

Train Robot to Climb Stairs: Maintain Stability of Robot

21_22-J 34

Status Document 2

Balasooriya T.D

IT18212150

Supervisor – Mr. Samantha Rajapakshe Co-Supervisor –
Mr.S.M.B. Harshanath

B.Sc. (Hons) Degree in Information Technology Specializing in Information Technology

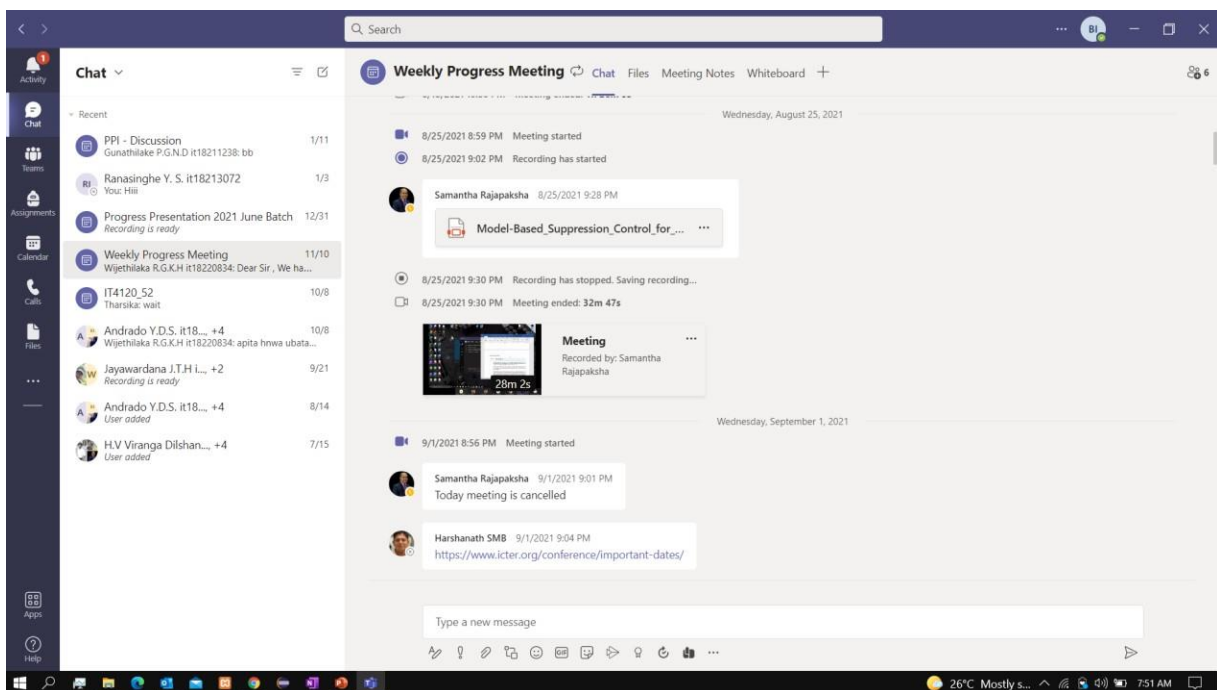
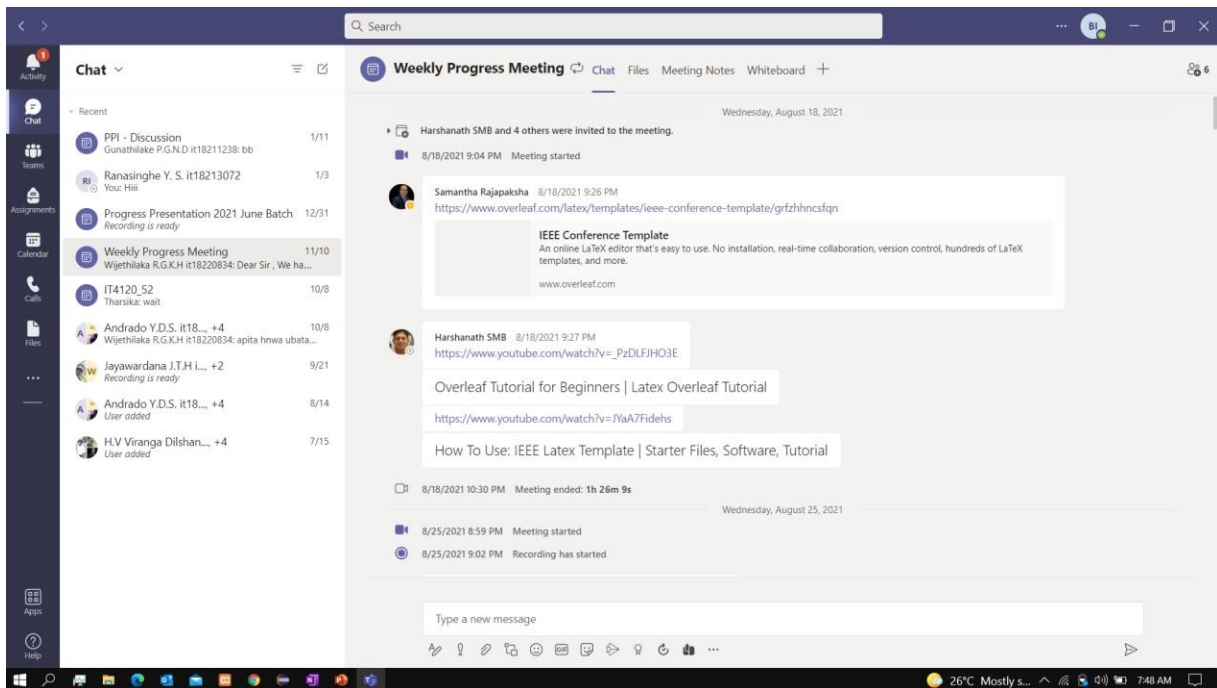
Department of Information Technology

