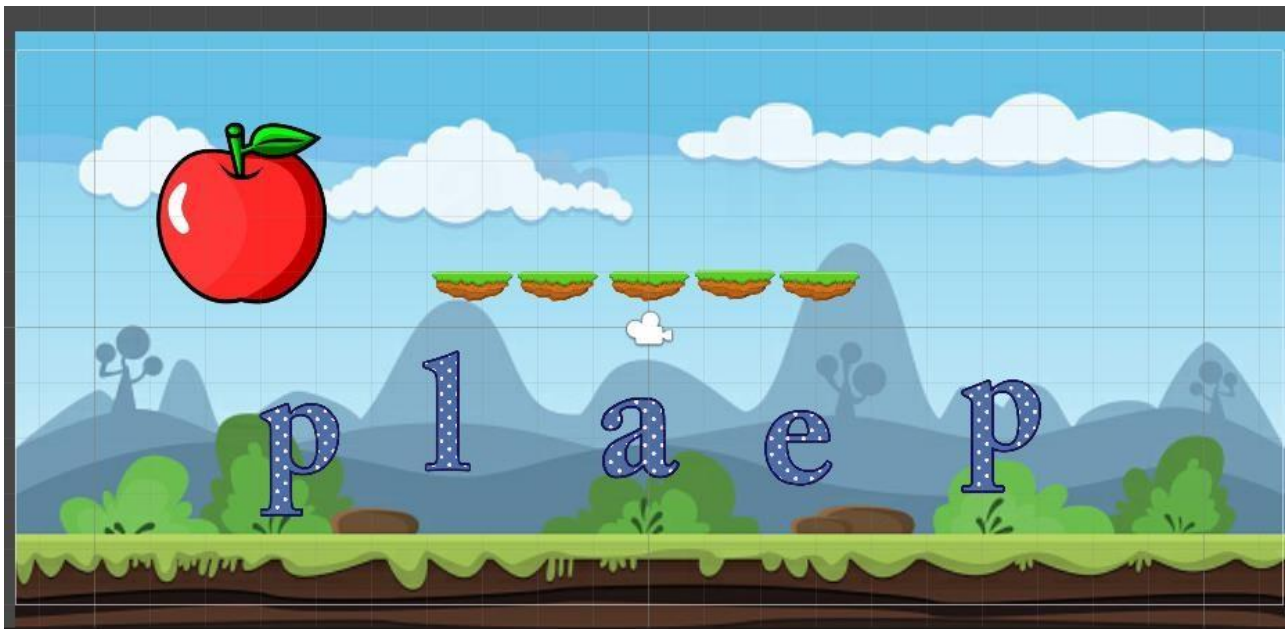
Oneshot learning was done to do classification and following are the results of it

```
[ ]  val_accs, train_accs,nn_accs = [], [], []
     for N in ways:
         val_accs.append(test_oneshot(model, N, trials, "val", verbose=True))
         train_accs.append(test_oneshot(model, N, trials, "train", verbose=True))
         nn_acc = test_nn_accuracy(N, trials)
         nn_accs.append(nn_acc)
         print ("NN Accuracy = ", nn_acc)
         print("------------------------------------------------------------------------------------------")
```

```
Evaluating model on 2 random 1 way one-shot learning tasks ...

1/1 [==============================] - 0s 17ms/step
1/1 [==============================] - 0s 17ms/step
Got an average of 100.0% 1 way one-shot learning accuracy

Evaluating model on 2 random 1 way one-shot learning tasks ...

1/1 [==============================] - 0s 17ms/step
1/1 [==============================] - 0s 16ms/step
Got an average of 100.0% 1 way one-shot learning accuracy

Evaluating nearest neighbour on 2 unique 1 way one-shot learning tasks ...
NN Accuracy =  100.0
------------------------------------------------------------------------------------------
/usr/local/lib/python3.8/dist-packages/numpy/core/fromnumeric.py:86: RuntimeWarning: overflow encountered in reduce
  return ufunc.reduce(obj, axis, dtype, out, **passkwargs)
```

