FACULTY OF COMPUTING

STATUS DOCUMENT 1

"TeaBot" – Tea plantation preservation using an intelligent robot.

STUDENT NAME: GUNAWARDANA I.I.E

STUDENT NUMBER: IT19973470

GROUP ID:2023-044

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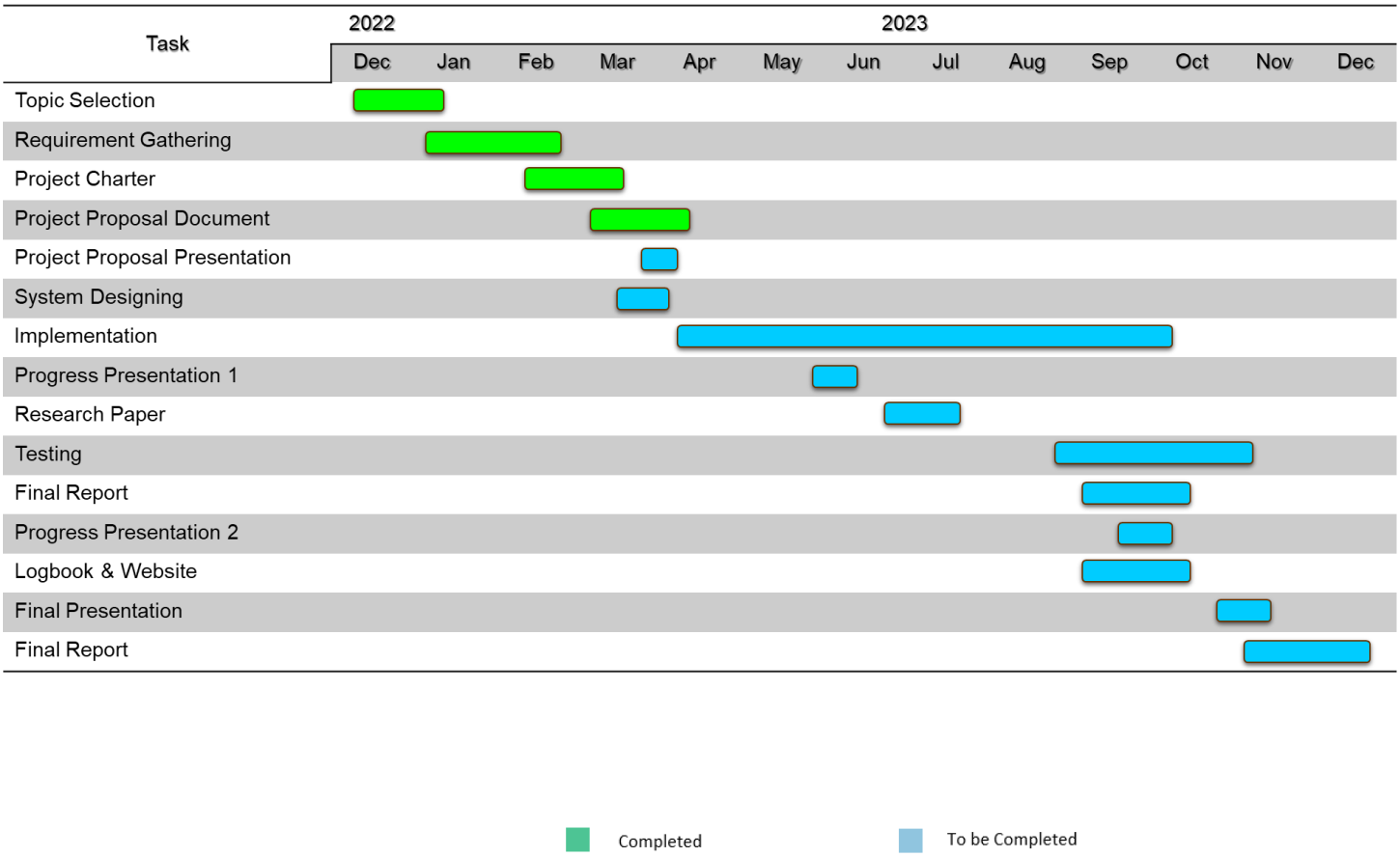
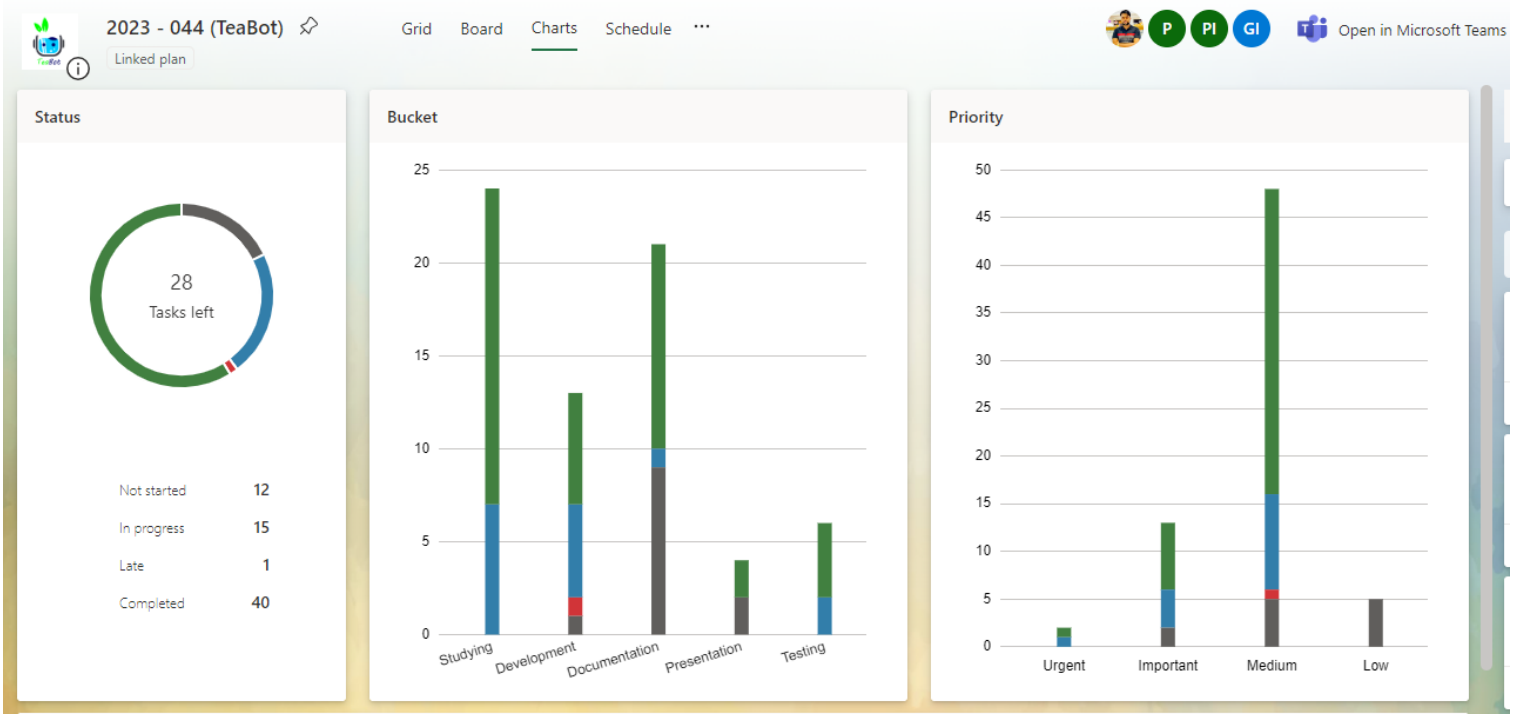
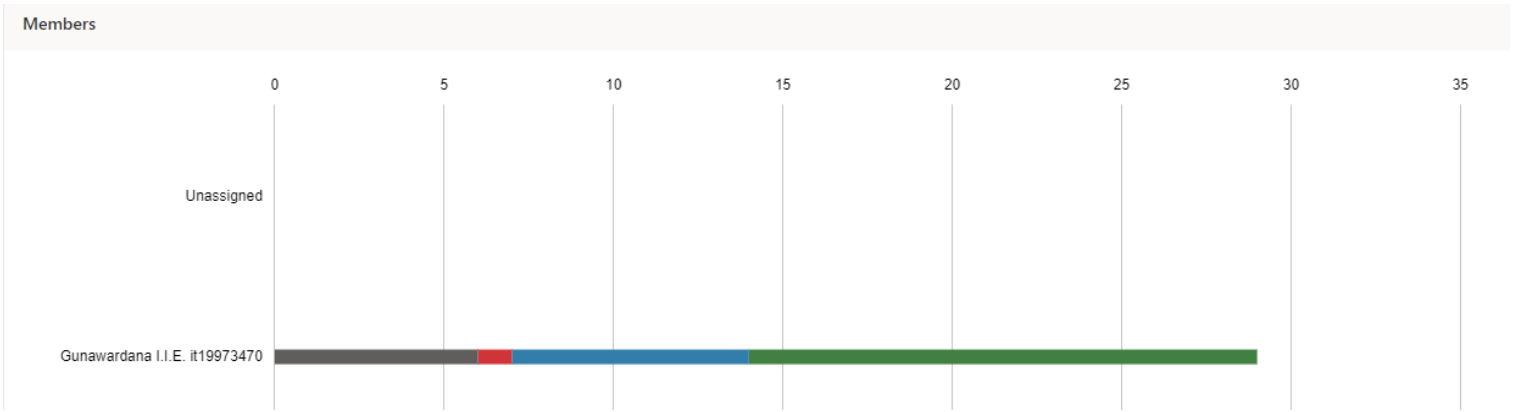
1 GANNT CHART