Sri Lanka Institute of Information
Technology

June 2022

1) Screenshots of chats and calls with supervisors

1. MSTEams



Weekly Progress Meeting

Recent

- PPI - Discussion 1/11
- Ranasinghe Y. S. it18213072 1/3
- Progress Presentation 2021 June Batch 12/31
- Weekly Progress Meeting 11/10
- IT4120_52 10/8
- Andrado Y.D.S. it18... +4 10/8
- Jayawardana J.T.H L... +2 9/21
- Andrado Y.D.S. it18... +4 8/14
- H.V Viranga Dilshan... +4 7/15

Online Courses - Learn Anything, On Your Schedule | Udemy

Udemy is an online learning and teaching marketplace with over 155,000 courses and 40 million students. Learn programming, marketing, data science and more.

www.udemy.com

Functional predictors of stair-climbing speed in older adults - PubMed

An older adult's stair-climbing speed can be accurately estimated by using a model that includes his or her usual gait speed and OLS. This information will help health care professionals and direc...

pubmed.ncbi.nlm.nih.gov

Energy cost of stair climbing and descending on the college alumnus questionnaire - PubMed

In calculating the physical activity index (PAI) on the college alumnus questionnaire, it is assumed that 8 kcal are expended for every 20 steps climbed. This value is equal to an energy cost of 0...

pubmed.ncbi.nlm.nih.gov

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Weekly Progress Meeting

Recent

- PPI - Discussion 1/11
- Ranasinghe Y. S. it18213072 1/3
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- Jayawardana J.T.H L... +2 9/21
- Andrado Y.D.S. it18... +4 8/14
- H.V Viranga Dilshan... +4 7/15

(PDF) Vision-based Detection of Stair-cases

PDF | On Jan 1, 2000, Stephen Se and others published Vision-based Detection of Stair-cases | Find, read and cite all the research you need on ResearchGate

www.researchgate.net

(PDF) Design and development of a semi-autonomous stair climbing robotic platform for rough te...

PDF | On Oct 1, 2017, Muhammad Umar Masood and others published Design and development of a semi-autonomous stair climbing robotic platform for rough terrains | Find, read and cite all the research...

www.researchgate.net

DSP- and FPGA-Based Stair-Climbing Robot Design

A stair-climbing robot is equipped with a grasping arm for capturing objects to provide service for the elders. A board based on a digital signal processor (DSP) plays the role of control center to...

www.hindawi.com

DEVELOPMENT OF CONTROL SOFTWARE FOR STAIR DETECTION IN A MOBILE ROBOT...

In this paper our main aim is to design and develop the control software for the detection and alignment of stairs by a stair climbing and manually operated ro...

Activity

Chat

Teams

Assignments

Calendar

Calls

Files

...

Apps

Help

Chat

Recent

PPI - Discussion
Gunathilake P.G.N.D it18211238: bb

1/11

Ranasinghe Y. S. it18213072
You: Hi!

1/3

Progress Presentation 2021 June Batch
Recording is ready

12/31

Weekly Progress Meeting
Wijethilaka R.G.K.H it18220834: Dear Sir , We ha...

11/10

IT4120_52
Tharsika: wait

10/8

Andrado Y.D.S. it18... +4
Wijethilaka R.G.K.H it18220834: apita hnw ubata...

10/8

Jayawardana J.T.H i... +2
Recording is ready

9/21

Andrado Y.D.S. it18... +4
User added

8/14

H.V Viranga Dilshan... +4
User added

7/15

Weekly Progress Meeting

Chat Files Meeting Notes Whiteboard +

9/8/2021 9:28 PM Meeting ended: 28m 4s

Wednesday, September 15, 2021

9/15/2021 8:58 PM Meeting started

Jayawardana J.T.H it18216974 9/15/2021 9:04 PM

Dear Sir don't we have meeting today.

9/15/2021 9:36 PM Meeting ended: 37m 39s

Thursday, September 16, 2021

Harshanath SMB 9/16/2021 8:50 PM

<https://www.icarc.lk/>

try to have a paper set

Saturday, September 18, 2021

Jayawardana J.T.H it18216974 9/18/2021 9:00 PM

Dear Sir

Here is the our research proposal presentation which we expect to present.

21_22-J 34.pptx

...

Sunday, September 19, 2021

Harshanath SMB 9/19/2021 9:49 AM

Type a new message

26°C Mostly s...