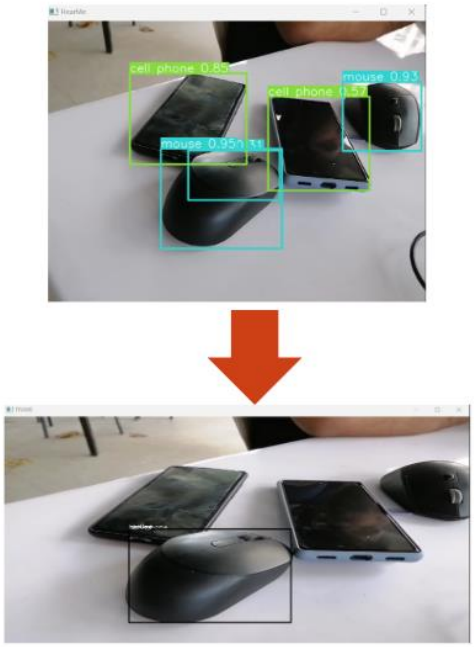
```
[ ]  Starting training process!
     --------------------------------------

      -------------

     Time for 20 iterations: 0.7627347628275554 mins
     Train Loss: 4.250063419342041
     Evaluating model on 10 random 2 way one-shot learning tasks ...

     true_category: 2
     ex1, ex 3 0
     1/1 [==============================] - 0s 398ms/step
     probs:  [[0.5925619]
      [0.5961007]]
     true_category: 1
     ex1, ex 7 11
     1/1 [==============================] - 0s 231ms/step
     probs:  [[0.60056937]
      [0.60042566]]
     true_category: 1
     ex1, ex 19 14
     1/1 [==============================] - 0s 268ms/step
     probs:  [[0.4509704]
      [0.5595607]]
     true_category: 0
     ex1, ex 3 5
     1/1 [==============================] - 0s 239ms/step
     probs:  [[0.54566723]
      [0.5774071 ]]
     true_category: 1
     ex1, ex 19 18
     1/1 [==============================] - 0s 237ms/step
     probs:  [[0.52583325]
      [0.5356785 ]]
     true_category: 2
     ex1, ex 14 8
     1/1 [==============================] - 0s 259ms/step
     probs:  [[0.56610173]
      [0.55551946]]
     true_category: 0
     ex1, ex 4 3
     1/1 [==============================] - 0s 228ms/step
     probs:  [[0.5636464 ]
```