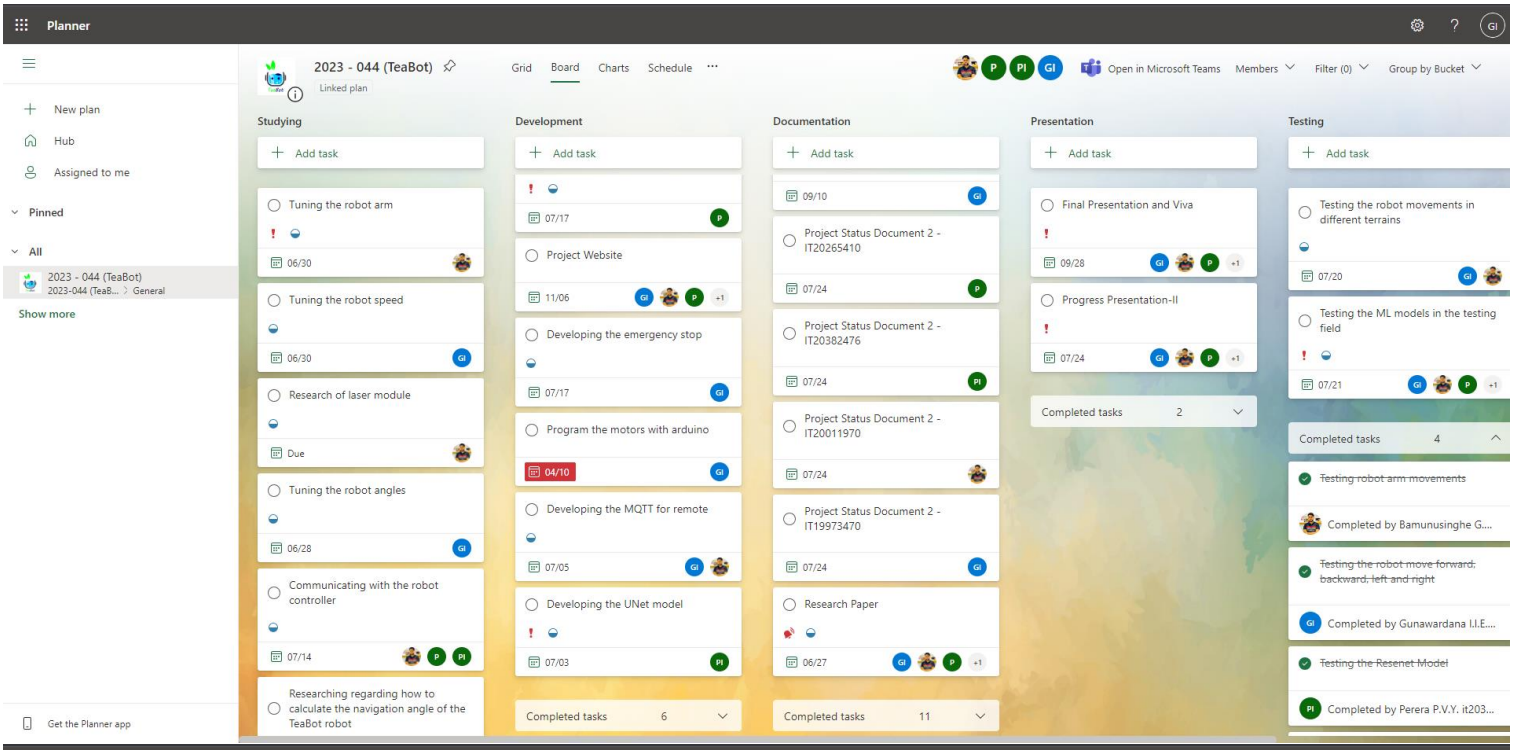


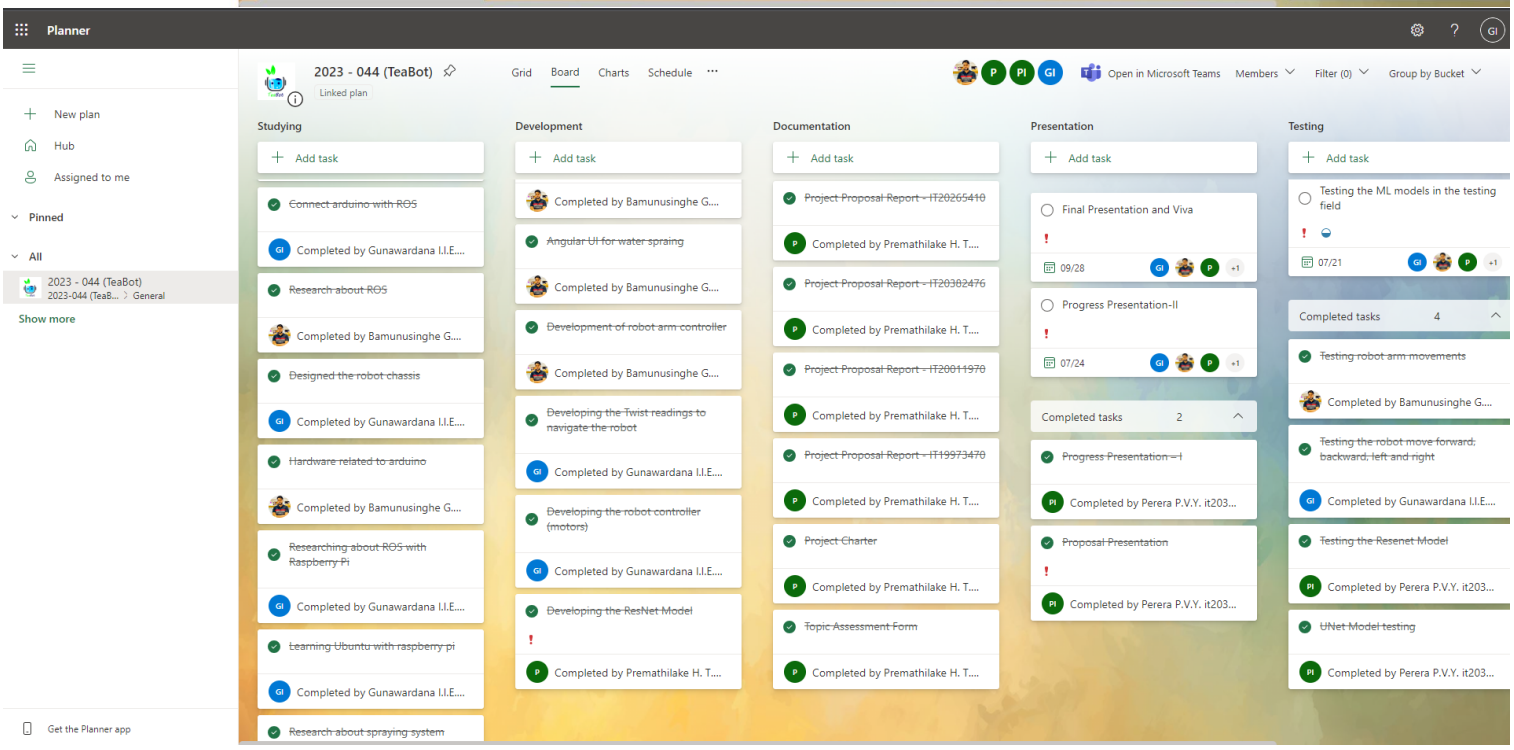
2 PROJECT VIEWS MS PLANNER



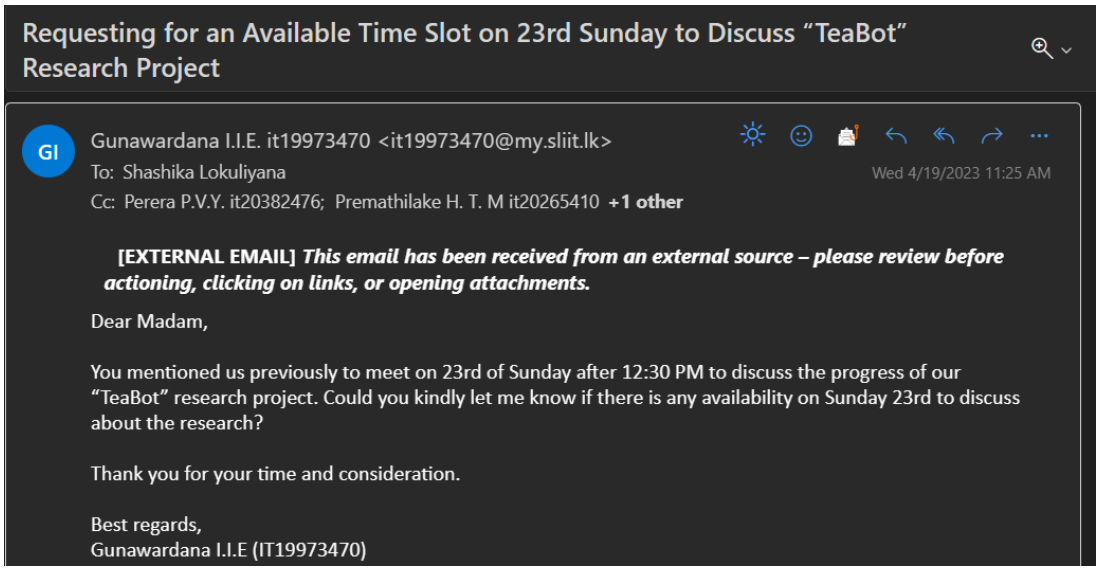


3 Work Break Down Structure Ms Planner





4 EMAILS, MEETINGS WITH SUPERVISOR, CO-SUPERVISOR



Requesting for an Available Time Slot on 23rd Sunday to Discuss "TeaBot" Research Project