7:58 AM

Activity

Chat

Teams

Assignments

Calendar

Calls

Files

...

Apps

Help

Chat

Recent

PPI - Discussion
Gunathilake P.G.N.D it18211238: bb

1/11

Ranasinghe Y. S. it18213072
You: Hi!

1/3

Progress Presentation 2021 June Batch
Recording is ready

12/31

Weekly Progress Meeting
Wijethilaka R.G.K.H it18220834: Dear Sir , We ha...

11/10

IT4120_52
Tharsika: wait

10/8

Andrado Y.D.S. it18... +4
Wijethilaka R.G.K.H it18220834: apita hnw ubata...

10/8

Jayawardana J.T.H i... +2
Recording is ready

9/21

Andrado Y.D.S. it18... +4
User added

8/14

H.V Viranga Dilshan... +4
User added

7/15

Weekly Progress Meeting

Chat Files Meeting Notes Whiteboard +

Sunday, September 19, 2021

Harshanath SMB 9/19/2021 9:49 AM

3:27 Now playing

Robot Learns to Climb Stairs Blind

<https://www.youtube.com/watch?v=MPhEmC6b6XU>

Robot Learns to Climb Stairs Blind - YouTube

We successfully used reinforcement learning to train a recurrent neural network to control our bipedal robot Cassie to climb stairs without any perception se...

www.youtube.com

Cassie: Dynamic Planning on Stairs <https://www.youtube.com/watch?v=qV-92Bq96Co>

Cassie: Dynamic Planning on Stairs - YouTube

This video shows the progression of increasingly complex gait strategies from ATRIAS through recent results with Cassie. Specifically, Cassie's controller no...

www.youtube.com

Type a new message

26°C Mostly s...

7:59 AM

Search

Chat

Weekly Progress Meeting

Recent

- PPI - Discussion
Gunathilake P.G.N.D it18211238: bb 1/11
- Ranasinghe Y. S. it18213072
You: Hii 1/3
- Progress Presentation 2021 June Batch
Recording is ready 12/31
- Weekly Progress Meeting
Wijethilaka R.G.K.H it18220834: Dear Sir , We ha... 11/10
- IT4120_52
Tharsika: wait 10/8
- Andrado Y.D.S. it18... +4
Wijethilaka R.G.K.H it18220834: apita hnwa ubata... 10/8
- Jayawardana J.T.H i... +2
Recording is ready 9/21
- Andrado Y.D.S. it18... +4
User added 8/14
- H.V Viranga Dilshan... +4
User added 7/15

The Art of Stair Climbing - Advanced instruction <https://www.youtube.com/watch?v=aV8MUQnltgc>

The Art of Stair Climbing - Advanced instruction - YouTube
#stairclimbing, #howtoclimbstairs, #walkingstairs, As part of the Life Athlete year round training system, fall is the best time of the year to hit the sta...
www.youtube.com

LeetCode 70. Climbing Stairs [Algorithm + Code Explained] Best Solution <https://www.youtube.com/watch?v=qhDXejbprJK>

LeetCode 70. Climbing Stairs [Algorithm + Code Explained] Best Solution - YouTube
One of the most frequently asked coding interview questions on Dynamic Programming in companies like Google, Facebook, Amazon, LinkedIn, Microsoft, Uber, App...
www.youtube.com

amazon Coding Interview
20:01 Now playing

Type a new message

26°C Mostly s... 8:01 AM

Search

Chat

Weekly Progress Meeting

Recent

- PPI - Discussion
Gunathilake P.G.N.D it18211238: bb 1/11
- Ranasinghe Y. S. it18213072
You: Hii 1/3
- Progress Presentation 2021 June Batch
Recording is ready 12/31
- Weekly Progress Meeting
Wijethilaka R.G.K.H it18220834: Dear Sir , We ha... 11/10
- IT4120_52
Tharsika: wait 10/8
- Andrado Y.D.S. it18... +4
Wijethilaka R.G.K.H it18220834: apita hnwa ubata... 10/8
- Jayawardana J.T.H i... +2
Recording is ready 9/21
- Andrado Y.D.S. it18... +4
User added 8/14
- H.V Viranga Dilshan... +4
User added 7/15

Amazon Coding Interview Question - Recursive Staircase Problem

Amazon Coding Interview Question - Recursive Staircase Problem - YouTube
Amazon coding interview question and answer - recursive staircase problem!For daily coding problems like this one, I'd recommend this website called Daily Co...
www.youtube.com

<https://www.youtube.com/watch?v=HFUJHrl8-59c>

Jayawardana J.T.H it18216974 9/19/2021 10:24 AM

Harshanath SMB 9/19/2021 10:05 AM
20:01 Now playing Amazon Coding Interview Question - Recursive Staircase Problem

Thank you sir!

Harshanath SMB 9/19/2021 10:29 AM
check them all and some may go to Literature review / references and some for your knowledge and some for coding your project

will mark required change in the NOTE area of the presentation. Check and Do the changes before rehearsal. FIX A TIME for the rehearsal tomorrow (day time).