One shot learning results on complex image backgrounds



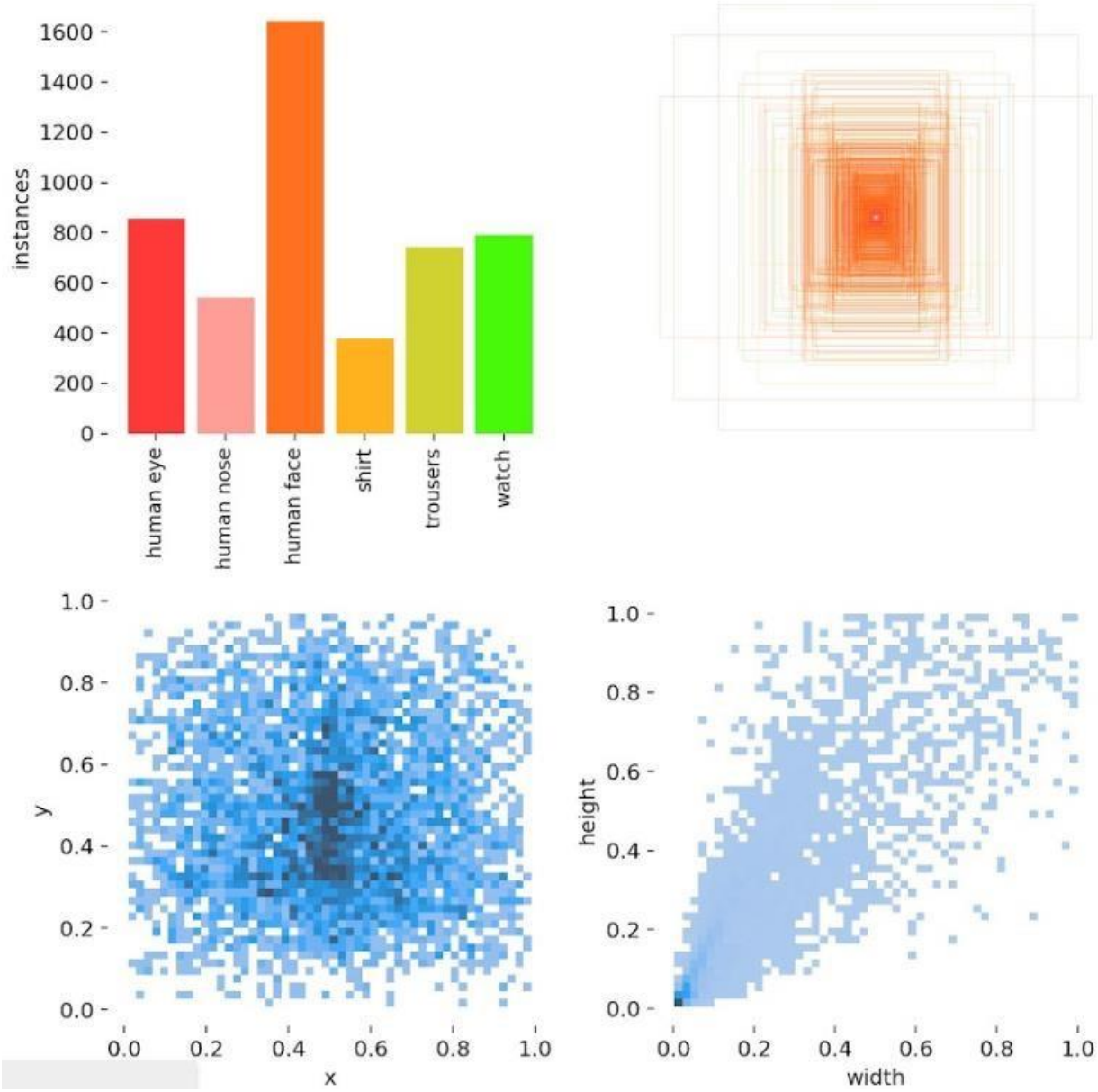
Game UI images

Game UI images previous design on Unity

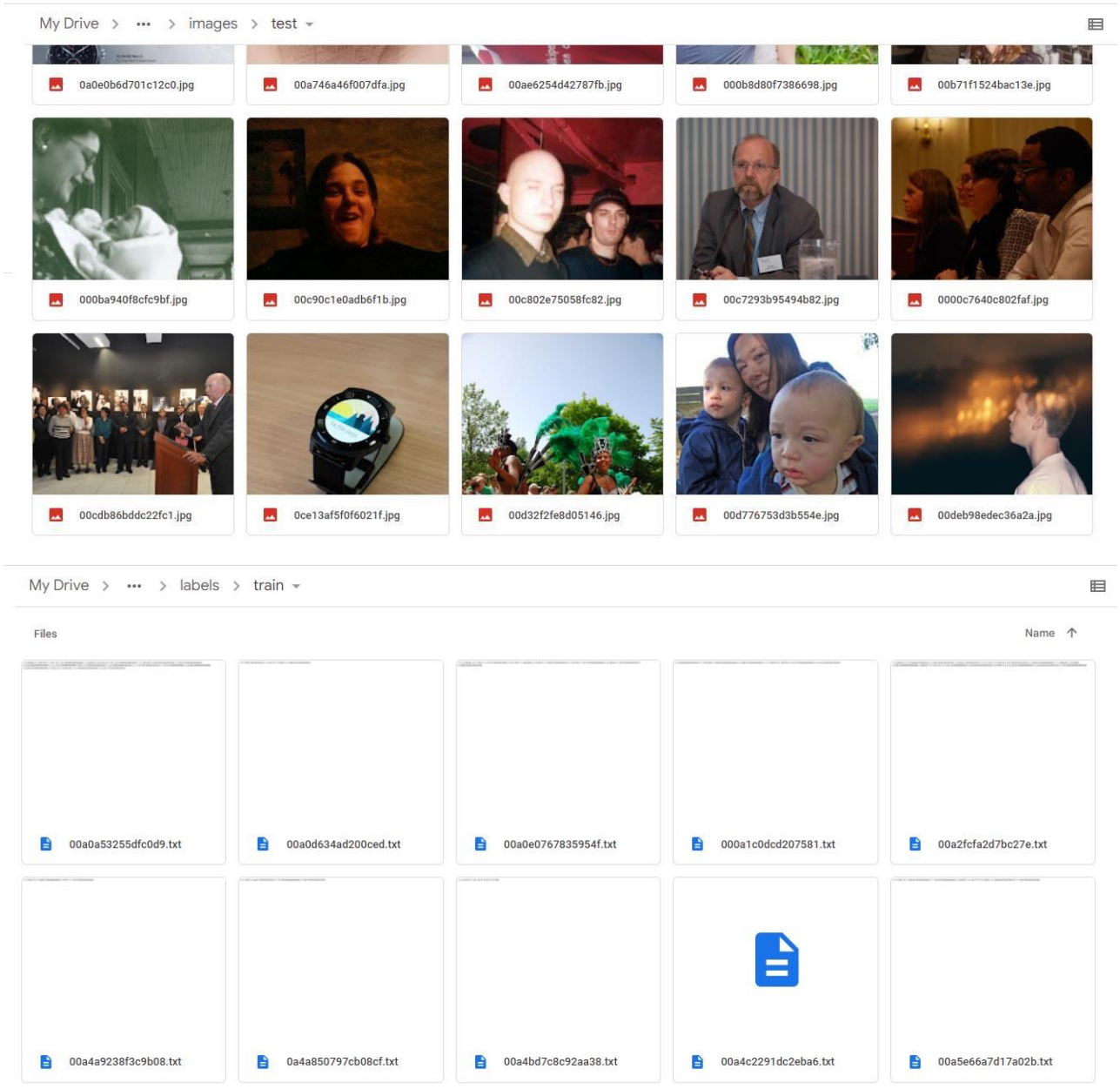


Object detection reducing complexity results

The drag and drop User interface customized to mobile device.

