MODERN EDUCATION SOCIETY'S WADIA COLLEGE OF ENGINEERING

YEAR 2023-24

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION

MINI PROJECT WORK BOOK

ACADEMIC YEAR 2023-24

PROJECT GROUP NO. :22

Vision of the Institute

To groom Motivated, Environment friendly, Self-esteemed, Creative and Oriented Engineers.

Mission of the Institute

To develop Industry Oriented Manpower to accept the challenges of Globalization by,

- Promoting Value Education through motivated trained faculty,
- Maintaining conducive environment for education at affordable cost,
- Promoting Industry Institute interaction,
- Involving Alumni.

Vision of the E&TC Department

To groom Motivated, Environment friendly, Self-esteemed, Creative and Oriented Electronics and Telecommunication Engineers.

Mission of the E&TC Department

To develop Industry Oriented Manpower to accept the challenges of Globalization by,

Ml: Imparting electronics and telecommunication knowledge through trained faculty in a conducive environment

M2: Creating awareness about the needs of electronics and telecommunication industries through alumni and Industry Institute interaction

M3: Encouraging students to think innovatively and introduce them to various research activities, M4: Grooming students in communication and interpersonal skills.

Program Educational Objectives (PEOs)

- PEOl: To prepare students with strong foundation in mathematical , scientific and engineering fundamentals to excel in their career.
- PE02: To prepare students for technological changes through domain knowledge and extend their skills across the range of disciplines.
- PE03: To prepare students for continuous professional and social development through soft skills and self-learning abilities.

STUDENT TEAM DETAILS

1. NAME OF STUDENT : Divyanshi Rathore

ROLL NO: 61 MOBILE NO: 8149268995

EMAIL: divyanshirathore22@gmail.com

2. NAME OF STUDENT : Asmita Walke

ROLL NO: 74 MOBILE NO: 8830604596

EMAIL: asmita7175@gmail.com

3. NAME OF STUDENT : Jyotika Kumari

ROLL NO: 62 MOBILE NO. 9315633653

EMAIL: sjyotika408@gmail.com

GUIDING FACULTY

Name : Mrs.Kanchan Tiwari

Sign.

Policy for Project Category :

1.The project work preferably should meet and contribute towards the needs of the society. - Societal

2. The project aims to provide an opportunity of designing and building complete system or subsystems based on innovative idea where the student likes to acquire specialized skills. – Research

3. Apply formal idea generation tools to develop multiple engineering design solutions considering environment factor – Environmental

4. Project related to medical field: Health

5. Projects based on music, audio, video systems – Cultural

6. The project based on human safety issues - Safety

PROJECT DETAILS

DOMAIN : Healthcare & Assisted Living

CATEGORY :
(select from give category list)

TITLE OF PROJECT : FALL DETECTION OF ELDERLY PEOPLE USING ESP32 & MPU6050

DESCRIPTION OF THE PROJECT
(Draw diagram if needed)

This project creates a wearable fall detector for elderly people. It uses an ESP32 microcontroller and an MPU6050 sensor,. The accelerometer continuously measures acceleration along the X, Y, and Z axes, which helps detect sudden changes in movement that might indicate a fall.

HARDWARE REQUIREMENT

	AVAILABLE		
ITEM	**COLLEGE**	**COMPANY**	**STUDENT**
ESP 32		Robocraze	
MPU 6050		Robocraze	
PCB BOARD		Robocraze	
JUMPER WIRE		Robocraze	

SOFTWARE REQUIREMENT

	AVAILABLE		
ITEM	**COLLEGE**	**COMPANY**	**STUDENT**
ARDUINO NO IDE		**Arduino Website**	
VS CODE		**Vs code website**	

Name industries working in this field associated with this project.

1. _____
   _____
   _____

2. _____
   _____
   _____

BUDGET OF PROJECT

ITEM	PROPOSED	ACTUAL
ESP 32	450	**356**
MPU 6050	155	**119**
PCB BOARD	60	**60**
JUMPER WIRE	35	**29**
TOTAL	**700**	**564**

SCHEDULE

MES College of Engineering, Pune

Mini project Activity Calendar

Sr.No	Month	JAN		FEB				MAR				APR
	Activity	W 1	W 2	W 4	W 5	W 6	W 7	W 8	W 9	W 10	W 11	W 12
1	Formation of groups	■										
2	Finalization of Mini project & Distribution of work.		■									
3	Submission of synopsis							■				
4	Simulation			■								
5	PCB artwork design using an appropriate EDA tool				■							
6	Fabrication					■						
7	Hardware assembly						■					
8	Testing							■				
9	Enclosure Design ,Poster Presentation								■			
10	Preparation of report										■	
11	Checking & Correction of the Draft Copy of Report										■	
12	Demo and Group Presentations											■

SYNOPSIS

Title: Fall Detection For Elderly People using ESP 32 & MPU 6050

Motivation :

(Why you want to do this project)

We have choose this topic because firstly we wanted to work on real world problems , secondly as old people are the crucial factor in todays world also the number of old people is getting more and more, the falls amongst them too are increasing with the same so we decided to work upon this topic in which we can detect the fall among thode people and notify their guardians , we can also extend this topic and take them towards prevention too.