Harshanath SMB 9/19/2021 10:41 AM
Get Stairs Path - Solution | Recursion | Data Structures and Algorithms in JAVA <https://www.youtube.com/watch?v=hMJAibJ157E>

Type a new message

26°C Mostly s... 8:01 AM

Microsoft Teams Chat interface for the "Weekly Progress Meeting".

Left Panel (Recent Chats):

- PPI - Discussion (Gunathilake P.G.N.D it18211238: bb) 1/11
- Ranasinghe Y. S. it18213072 (You: Hi!) 1/3
- Progress Presentation 2021 June Batch (Recording is ready) 12/31
- Weekly Progress Meeting (Wijethilaka R.G.K.H it18220834: Dear Sir , We ha...)** 11/10
- IT4120_52 (Tharsika: wait) 10/8
- Andrado Y.D.S. it18... +4 (Wijethilaka R.G.K.H it18220834: apita hwa ubata...) 10/8
- Jayawardana J.T.H i... +2 (Recording is ready) 9/21
- Andrado Y.D.S. it18... +4 (User added) 8/14
- H.V Viranga Dilshan... +4 (User added) 7/15

Chat History:

- Jayawardana J.T.H it18216974** 9/19/2021 11:25 AM
 - Harshanath SMB 9/19/2021 10:32 AM: will mark required change in the NOTE area of the presentation. Check and Do the changes before rehearsal. FIX A TIME for the...
 - Sure sir
 - Thank you
- Harshanath SMB** 9/19/2021 11:28 AM: when you are having the weekly meeting please let me know the daye and time to fix my time table
- Jayawardana J.T.H it18216974** 9/19/2021 11:31 AM
 - Harshanath SMB 9/19/2021 11:28 AM: when you are having the weekly meeting please let me know the daye and time to fix my time table
 - We have the weekly meeting on Wednesday at 9:00 pm sir.
- Harshanath SMB** 9/19/2021 11:32 AM
 - ok
 - did you discuss the presentation with Sir?
 - Mr Samantha?
- Jayawardana J.T.H it18216974** 9/19/2021 11:34 AM

Bottom Bar: Type a new message, icons for attachments, emojis, video call, voice call, and more.

Continuation of the Microsoft Teams Chat interface for the "Weekly Progress Meeting".

Chat History:

- Jayawardana J.T.H it18216974** 9/19/2021 11:34 AM
 - Harshanath SMB 9/19/2021 11:32 AM: did you discuss the presentation with Sir?
 - Not yet sir
- Harshanath SMB** 9/19/2021 12:01 PM
 - 21_22-J 34 FEED BACK.pptx ...
- Jayawardana J.T.H it18216974** 9/19/2021 1:23 PM
 - Harshanath SMB 9/19/2021 12:01 PM: [File: 21_22-J 34 FEED BACK.pptx]
 - Thank you sir, we would do the necessary changes.
- Jayawardana J.T.H it18216974** 9/19/2021 10:50 PM
 - Dear Sir
 - Here is the updated version.
 - 21_22-J 34.pptx ...
- Samantha Rajapaksha** 9/19/2021 10:51 PM

Bottom Bar: Type a new message, icons for attachments, emojis, video call, voice call, and more.

Activity

Chat

Teams

Assignments

Calendar

Calls

Files

...

Apps

Help

Search

Weekly Progress Meeting

Chat

Files

Meeting Notes

Whiteboard

+

Recent

PPI - Discussion
Gunathilake P.G.N.D it18211238: bb

1/11

Ranasinghe Y. S. it18213072
You: Hi!

1/3

Progress Presentation 2021 June Batch
Recording is ready

12/31

Weekly Progress Meeting
Wijethilaka R.G.K.H it18220834: Dear Sir , We ha...

11/10

IT4120_52
Tharsika: wait

10/8

Andrado Y.D.S. it18... +4
Wijethilaka R.G.K.H it18220834: apita hnwa ubata...

10/8

Jayawardana J.T.H i... +2
Recording is ready

9/21

Andrado Y.D.S. it18... +4
User added

8/14

H.V Viranga Dilshan... +4
User added

7/15

Here is the updated version.

21_22-J 34.pptx

...