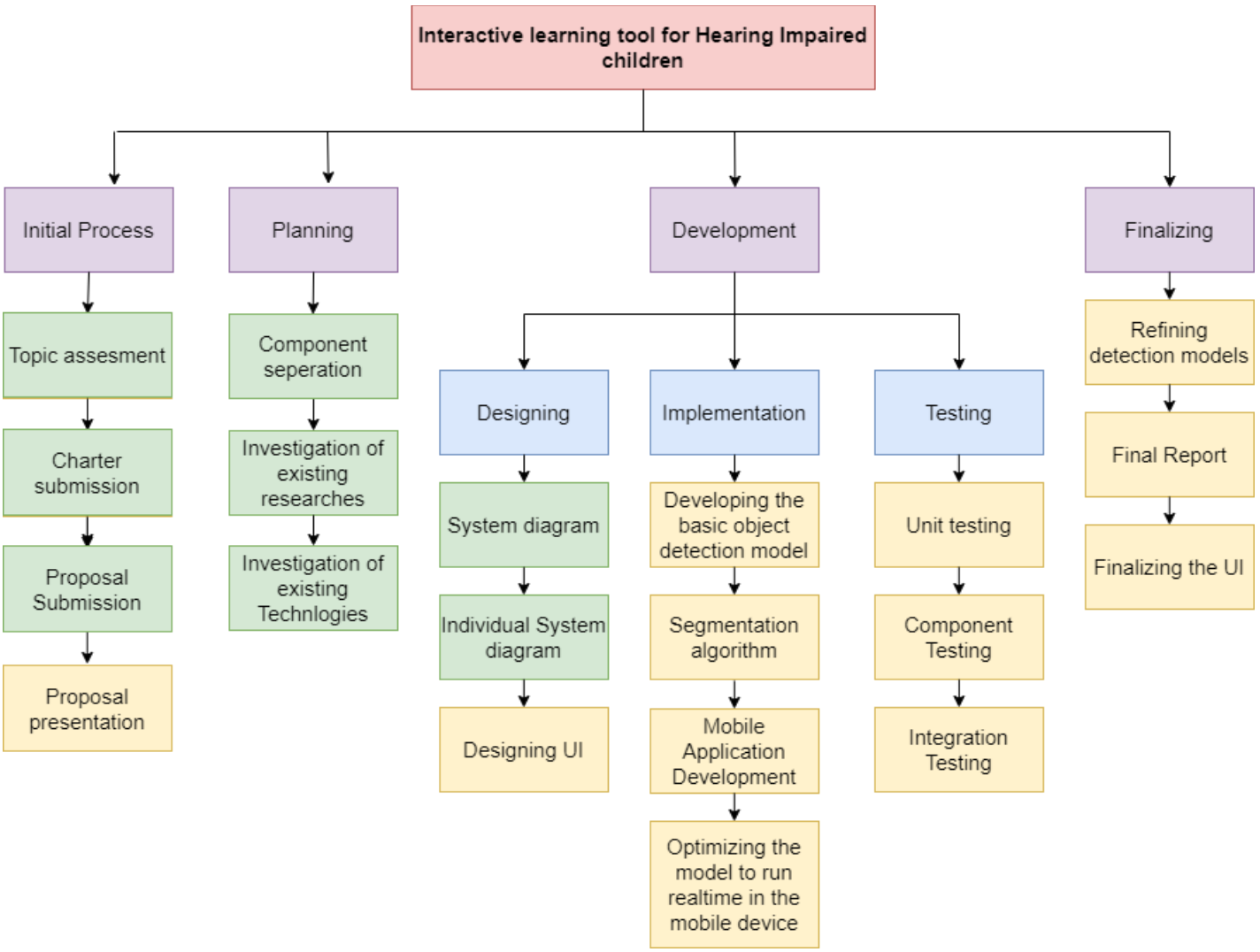


Genterated charts



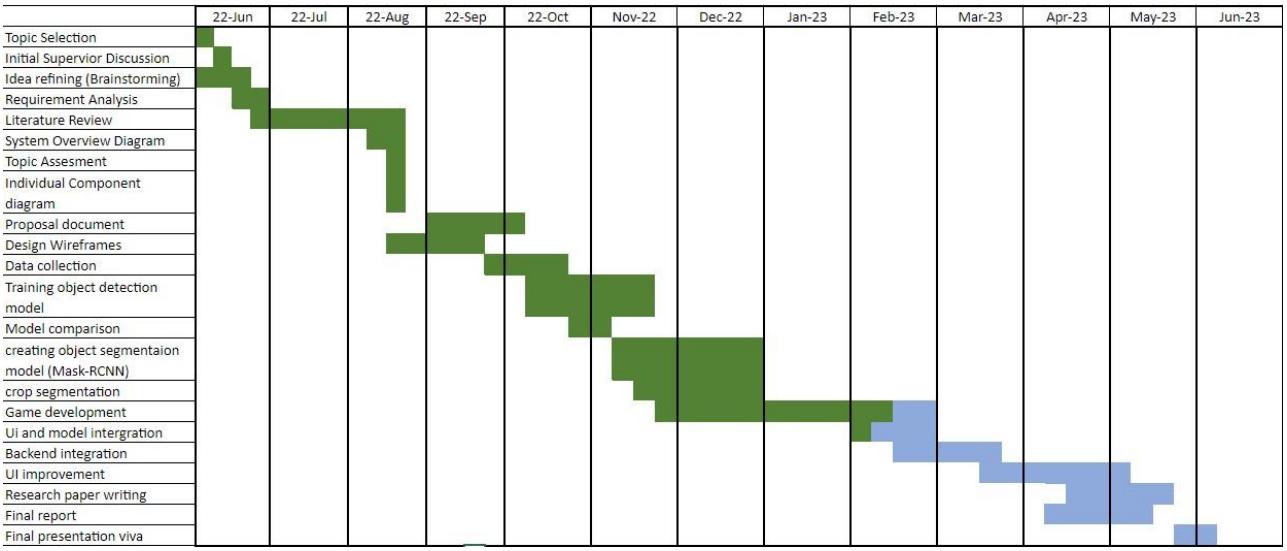
Sample datasets used for training

06. Work breakdown structure & allocates resources for each areas.



Work breakdown chart

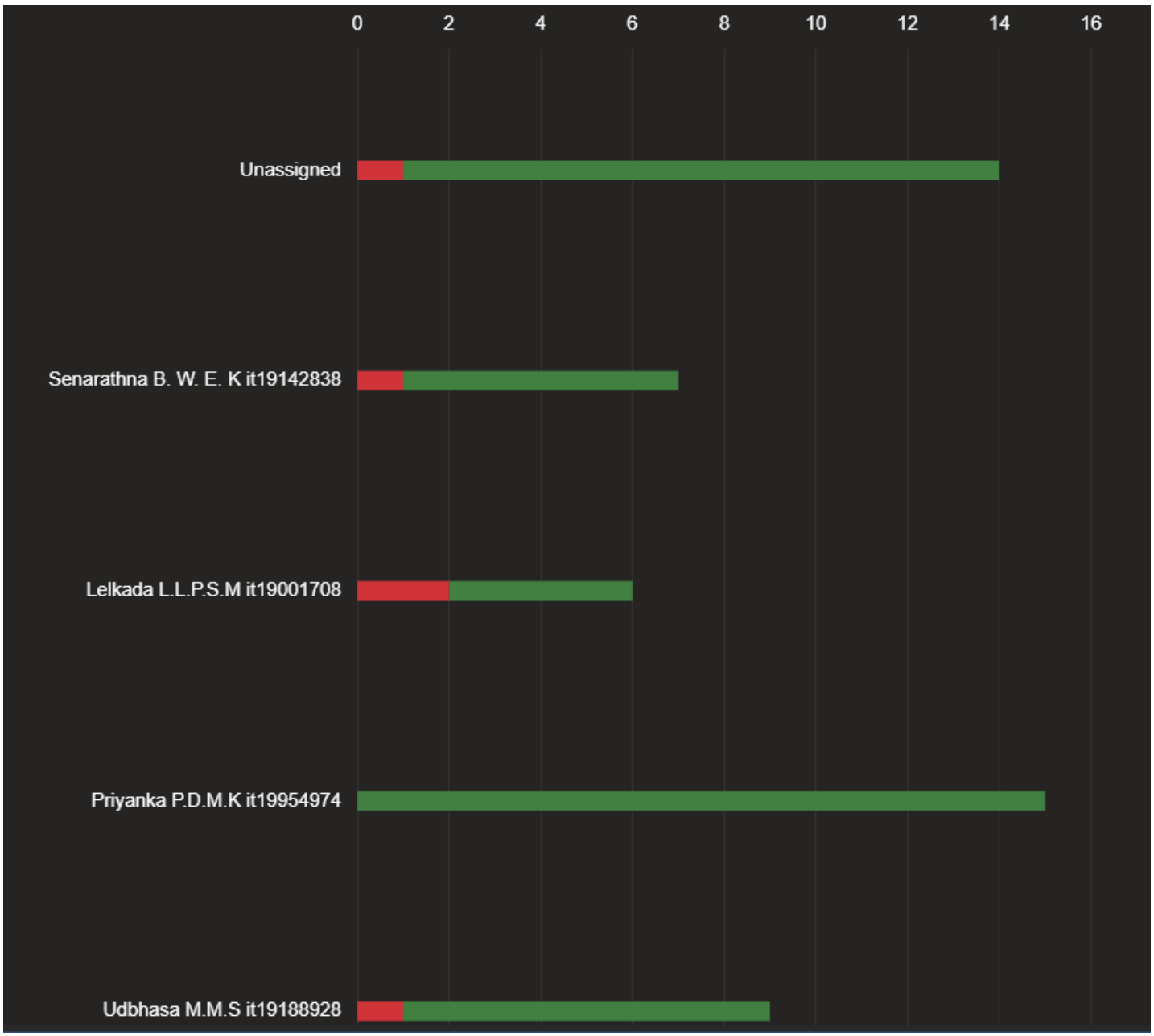
07.Gannt Chart


22-Jun
22-Jul
22-Aug
22-Sep
22-Oct
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Topic Selection
Initial Supervior Discussion
Idea refining (Brainstorming)
Requirement Analysis
Literature Review
System Overview Diagram
Topic Assesment
Individual Component diagram
Proposal document
Design Wireframes
Data collection
Training object detection model
Model comparison
creating object segmentaion model (Mask-RCNN)
crop segmentation
Game development
Ui and model intergration
Backend integration
UI improvement
Research paper writing
Final report
Final presentation viva