Proposed Work:

(What do you plan to do?)

We plan to make a device which would detect fall which would also give us the information about the acceleration with which the person falls and also at what angle .

References

(From where will you gather necessary technical inputs? Preferably write IEEE papers name with proper syntax)

https://ieeexplore.ieee.org/abstract/document/10147586/

https://www.academia.edu/download/105651467/31990_66651_1_PB.pdf

https://ieeexplore.ieee.org/document/8736227/

https://ieeexplore.ieee.org/document/10374122

https://ieeexplore.ieee.org/document/9797202/

https://ieeexplore.ieee.org/document/9031939/

https://youtu.be/ycAf2J4Ll3o?si=kMcjwWKx63rN2y6-

Task 1 Name : Project Discussion

DETAILS

How it works: Sensor detection, microcontroller processing, displaying the values

Strengths & Weaknesses: Improved safety & independence, potential false alarms, and room for improvement.

Applications & Impact: Healthcare, assisted living, independent living, and preventing injuries.

Future Enhancements: Machine learning, more sensors, user behavior recognition, and real-world testing.

GUIDING FACULTY DATE

Task 2 Name : Presentation of 3 possible ideas

DETAILS

The three ideas that we first came up with was one of it was the fall detection, other was 3D view blind stick and other was blood glucose level detection without pricking.

The problem that came with the other two projects was first the blind stick was something that everyone were doing and with the blood glucose detection what it was really difficult project as compare to what we have learn till date and we didn't know what do exactly do to achieve our goal.

GUIDING FACULTY DATE

Task 3 Name : Synopsis submission of finalized project

DETAILS

This project presents a promising solution for fall detection and improved safety for elderly populations. This project creates a wearable fall detector for seniors using an ESP32 and MPU6050 sensor. It detects sudden movements and sends alerts for quicker help, improving safety and independence. Future plans include AI integration and additional sensors for enhanced accuracy. This technology benefits healthcare, wearables, and IoT sectors.

GUIDING FACULTY DATE

Task 4 Name : Literature Survey

DETAILS

This research explores wearable fall detection systems for seniors. Sensors like accelerometers and gyroscopes detect sudden movements. Challenges include comfort, battery life, and false alarms. Future advancements will focus on more accurate detection, integrating additional sensors, and real-world testing. Overall, this research strives to create reliable wearables that enhance elderly safety and well-being.

GUIDING FACULTY DATE

Task 5 Name : Data sheet and component availability survey

DETAILS

https://www.espressif.com/sites/default/files/documentation/esp32_datasheet_en.pdf

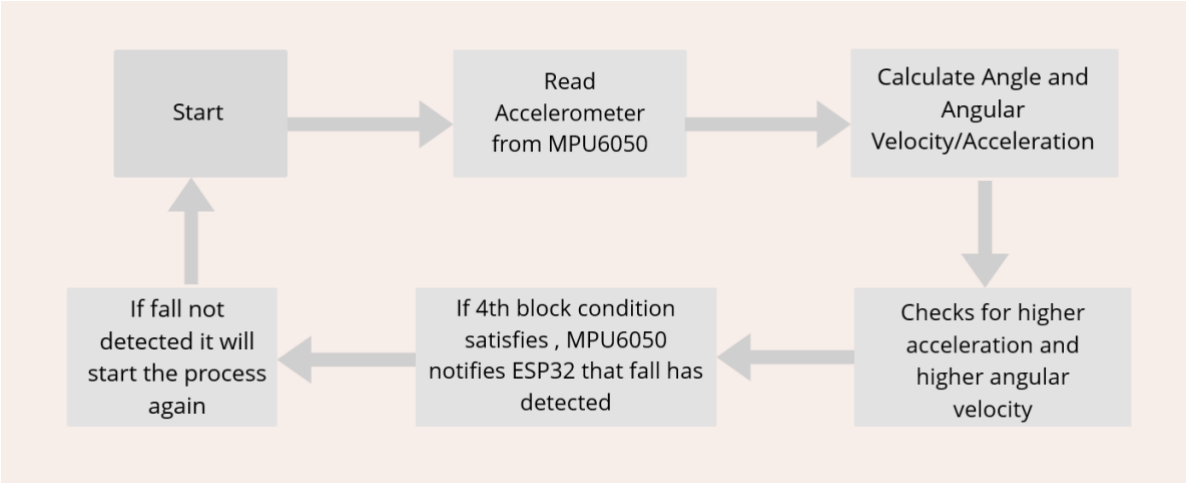
https://cdn.sparkfun.com/datasheets/Sensors/Accelerometers/RM-MPU-6000A.pdf