Samantha Rajapaksha

9/19/2021 10:51 PM

email it

9/20/2021 3:00 PM

Meeting ended: 14m 55s

Monday, September 20, 2021

9/22/2021 9:09 PM

Meeting ended: 25s

Wednesday, September 22, 2021

9/29/2021 9:01 PM

Meeting started

Wednesday, September 29, 2021

Wijethilaka R.G.K.H it18220834

9/29/2021 9:12 PM

Dear Sir don't we have meeting today

Harshanath SMB

9/29/2021 9:19 PM

no

9/29/2021 9:19 PM

Meeting ended: 17m 30s

Wednesday, November 10, 2021

Wijethilaka R.G.K.H it18220834

11/10/2021 8:32 PM

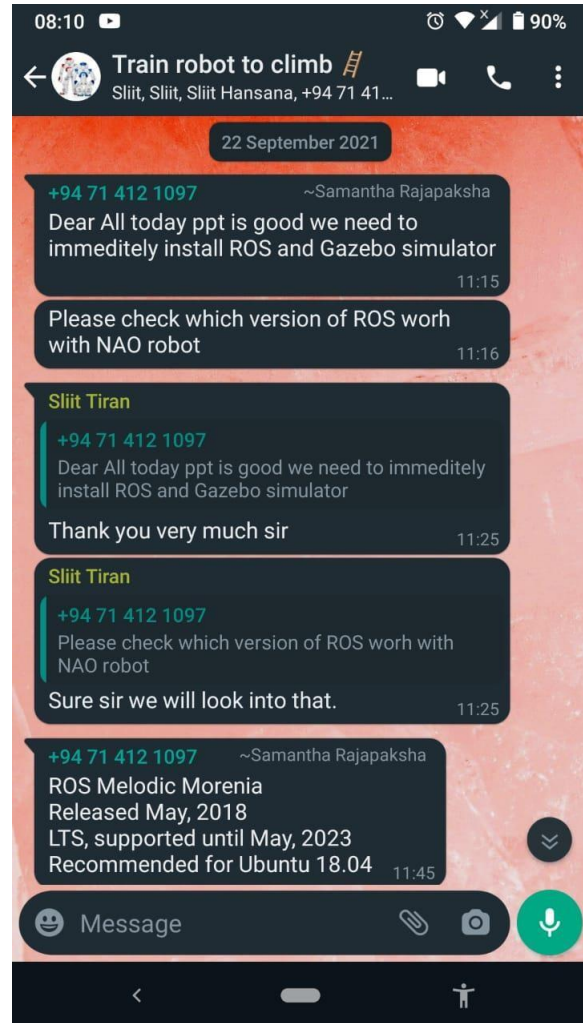
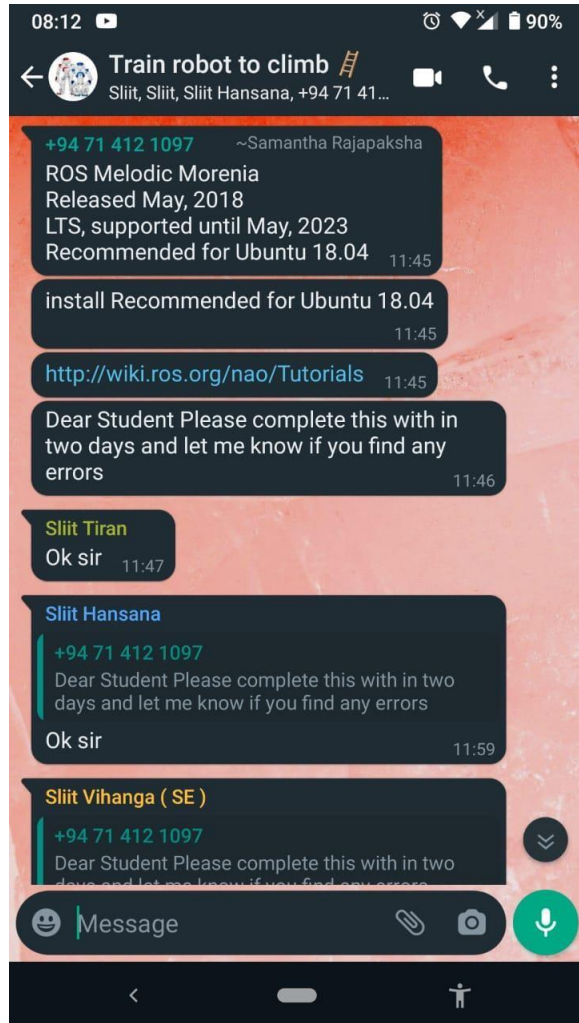
Dear Sir , We have progress meeting today?

Type a new message

26°C Mostly s...