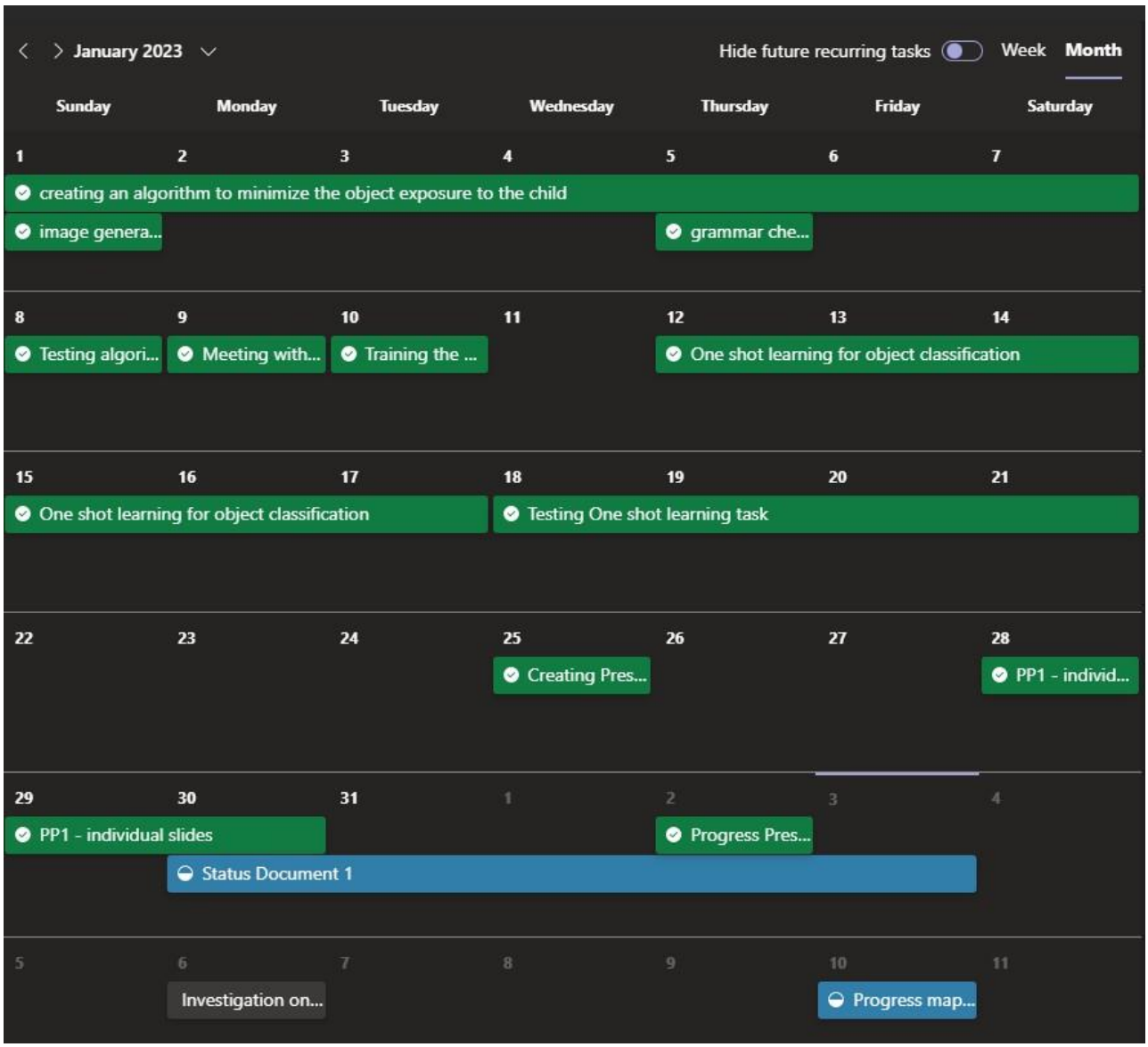
Gannt chart

07. Teams Planner Charts

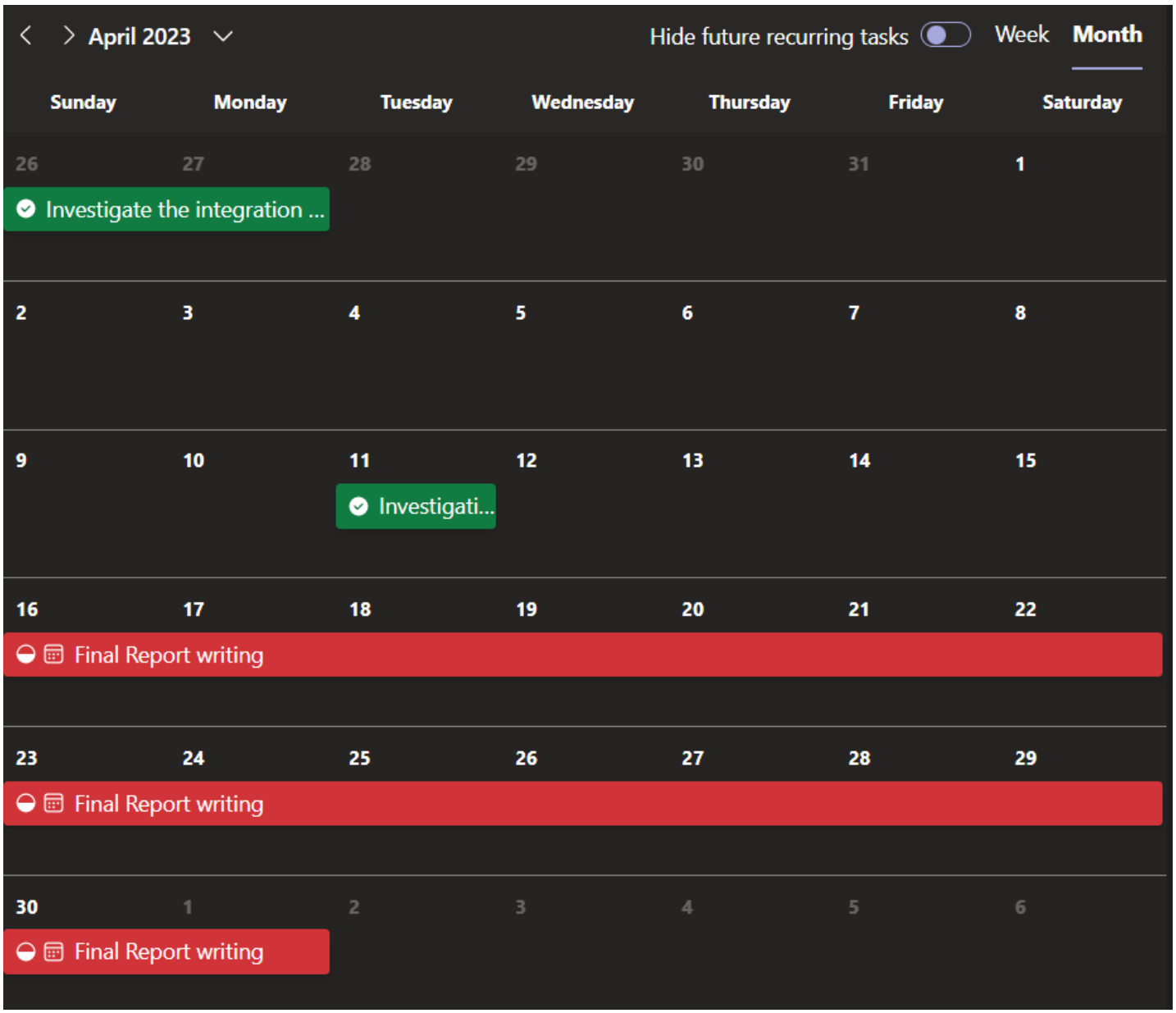
Task planner charts



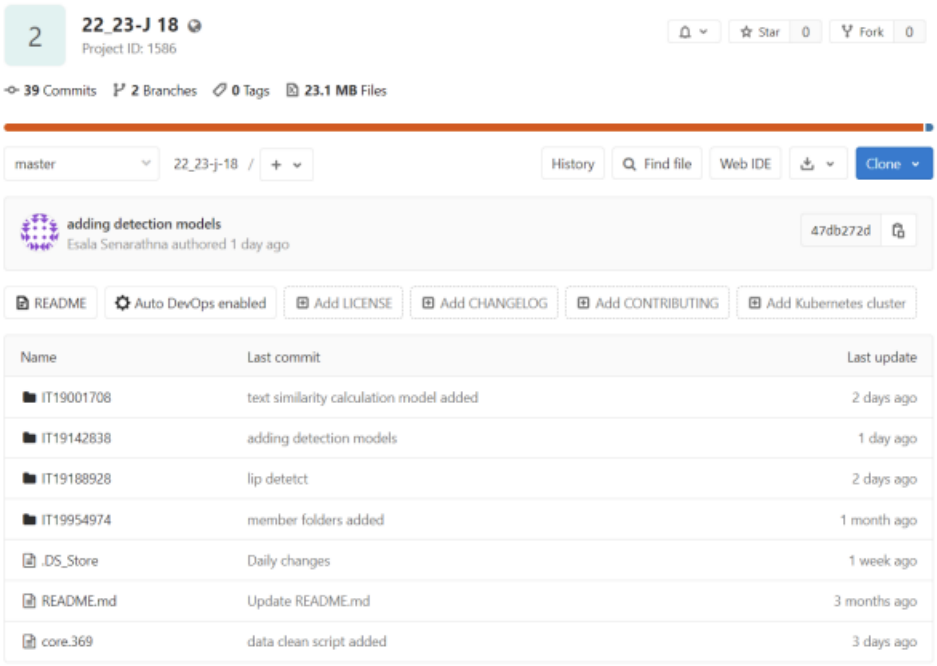
Individual task distribution