GI

Gunawardana I.I.E. it19973470 <it19973470@my.sliit.lk>

To: Shashika Lokuliyana

Wed 4/19/2023 11:25 AM

Cc: Perera P.V.Y. it20382476; Premathilake H. T. M it20265410 **+1 other**

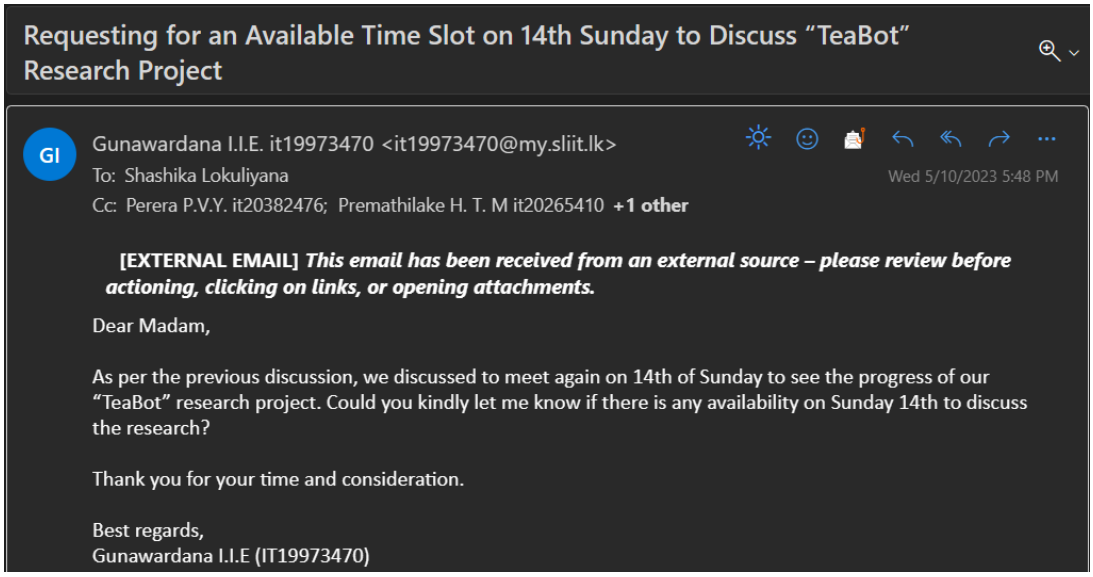
[EXTERNAL EMAIL] ***This email has been received from an external source – please review before actioning, clicking on links, or opening attachments.***

Dear Madam,

You mentioned us previously to meet on 23rd of Sunday after 12:30 PM to discuss the progress of our "TeaBot" research project. Could you kindly let me know if there is any availability on Sunday 23rd to discuss about the research?

Thank you for your time and consideration.

Best regards,
Gunawardana I.I.E (IT19973470)



Requesting for an Available Time Slot on 14th Sunday to Discuss "TeaBot" Research Project

GI

Gunawardana I.I.E. it19973470 <it19973470@my.sliit.lk>

To: Shashika Lokuliyana

Wed 5/10/2023 5:48 PM

Cc: Perera P.V.Y. it20382476; Premathilake H. T. M it20265410 **+1 other**

[EXTERNAL EMAIL] ***This email has been received from an external source – please review before actioning, clicking on links, or opening attachments.***

Dear Madam,

As per the previous discussion, we discussed to meet again on 14th of Sunday to see the progress of our "TeaBot" research project. Could you kindly let me know if there is any availability on Sunday 14th to discuss the research?

Thank you for your time and consideration.

Best regards,
Gunawardana I.I.E (IT19973470)

Requesting a time to meet to discuss the TeaBot project

GI

Gunawardana I.I.E. it19973470

To: Shashika Lokuliyana

Cc: Premathilake H. T. M it20265410; Perera P.V.Y. it20382476; Bamunusinghe G.P it20011970

Thu 5/25/2023 11:51 AM

Dear Madam,

Could you please give us a time to meet on 27th Saturday to discuss about our TeaBot project?

Thank you for your time and consideration.

Regards,
Gunawardana I.I.E (IT19973470)

SL

Shashika Lokuliyana <shashika.l@sliit.lk>

To: Gunawardana I.I.E. it19973470

Mon 5/29/2023 2:04 PM

[EXTERNAL EMAIL] ***This email has been received from an external source – please review before actioning, clicking on links, or opening attachments.***

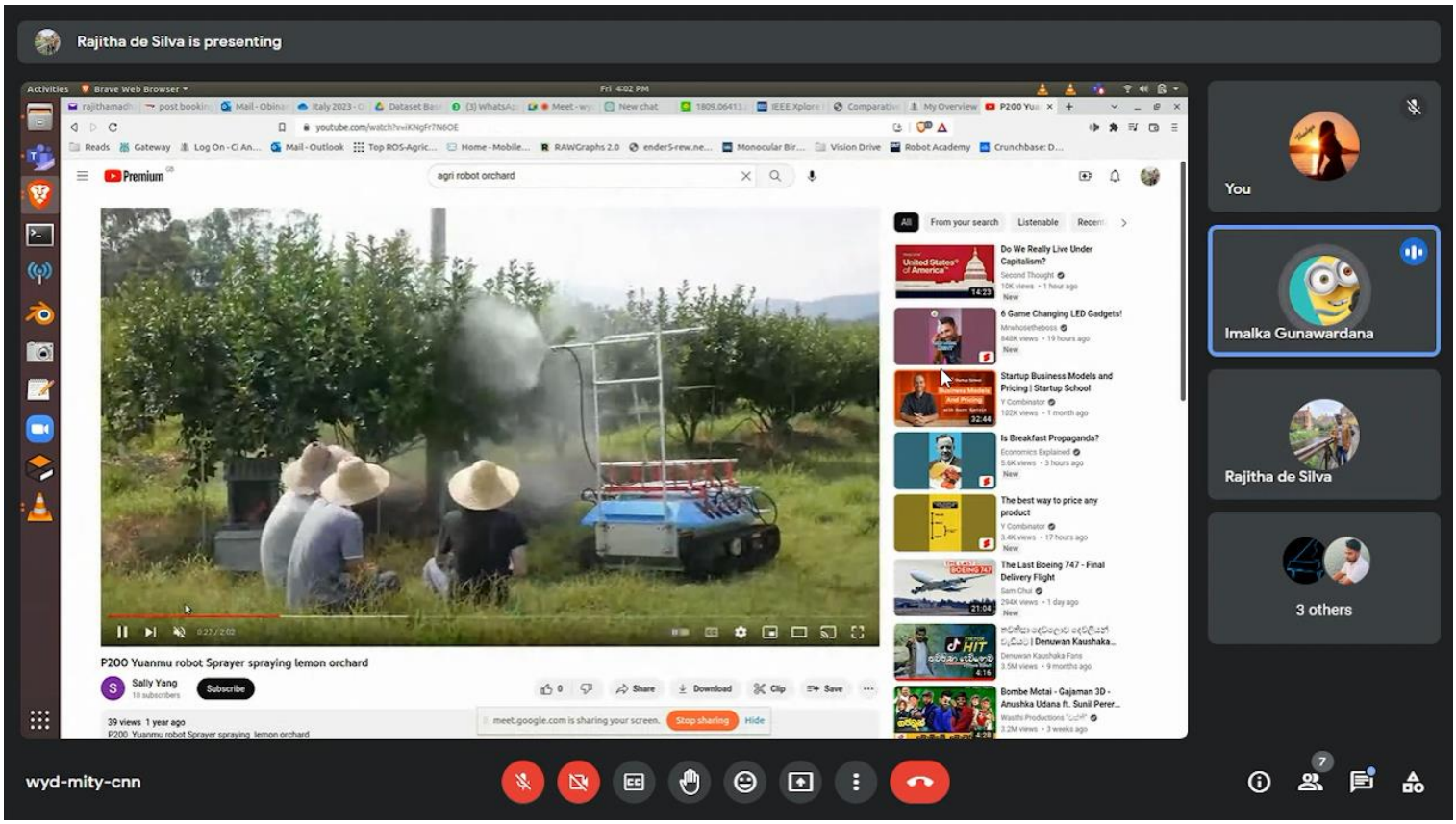
Putha can you come on 2nd June around 10.00 am??

