EMBEDDED DESIGN AND LabVIEW INTEGRATION SPECIAL LAB - SSLB055

Place :**AS Block, Groung floor**

SELF-BALANCING ROBOT

Date : 23/09/2023 to 20/10/2023

1) Student Details

NAME	DEPARTMENT
VIMAL KUMAR P S SHARMILAA DEVI P A	ELECTRONICS AND COMMUNICATION ENGINEERING COMPUTER SCIENCE AND ENGINEERING

FACULTY INCHARGE

Dr. MANOJKUMAR P - EE10786

2)Project Schedule:

Timing	WEEK 1		WEEK 2	WEEK 3	WEEK 4	WEEK 5
8:30 AM	Planning, what to gather	Discussion to programme	Preparing an idea to design	Gathering parts to assemble	Preparing the stage	Preparing by taking safety measures
9:30 AM	Learning software	Programming	Desigining body	Assembly	Corrections	Checking
10:30 AM						
10:45 AM	Tea Break	Tea Break	Tea Break	Tea Break	Tea Break	Tea Break
11:00 AM	Learning software	Checking the code by stimulation	Checking the stability			Testing
1:00 PM				Assembly	Checking	
2:00 PM	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
2:30 PM	Learning hardware	Programming	Desigining	Uploading the Code	Modification	Testing
3:00 PM					Cheching	
3:15 PM	Tea Break	Tea Break	Tea Break	Tea Break	Tea Break	Tea Break
3:20 PM	Concluding the task done	Concluding the task done	Concluding the task done	Checking	modification	Concluding the task done
4:15 PM				Concluding the task done	Concluding the task done	

3) DAY WISE CONTENT :

PROJECT SCHEDULE						
DESCRIPTION	**WEEK 1**	**WEEK 2**	**WEEK 3**	**WEEK 4**	**WEEK 5**	**CONTIBUTION**
Learning the contents required for software and hardware						**80%**
Developing the program stimulating the program						**100%**
Designing the body and testing the body						**70%**
Assembling the body parts and loading the code						**70%**
Testing the prototype						**100%**
Concluding the task done						**100%**

4) PROJECT CONTENT :

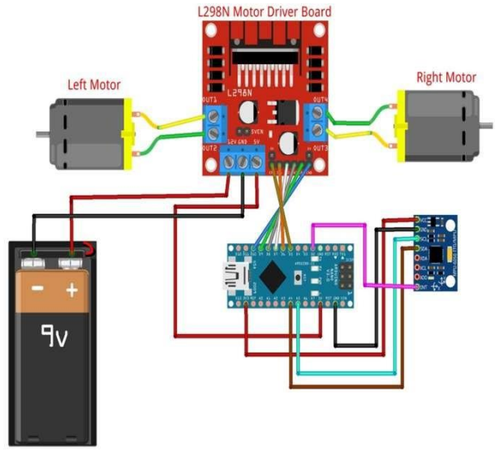
Modules

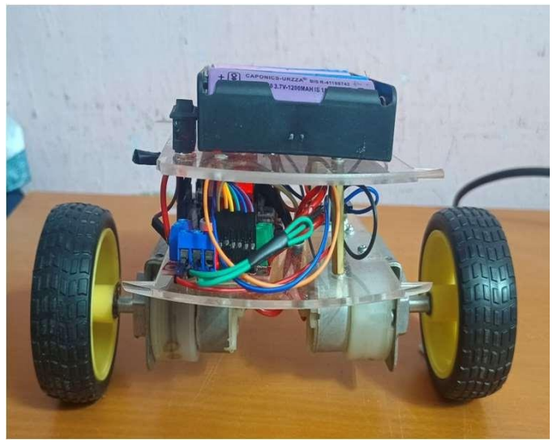
i) Work Organisation Management
ii) Learning software and hardware
iii) Desigining the body
iv) Assembling the body parts
v) Programming
vi) Corrections

5) COMPARISON

Abstract	Proposed solution
The project aims to design, implement, and demonstrate a self-balancing robot that utilizes sensor feedback and control algorithms to maintain stability while traversing various terrains. The self-balancing robot's core functionality lies in its ability to dynamically adjust its position in real-time to remain upright, akin to the human body's proprioceptive response. The robot's hardware components include an inertial measurement unit (IMU) comprising gyroscopes and accelerometers to detect its orientation and movement in three-dimensional space. These sensors provide data inputs to a microcontroller, typically an Arduino or Raspberry Pi, which processes the information to calculate the robot's tilt angle. A PID (Proportional-Integral-Derivative) control algorithm is employed to generate corrective signals for the motors based on the deviation from the desired orientation.	The product explores the integration of motor drivers and actuators responsible for driving the wheels or propulsion mechanism, enabling the robot to move in a controlled manner while maintaining its balance. The motor system responds to the control signals generated by the PID algorithm, adjusting the robot's position to counteract any deviation from equilibrium. Software development involves programming the microcontroller to interpret sensor data, execute the control algorithm, and actuate the motors accordingly. Calibration and fine-tuning of the PID parameters play a crucial role in achieving stable and responsive balancing behavior. The producttt's practical implementation includes testing the self-balancing robot in diverse environments to evaluate its stability, responsiveness, and adaptability to varying conditions.

6) TASK PHOTOGRAPH





S.No	PROJECT PRESENTATION	PAPER PRESENTATION	PATENT
1	Presented	Presented	Patent filed Ref no. TEMP/E-1/71593/2023-CHE

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VIMAL KUMAR P S SHARMILAA DEVI P A	ELECTRONICS AND COMMUNICATION ENGINEERING COMPUTER SCIENCE AND ENGINEERING

FACULTY INCHARGE

Dr. MANOJKUMAR P - ECE0786

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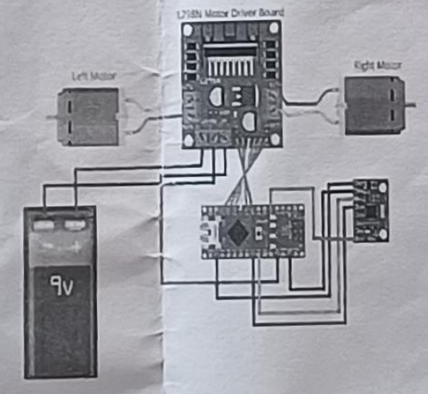

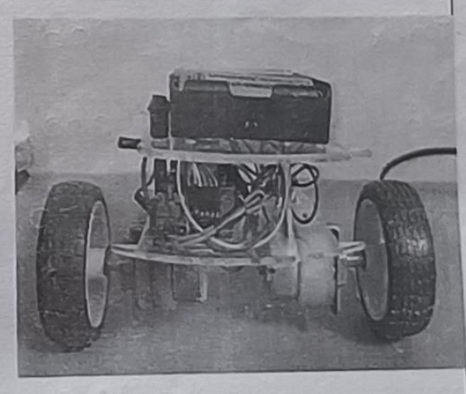

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SPECIAL LAB (Code & Name) : SSLB055 & Embedded Design and LabVIEW Integratio

STUDENT NAME : Vimal Kumar.P.S , Sharmilaa Devi.P.A.

ROLL No.: 73T6221EC342, 73T6221EC310

COMPETITION / PROJECT / PAPER Product

WINNER / RUNNER / PARTICIPATED

LEVEL : — / — R.Amutha 7/12/2023

Signature of Lab In-Charge (with Name) : Mariaamutha.R