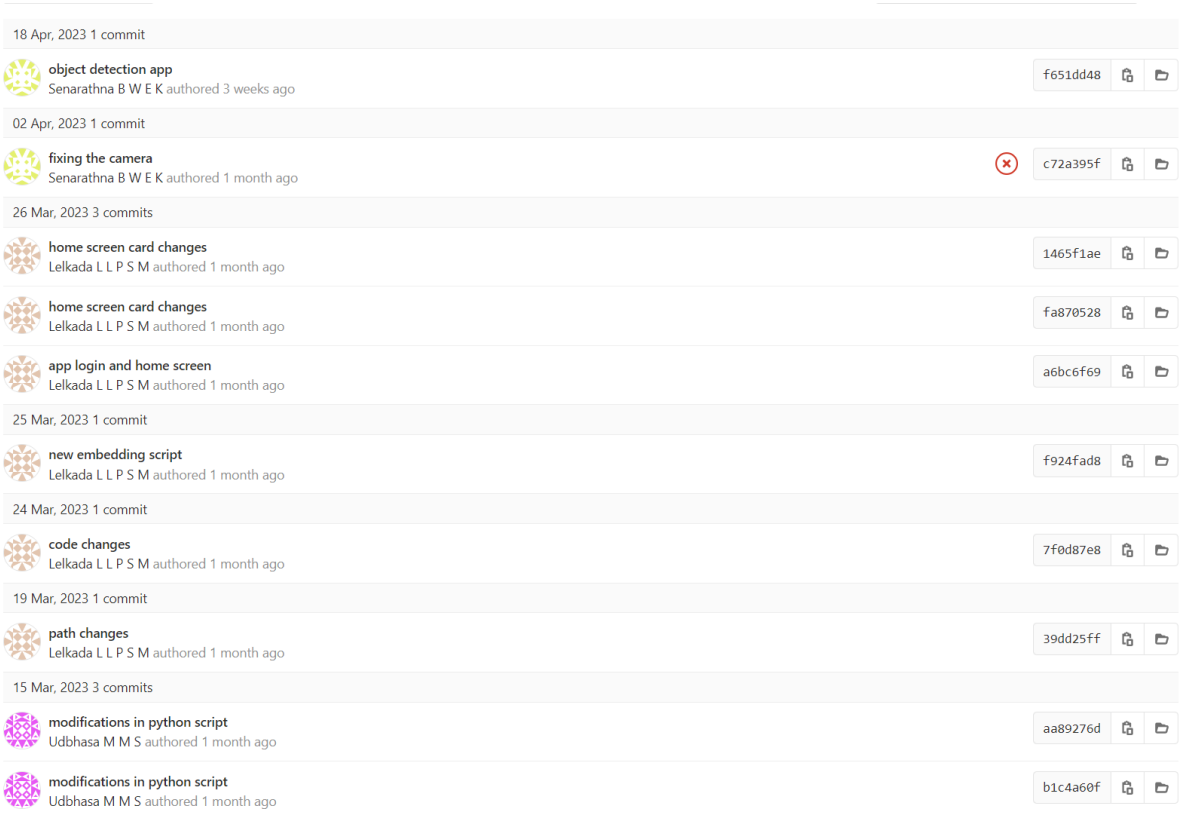
Monthly work on task planner



Monthly work on task planner



Gitlab repository



Gitlab commit history

08. Field Visits

Visit to School of Deaf Rathmalana

Initial Meeting the Executive board of CEHIC

Meeting Sister Greta Nalawaththa to get Learning Materials

Intertactive sessions with teachers about teaching techniques

Knowledge sharing session with sister greta

FACULTY OF