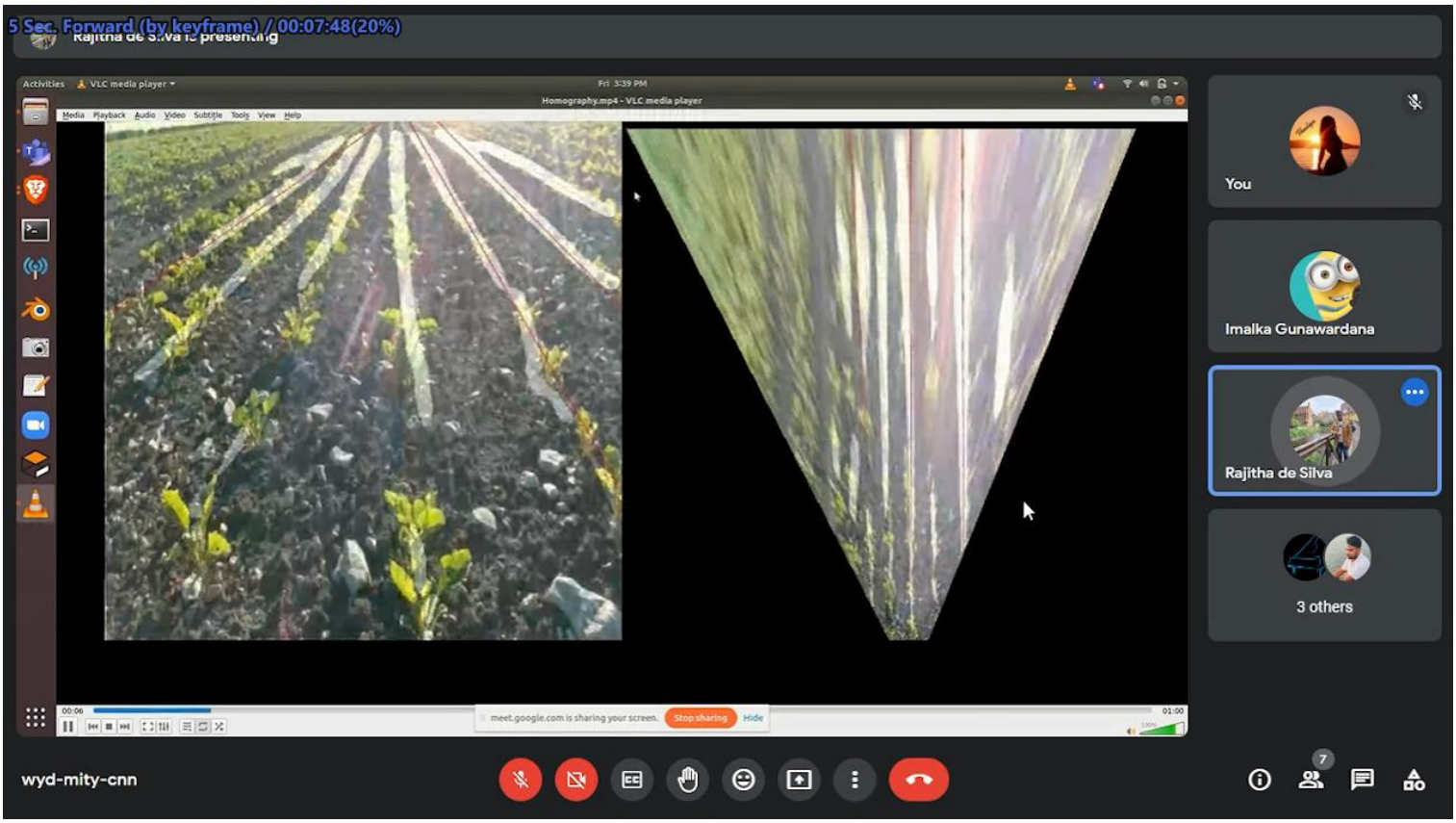
Thanks in Advanced.

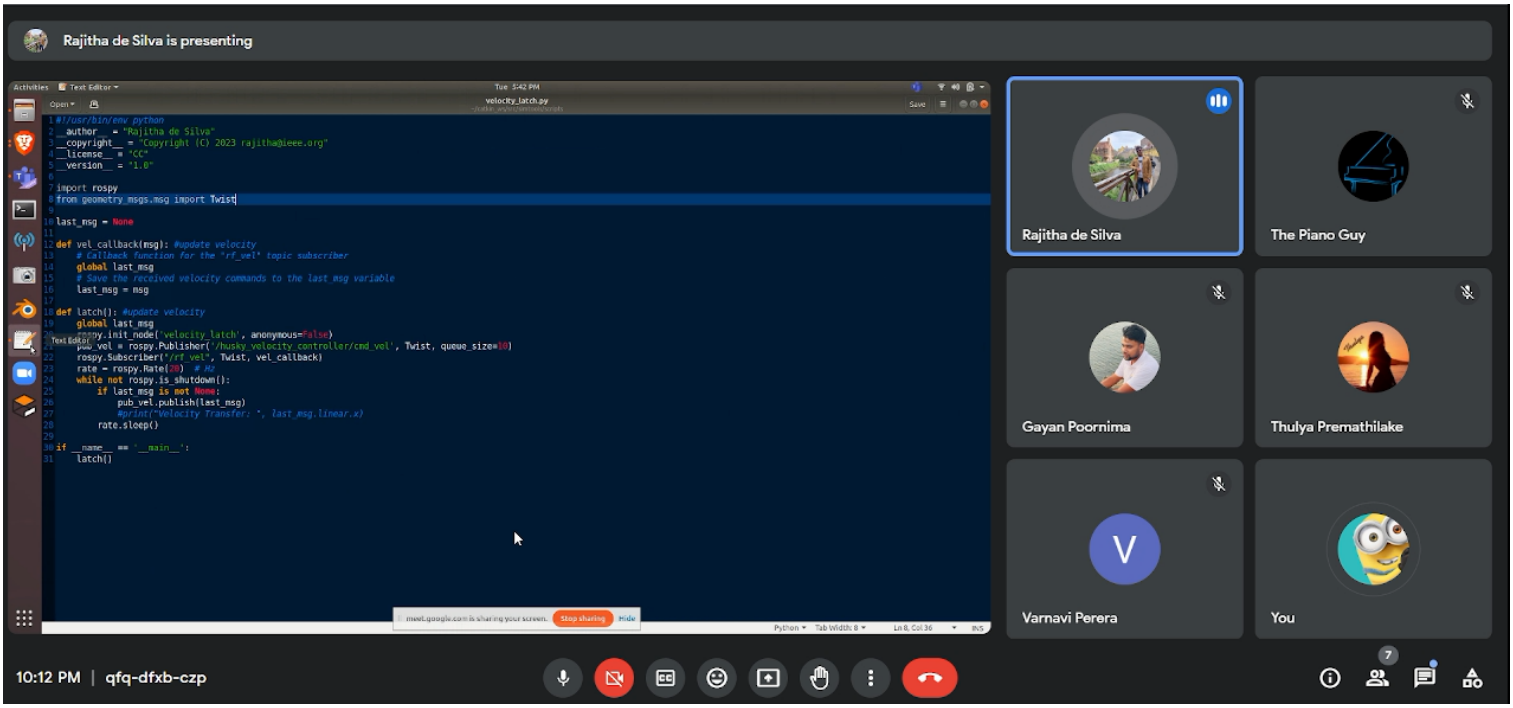
Shashika L. Lokuliyana
M.Sc. (IT) SLIIT, B.Sc.(Sp.) Hons in IT (Spec. in CSN) (SLIIT), MIEEE, MCSSL, MISOC
Senior Lecturer
CSNE Degree Program Coordinator
Secretary - IEEE Computer Society Sri Lanka Section
Committee Member - IEEE WIE Sri Lanka Section
Registrations Co-Chair - ICAC 2023
SLIIT, Malabe Campus, Sri Lanka.
shashika.l@sliit.lk | shashika0791@gmail.com
+94 77 2240 237

Screenshots of meetings about automatic navigation, dataset collection, and data labeling methods for & spraying with external supervisor Dr Rajitha De Silva