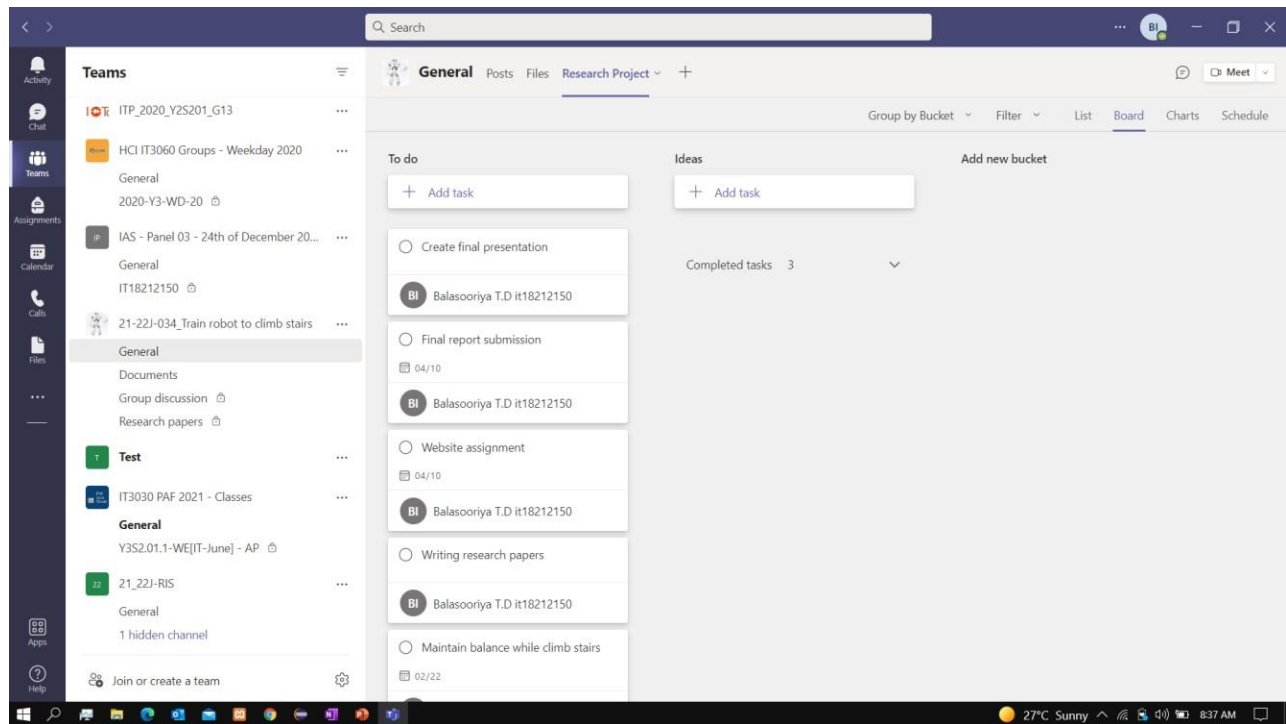
8:04 AM

1.2 WhatsApp



2 Project View/Gantt Chart

1. Work Breakdown Structure



Activity

Chat

Teams

Assignments

Calendar

Calls

Files

...

Apps

Help

Search

...

Meet

Teams

ITP_2020_Y2S201_G13

HCI IT3060 Groups - Weekday 2020

General

2020-Y3-WD-20

IAS - Panel 03 - 24th of December 20...

General

IT18212150

21-22J-034_Train robot to climb stairs

General

Documents

Group discussion

Research papers

Test

IT3030 PAF 2021 - Classes

General

Y3S2.01.1-WE[IT-June] - AP

21_22J-RIS

General

1 hidden channel

Join or create a team

General

Posts

Files

Research Project

+

Group by Bucket

Filter

List

Board

Charts

Schedule

To do

+

Add task

Complete 50 percent progress presentation

Completed by Balasooriya T.D it1...

Implement Balance controller for NAG

Completed by Balasooriya T.D it1...

Refer research papers on stability for NAG-Robot

Completed by Balasooriya T.D it1...

configure choreography with Webots

Completed by Balasooriya T.D it1...