Components are available easily and are easy to use

GUIDING FACULTY DATE

Task 6 Name : Block Diagram

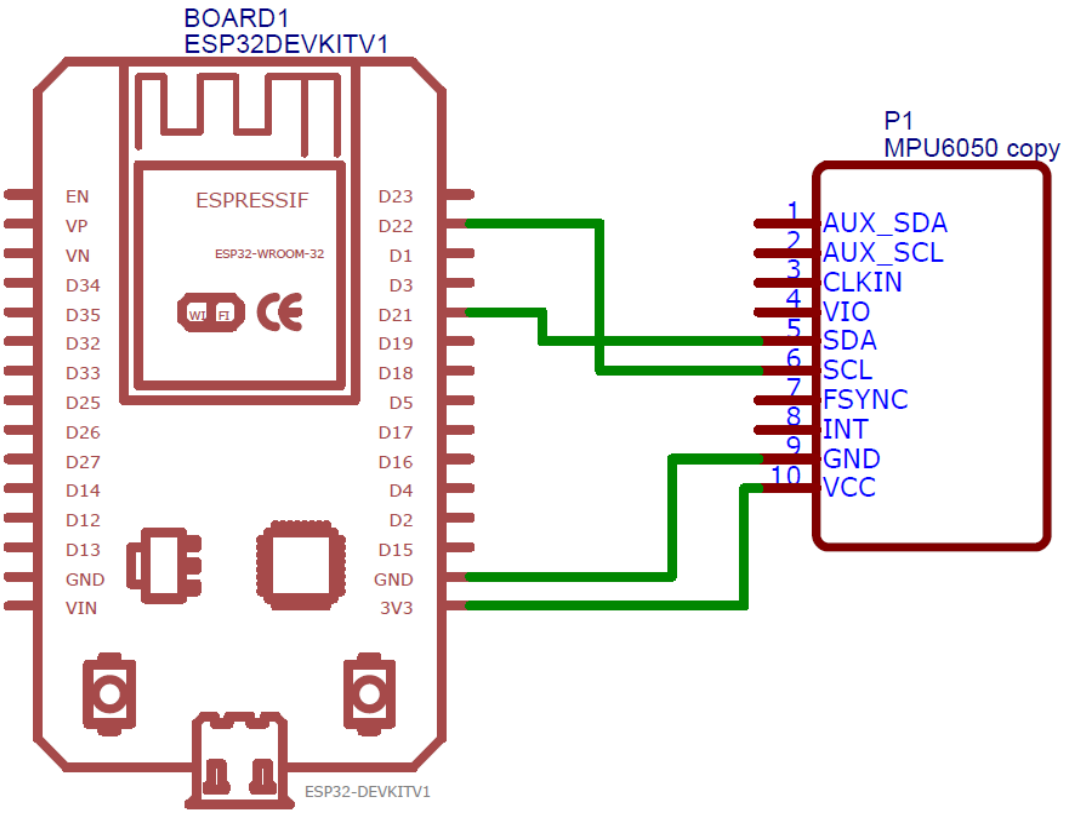
DETAILS



GUIDING FACULTY DATE

Task 7 Name : Circuit Diagram

DETAILS



GUIDING FACULTY DATE

Task 8 Name : Testing – Breadboard/General Purpose PCB

DETAILS

Breadboard:

Pros: Quick prototyping, flexible, cost-effective.

Cons: Prone to errors, limited functionality, not durable.

General Purpose PCB:

Pros: Reliable, more functions, professional look.

Cons: Less flexible, more expensive, longer development.

Use breadboard for initial testing, switch to PCB for final testing and a polished look.

GUIDING FACULTY DATE

INTERNAL PRESENTATION/REVIEW REPORT

DATE	DURATION	TOPIC	SIGN OF STUDENT	REMARK
		Review Presentation		
		Demo of Project		

SIGN OF GUIDING FACULTY SIGN OF OTHER STAFF

CONTINUOUS ASSESSMENT

Task No.	Task Name	Team Member 1 (10)	Team Member 2 (10)	Team Member 3 (10)	Sign and Date
1	Project Discussion				
2	Presentation of 3 possible ideas				
3	Synopsis submission of finalized project				
4	Literature Survey				
5	Data sheet and component availability survey				
6	Block Diagram				
7	Circuit Diagram				
8	Testing – Breadboard/General Purpose PCB				
9	Layout preparation				
10	Fabrication and mounting				
11	Final Demo & Presentation				
12	Rough Report				

13	Final Report Submission				