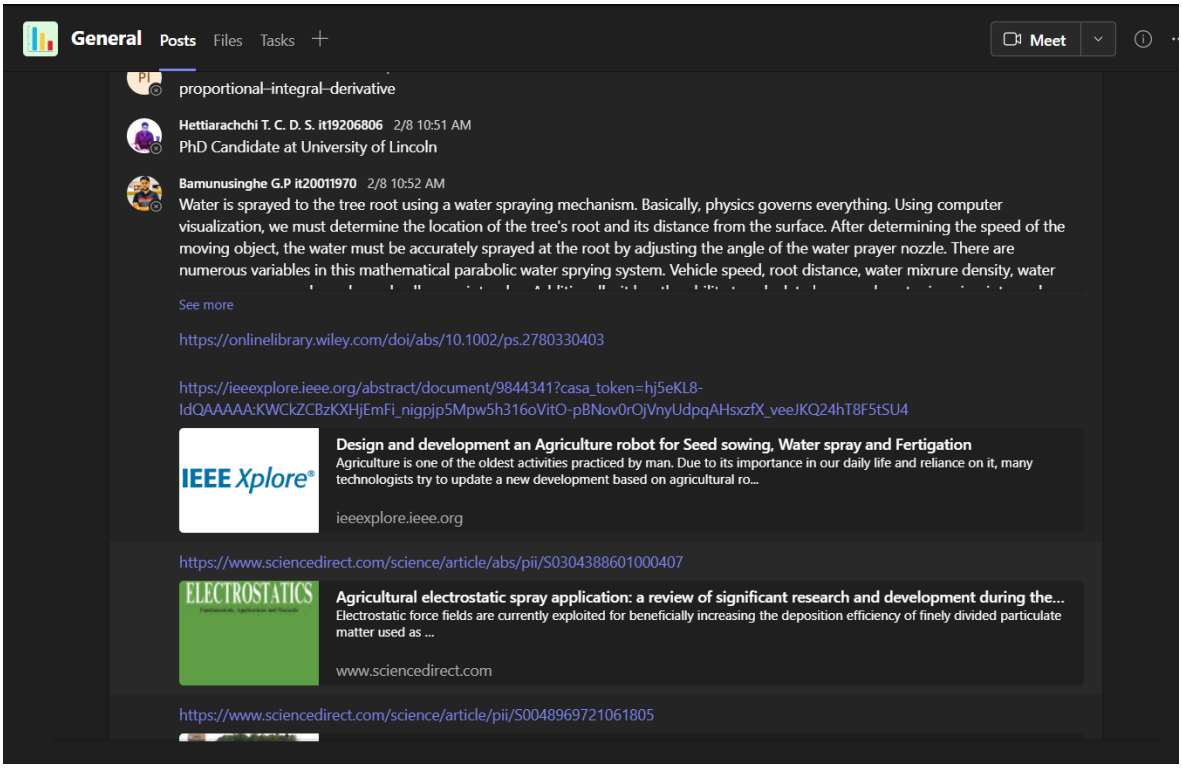
Discussions regarding Robot Controller Development.

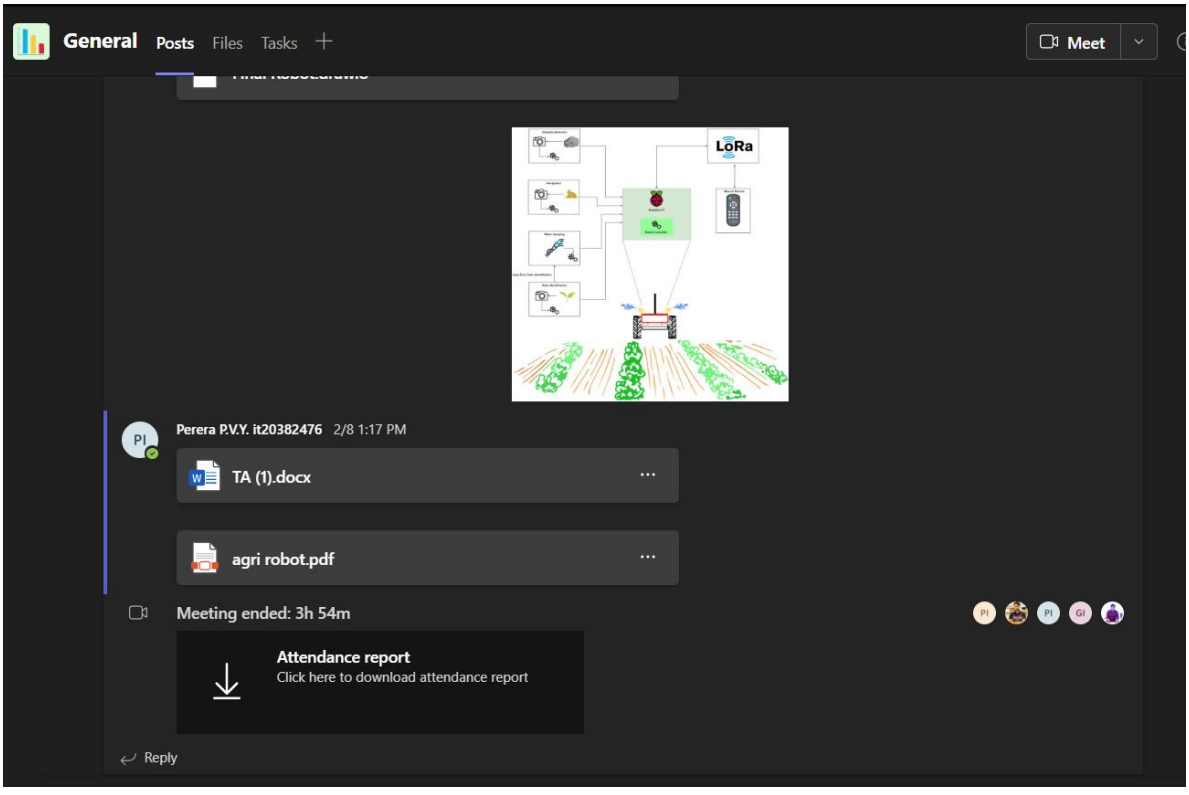



5 Sec. Forward (by keyframe) / 00:07:48(20%)
Activities
VLC media player
Fri 3:39 PM
Homography.mp4 - VLC media player
Media Playback Audio Video Subtitle Tools View Help
meet.google.com is sharing your screen.
Stop sharing
Hide
You
Imalka Gunawardana
Rajitha de Silva
3 others
wyd-mity-cnn


Rajitha de Silva is presenting
Activities
Text Editor
Tue 5:42 PM
velocity_latch.py
#!/usr/bin/env python
__author__ = "Rajitha de Silva"
__copyright__ = "Copyright (C) 2023 rajitha@ieee.org"
__license__ = "CC"
__version__ = "1.0"
import rospy
from geometry_msgs.msg import Twist
last_msg = None
def vel_callback(msg): #update velocity
Callback function for the 'rf_vel' topic subscriber
global last_msg
# Save the received velocity commands to the last_msg variable
last_msg = msg
def latch(): #update velocity
global last_msg
rospy.init_node('velocity_latch', anonymous=False)
pub_vel = rospy.Publisher('/husky_velocity_controller/cmd_vel', Twist, queue_size=10)
rospy.Subscriber("/rf_vel", Twist, vel_callback)
rate = rospy.Rate(20) # Hz
while not rospy.is_shutdown():
if last_msg is not None:
pub_vel.publish(last_msg)
#print("Velocity Transfer: ", last_msg.linear.x)
rate.sleep()
if __name__ == '__main__':
latch()
meet.google.com is sharing your screen.
Stop sharing
Hide
Rajitha de Silva
The Piano Guy
Gayan Poornima
Thulya Premathilake
V
Varnavi Perera
You
10:12 PM | qfq-dfxb-czp