Research how to maintain stability of of a humanoid robot

Ideas

+

Add task

Completed tasks 3

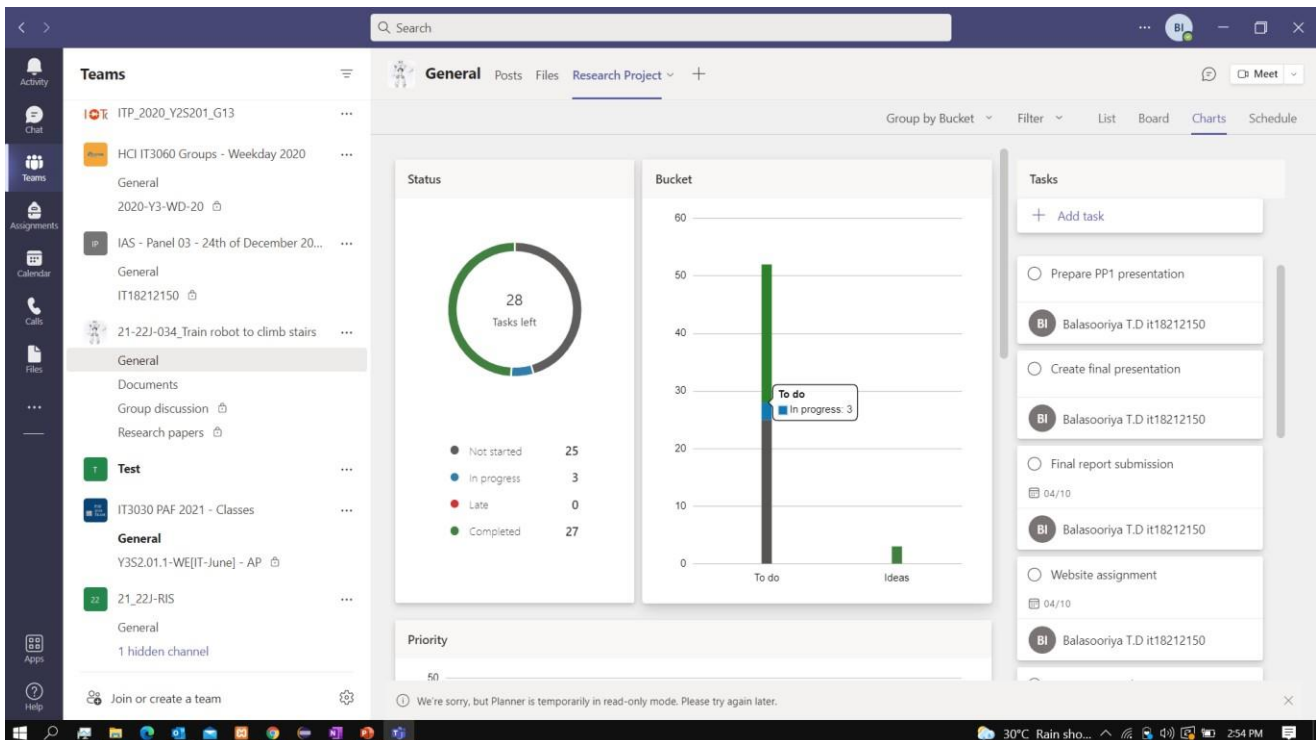
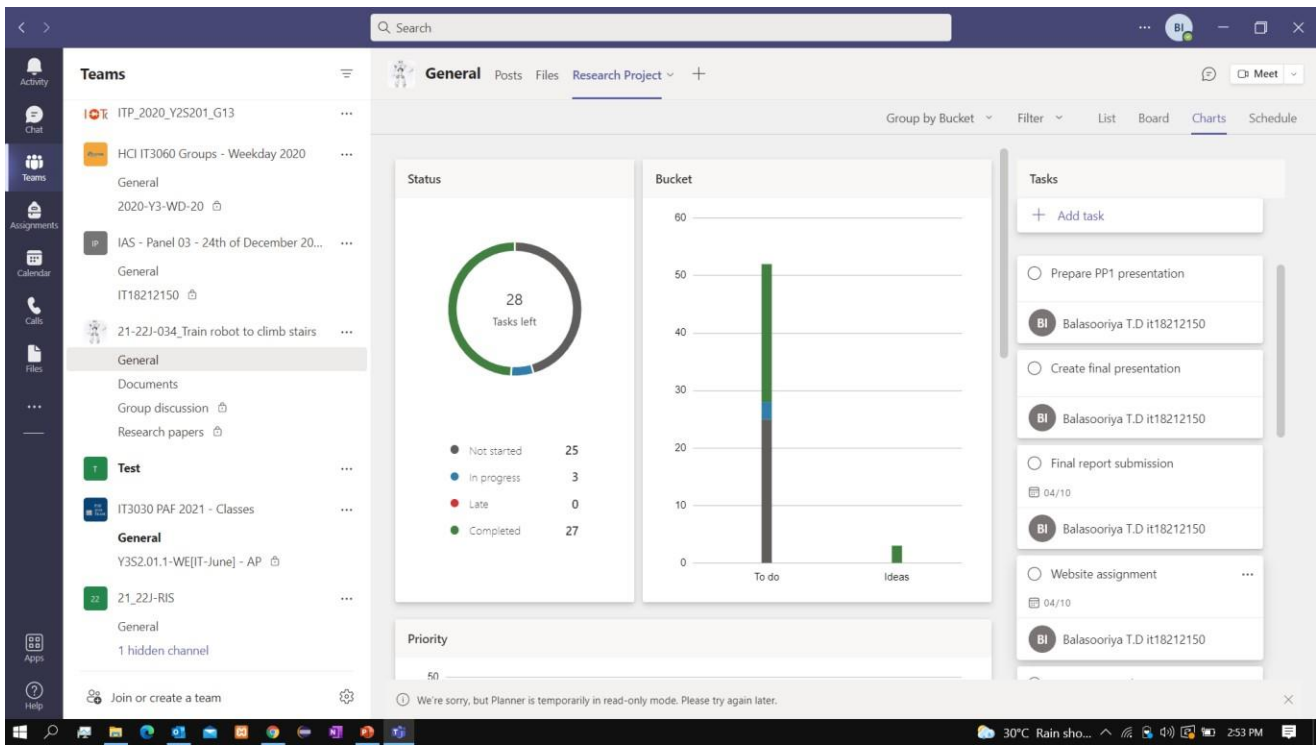
Add new bucket

We're sorry, but Planner is temporarily in read-only mode. Please try again later.

30°C Rain sho...

2:51 PM

2.2 MS Teams Generate Report



2.3 Supervisor's general Progress presentation

The screenshot shows an Outlook window with a search for 'Progress Meeting June Batch -Research Project'. The search results are displayed in a table format, showing the status of various participants.

Participant	Status
it18211474@my.sliit.lk	Presented.
it18221206@my.sliit.lk	Presented.
it18205534@my.sliit.lk	Presented.
it18221442@my.sliit.lk	Absent
it18216974@my.sliit.lk	Presented.
it18217100@my.sliit.lk	Presented.
it18220834@my.sliit.lk	Presented.
it18212150@my.sliit.lk	Presented.
it18227314@mysliit.lk	Presented.
it18218640@my.sliit.lk	Presented.
it18256888@my.sliit.lk	Presented.
it18257637@my.sliit.lk	Absent

The screenshot shows an Outlook window with a search for 'Progress Presentation'. The search results are displayed in a table format, showing the status of various participants.