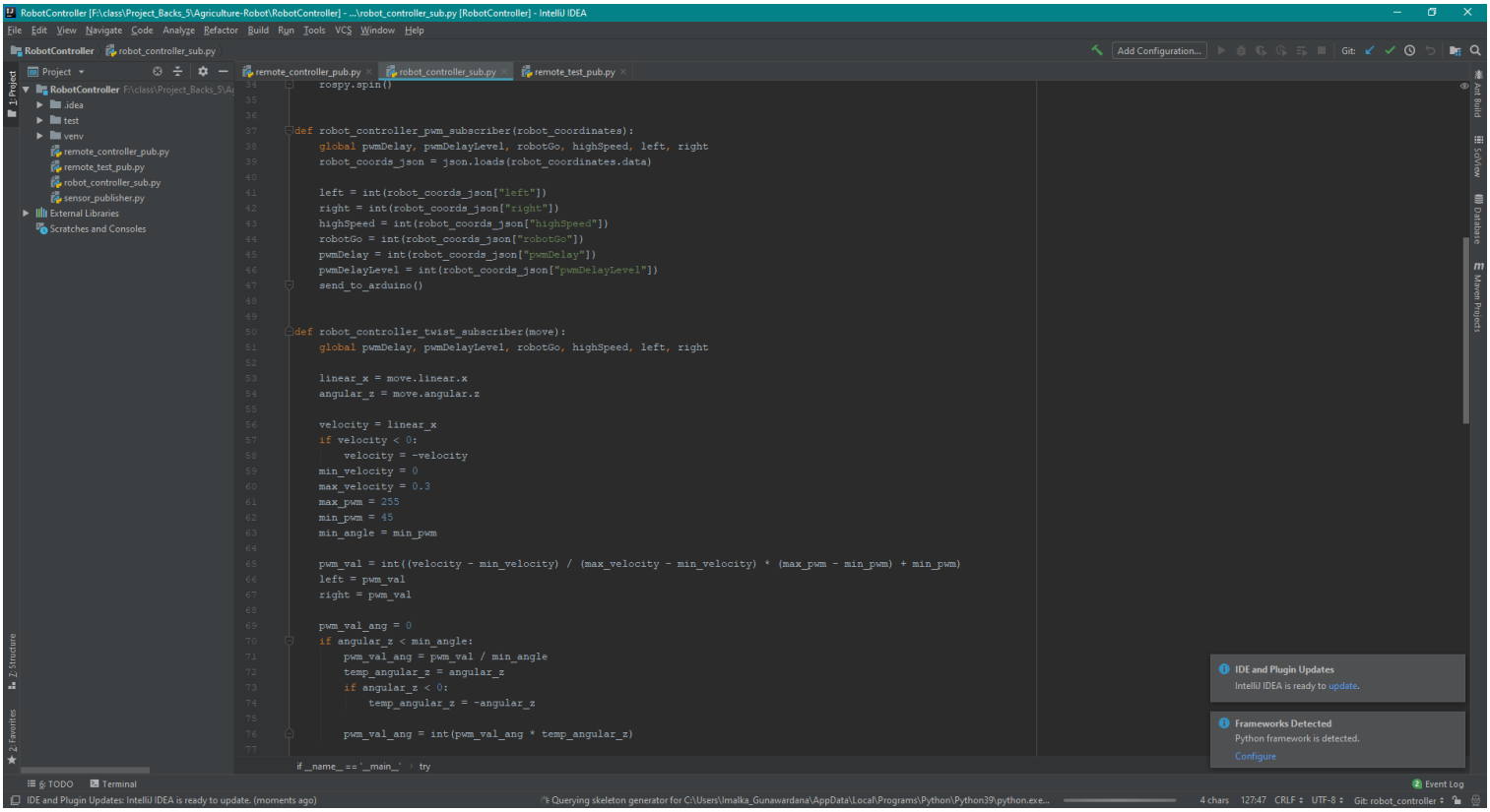
5 MS TEAMS AND CALLS

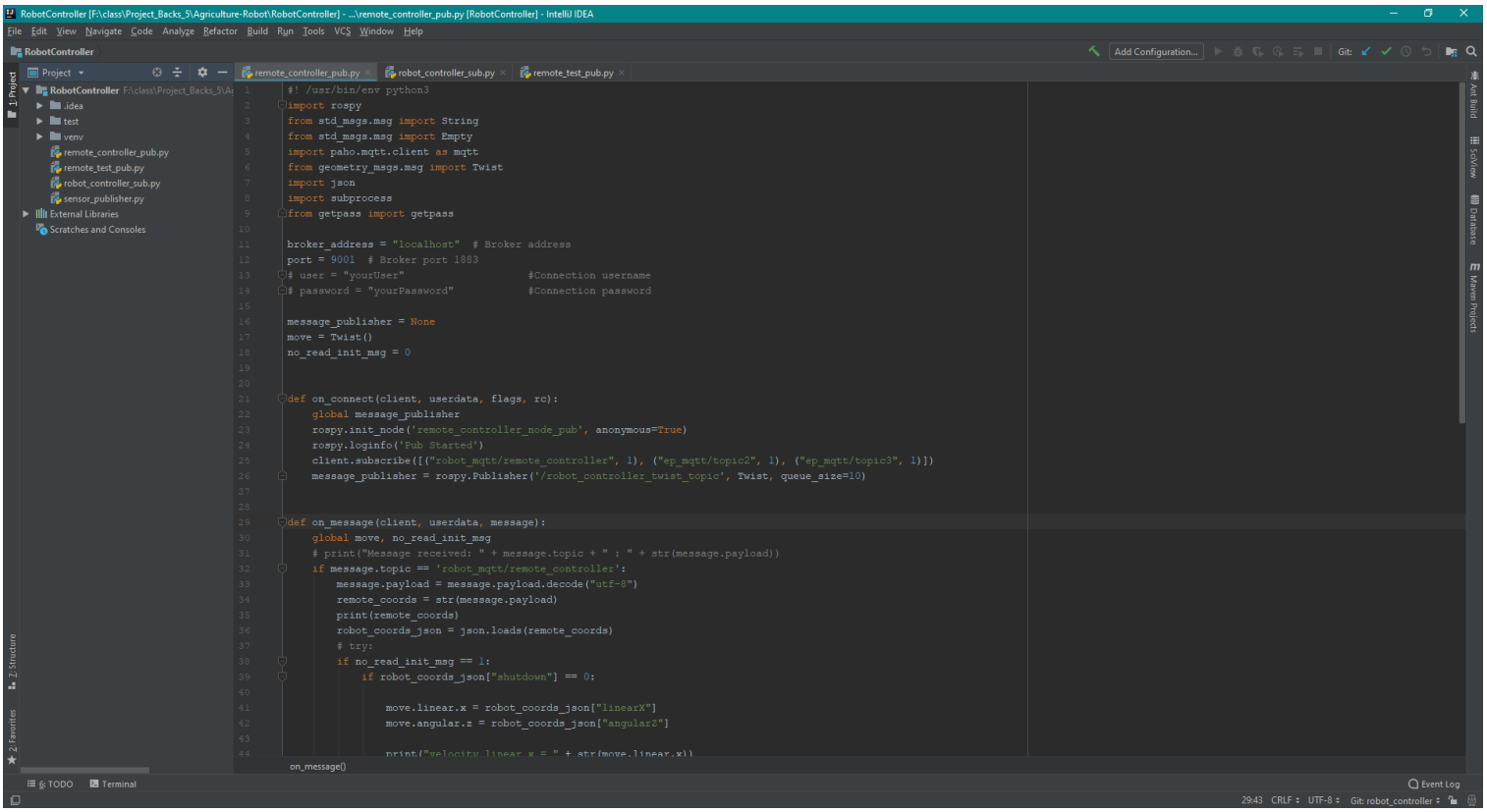


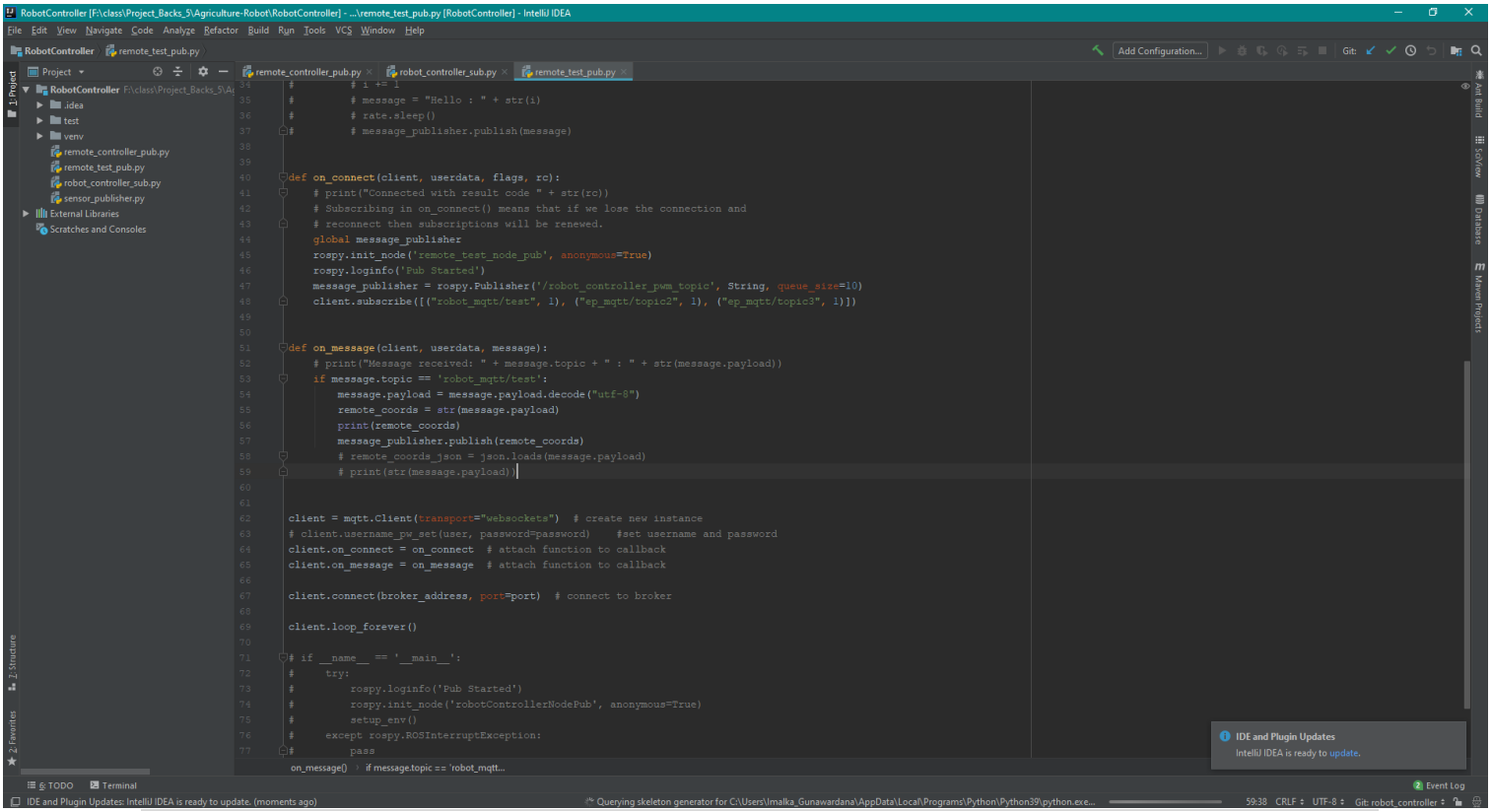


6 Prototype

Screenshot for the development of the robot controller

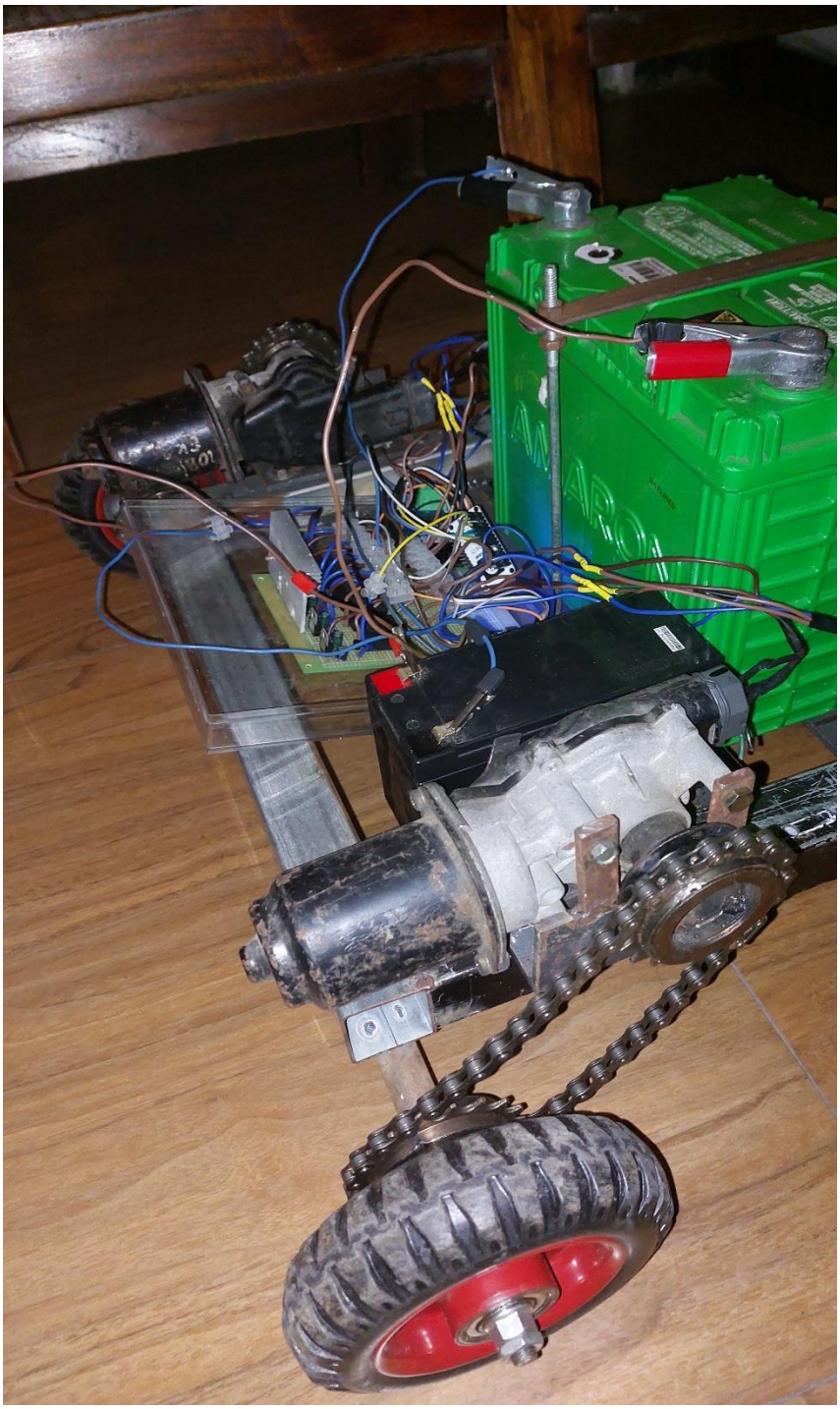


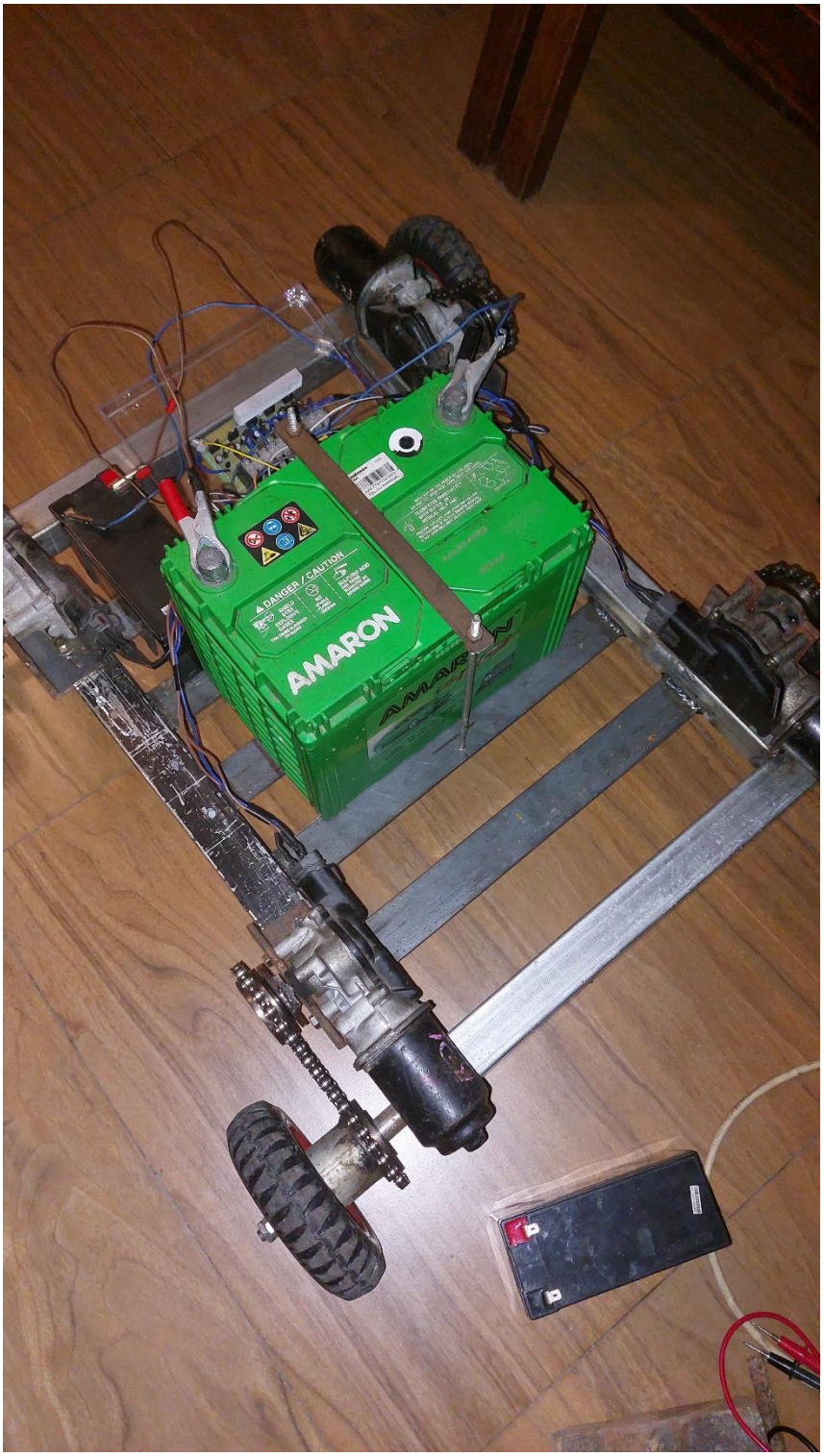

RobotController [F:\class\Project_Backs_5\Agriculture-Robot\RobotController] - ...\remote_controller_pub.py [RobotController] - IntelliJ IDEA
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
RobotController
Add Configuration...
Git:
Project
remote_controller_pub.py
robot_controller_sub.py
remote_test_pub.py
RobotController F:\class\Project_Backs_5\A
.idea
test
venv
remote_controller_pub.py
remote_test_pub.py
robot_controller_sub.py
sensor_publisher.py
External Libraries
Scratches and Consoles
#! /usr/bin/env python3
import rospy
from std_msgs.msg import String
from std_msgs.msg import Empty
import paho.mqtt.client as mqtt
from geometry_msgs.msg import Twist
import json
import subprocess
from getpass import getpass
broker_address = "localhost" # Broker address
port = 9001 # Broker port 1883
# user = "yourUser"   #Connection username
# password = "yourPassword"   #Connection password
message_publisher = None
move = Twist()
no_read_init_msg = 0
def on_connect(client, userdata, flags, rc):
global message_publisher
rospy.init_node('remote_controller_node_pub', anonymous=True)
rospy.loginfo('Pub Started')
client.subscribe([("robot_mqtt/remote_controller", 1), ("ep_mqtt/topic2", 1), ("ep_mqtt/topic3", 1)])
message_publisher = rospy.Publisher('/robot_controller_twist_topic', Twist, queue_size=10)
def on_message(client, userdata, message):
global move, no_read_init_msg
# print("Message received: " + message.topic + " : " + str(message.payload))
if message.topic == 'robot_mqtt/remote_controller':
message.payload = message.payload.decode("utf-8")
remote_coords = str(message.payload)
print(remote_coords)
robot_coords_json = json.loads(remote_coords)
# try:
if no_read_init_msg == 1:
if robot_coords_json["shutdown"] == 0:
move.linear.x = robot_coords_json["linearX"]
move.angular.z = robot_coords_json["angular2"]
print("velocity linear x = " + str(move.linear.x))
on_message()
TODO
Terminal
Event Log
29:43 CRLF UTF-8 Git: robot_controller

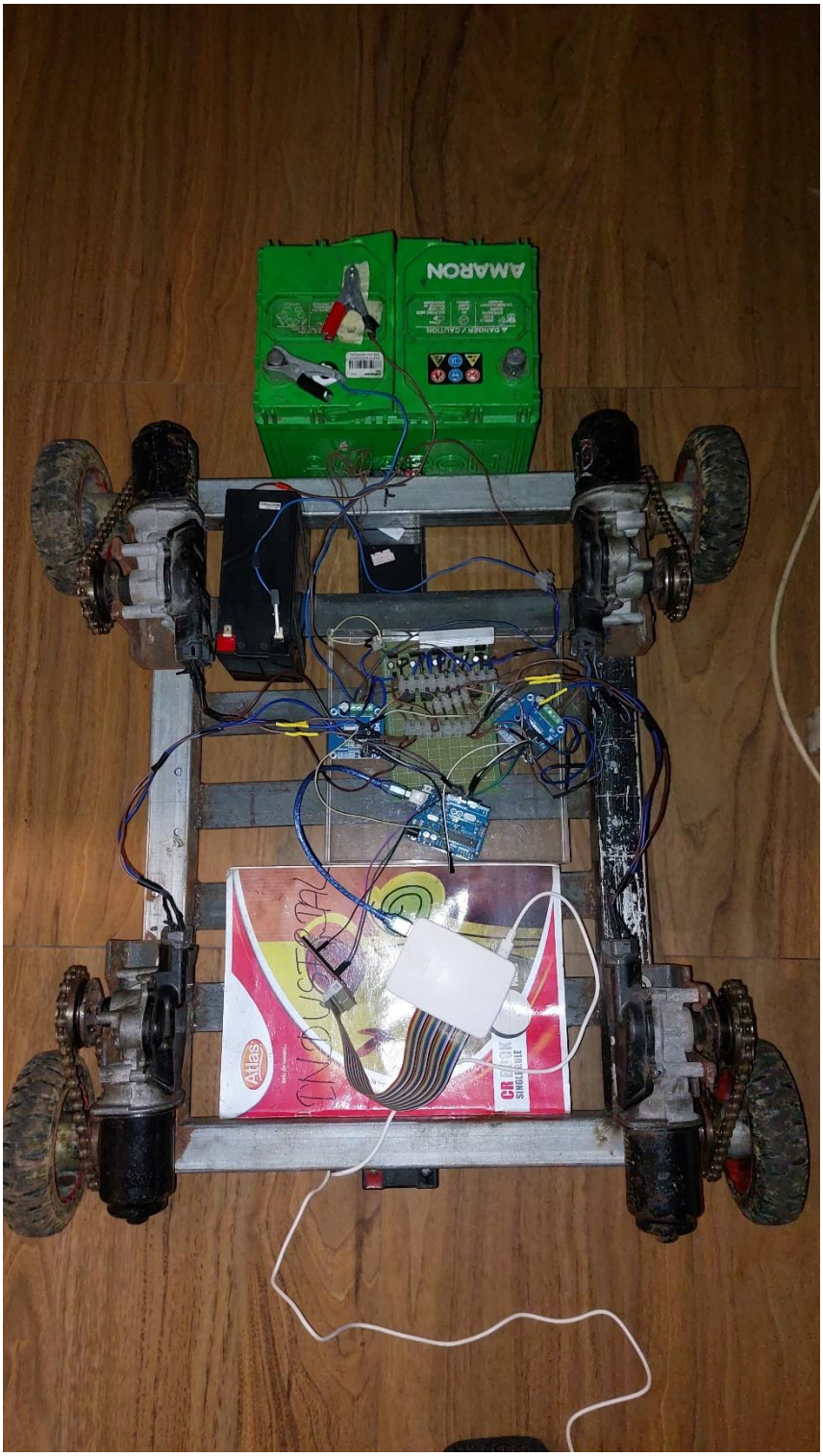

RobotController [F:\class\Project_Backs_5\Agriculture-Robot\RobotController] - ...\remote_test_pub.py [RobotController] - IntelliJ IDEA
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
RobotController remote_test_pub.py
Add Configuration...
Git:
Project
remote_controller_pub.py
robot_controller_sub.py
remote_test_pub.py
RobotController F:\class\Project_Backs_5\A
.idea
test
venv
remote_controller_pub.py
remote_test_pub.py
robot_controller_sub.py
sensor_publisher.py
External Libraries
Scratches and Consoles
#   i += 1
#   # message = "Hello : " + str(i)
#   # rate.sleep()
#   # message_publisher.publish(message)
def on_connect(client, userdata, flags, rc):
# print("Connected with result code " + str(rc))
# Subscribing in on_connect() means that if we lose the connection and
# reconnect then subscriptions will be renewed.
global message_publisher
rospy.init_node('remote_test_node_pub', anonymous=True)
rospy.loginfo('Pub Started')
message_publisher = rospy.Publisher('/robot_controller_pwm_topic', String, queue_size=10)
client.subscribe([("robot_mqtt/test", 1), ("ep_mqtt/topic2", 1), ("ep_mqtt/topic3", 1)])
def on_message(client, userdata, message):
# print("Message received: " + message.topic + " : " + str(message.payload))
if message.topic == 'robot_mqtt/test':
message.payload = message.payload.decode("utf-8")
remote_coords = str(message.payload)