Participant	Status
it18211474@my.sliit.lk	Presented.
it18221206@my.sliit.lk	Presented.
it18205534@my.sliit.lk	Presented.
it18221442@my.sliit.lk	Absent
it18216974@my.sliit.lk	Presented.
it18217100@my.sliit.lk	Presented.
it18220834@my.sliit.lk	Presented.
it18212150@my.sliit.lk	Presented.
it18227314@mysliit.lk	Presented.
it18218640@my.sliit.lk	Presented.
it18256888@my.sliit.lk	Presented.
it18257637@my.sliit.lk	Absent

2.3 Project Group Calls

The screenshot shows a Microsoft Teams chat window for the group "Progress Presentation 2021 June Batch". The left sidebar contains navigation icons for Activity, Chat, Teams, Assignments, Calendar, Calls, Files, and Apps. The chat history on the left lists recent messages, including "IT Internship Viva with Mr. Nelum Amar...", "Progress Presentation 2021 June Batch", "MTIT-034-Assignment 1-2", "Research Paper Submission Meeting", "Balasooriya T.D it18212150", "Balasooriya T.D it1... +3", and "PPI - Discussion".

The main chat area displays a meeting history for the group. The meetings are listed chronologically, with the most recent at the top. Each entry includes a date, time, and status (e.g., "Meeting ended: 13s", "Meeting started", "Recording has started"). A meeting card is shown for the meeting on Friday, December 31, 2021, at 12:30 PM, which ended at 1:03 PM. The card includes a thumbnail of the meeting and a link to the recording: <https://www.overleaf.com/project/61cdf88e97ae7f2cd58fb61d>. The meeting was recorded by Samantha Rajapaksha.

The chat area also shows a message from Samantha Rajapaksha on Friday, December 31, 2021, at 11:55 PM, with the same link. The chat area is currently empty, with a "Type a new message" input field at the bottom.

The screenshot shows a Microsoft Teams chat window for the group "Progress Presentation 2021 June Batch". The left sidebar contains navigation icons for Activity, Chat, Teams, Assignments, Calendar, Calls, Files, and Apps. The chat history on the left lists recent messages, including "IT Internship Viva with Mr. Nelum Amar...", "Progress Presentation 2021 June Batch", "MTIT-034-Assignment 1-2", "Research Paper Submission Meeting", "Balasooriya T.D it18212150", "Balasooriya T.D it1... +3", and "PPI - Discussion".

The main chat area displays a meeting history for the group. The meetings are listed chronologically, with the most recent at the top. Each entry includes a date, time, and status (e.g., "Meeting ended: 14m 19s", "Meeting started", "Recording has started"). A meeting card is shown for the meeting on Thursday, May 5, 2022, at 10:30 PM, which ended at 10:44 PM. The card includes a thumbnail of the meeting and a link to the recording: https://scholar.google.com/citations?hl=en&view_op=search_venues&vq=IEEE+region+10&btrG=. The meeting was recorded by Samantha Rajapaksha.

The chat area also shows a message from Panduwawala P.K.K.G it18184518 on Thursday, May 5, 2022, at 10:54 PM, with the text: "Sir, I'll join from my mobile. My headphone is not working".

The chat area is currently empty, with a "Type a new message" input field at the bottom.

Activity

Chat

Teams

Assignments

Calendar

Calls

Files

...

Apps

Help

Chat

Recent

IT Internship Viva with Mr. Nelum Amar... 6/7

User added

Progress Presentation 2021 June Batch 6/2

Recording is ready

MTIT-034-Assignment 1-2 4/24

User added

Research Paper Submission Meeting 3/31

Recording is ready

Balasooriya T.D it18212150 3/19

eeee

Balasooriya T.D it1... +3 3/19

User added

Research Paper Submission Meeting 3/16

Samantha: <https://www.jeeebombay.org/tensym...>

PPI - Discussion 1/4

Recording is ready

Progress Presentation 2021 June Batch

Chat Files Meeting Notes Whiteboard +

Join

30

12/30/2021 10:14 PM Meeting ended: 13s

12/30/2021 10:29 PM Meeting started

12/30/2021 10:39 PM Recording has started

Samantha Rajapaksha 12/30/2021 11:55 PM

<https://www.overleaf.com/project/61cdf88e97ae7f2cd58fb61d>

Friday, December 31, 2021

12/31/2021 12:12 AM Meeting ended: 1h 49m 4s

12/31/2021 12:12 AM Recording has stopped. Saving recording...

Meeting

Recorded by: Samantha Rajapaksha

Recorded by: Samantha Rajapaksha

Monday, January 10, 2022

1/10/2022 2:32 PM Meeting ended: 4h 37m 8s

1/10/2022 3:37 PM Meeting ended: 30s

Thursday, January 13, 2022

1/13/2022 10:21 PM Meeting started

1/13/2022 10:37 PM Recording has started

Friday, January 14, 2022

1/14/2022 12:41 AM Recording has stopped. Saving recording...

Type a new message

🗑️

📎

📄

😊

🗨️

👤

🔄

👍

👎

...

2.3 Updated Gantt Chart