print(remote_coords)
message_publisher.publish(remote_coords)
# remote_coords_json = json.loads(message.payload)
# print(str(message.payload))
client = mqtt.Client(transport="websockets") # create new instance
# client.username_pw_set(user, password=password)   #set username and password
client.on_connect = on_connect # attach function to callback
client.on_message = on_message # attach function to callback
client.connect(broker_address, port=port) # connect to broker
client.loop_forever()
# if __name__ == '__main__':
#   try:
#   rospy.loginfo('Pub Started')
#   rospy.init_node('robotControllerNodePub', anonymous=True)
#   setup_env()
#   except rospy.ROSInterruptException:
#   pass
IDE and Plugin Updates
IntelliJ IDEA is ready to update.
on_message() if message.topic == 'robot_mqtt...
TODO
Terminal
Event Log
IDE and Plugin Updates: IntelliJ IDEA is ready to update. (moments ago)
Querying skeleton generator for C:\Users\Imalka_Gunawardana\AppData\Local\Programs\Python\Python39\python.exe...
59:38 CRLF UTF-8 Git: robot_controller

sketch_feb04a | Arduino 1.8.8
File Edit Sketch Tools Help
sketch_feb04a
if (loopCountCur < rightCount) {
if (rightIsIncrementing) {
rightSet++;
if (rightSet > 0) {
analogWrite(R_F_PWM, rightSet);
if (rightSet < pwmDelayLevel) {
delay(pwmDelay);
}
}
if (rightSet <= 0) {
analogWrite(R_B_PWM, -rightSet);
if (-rightSet < pwmDelayLevel) {
delay(pwmDelay);
}
}
} else {
rightSet--;
if (rightSet >= 0) {
analogWrite(R_F_PWM, rightSet);
if (rightSet < pwmDelayLevel) {
delay(pwmDelay);
}
}
if (rightSet < 0) {
analogWrite(R_B_PWM, -rightSet);
if (-rightSet < pwmDelayLevel) {
delay(pwmDelay);
}
}
}
}
loopCountCur++;
}
// Serial.println("leftSet = " + String(leftSet) + ", rightSet = " + String(rightSet));
}
void loop() {
}

Development of the robot chassis




DANGER / CAUTION
AMARON


AMARON
Atlas