



MAR BASELIOS INSTITUTE OF TECHNOLOGY AND SCIENCE



DEPARTMENT
OF
ELECTRONICS AND COMMUNICATION ENGINEERING

MINI PROJECT FIRST REVIEW ON THE TOPIC

DIGITAL MEASURING TAPE

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OUTLINE

1. Introduction
2. Literature review
3. Objective
4. Design and Simulation Results
5. Block Diagram
6. Budget
7. Work Plan
8. Advantages
9. Future Scope
10. Conclusion
11. References



INTRODUCTION

- A digital measuring tape is an electronic device used to measure linear distance accurately using sensors and a microcontroller.
- This project uses an Arduino Nano and a rotary encoder to convert wheel rotation into digital distance values.
- The measured distance is calculated electronically and displayed in real-time on a 16×2 LCD screen.
- It demonstrates a practical application of embedded systems in measurement and automation.

LITERATURE REVIEW

SL.NO	TOPIC	AUTHOR	YEAR OF PUBLICATION	DESCRIPTION
1.	Digital Measuring Tape	S. P. Sabarinath	2021	Describes the design and working of a digital measuring tape using a microcontroller and rotary encoder to measure distance electronically.



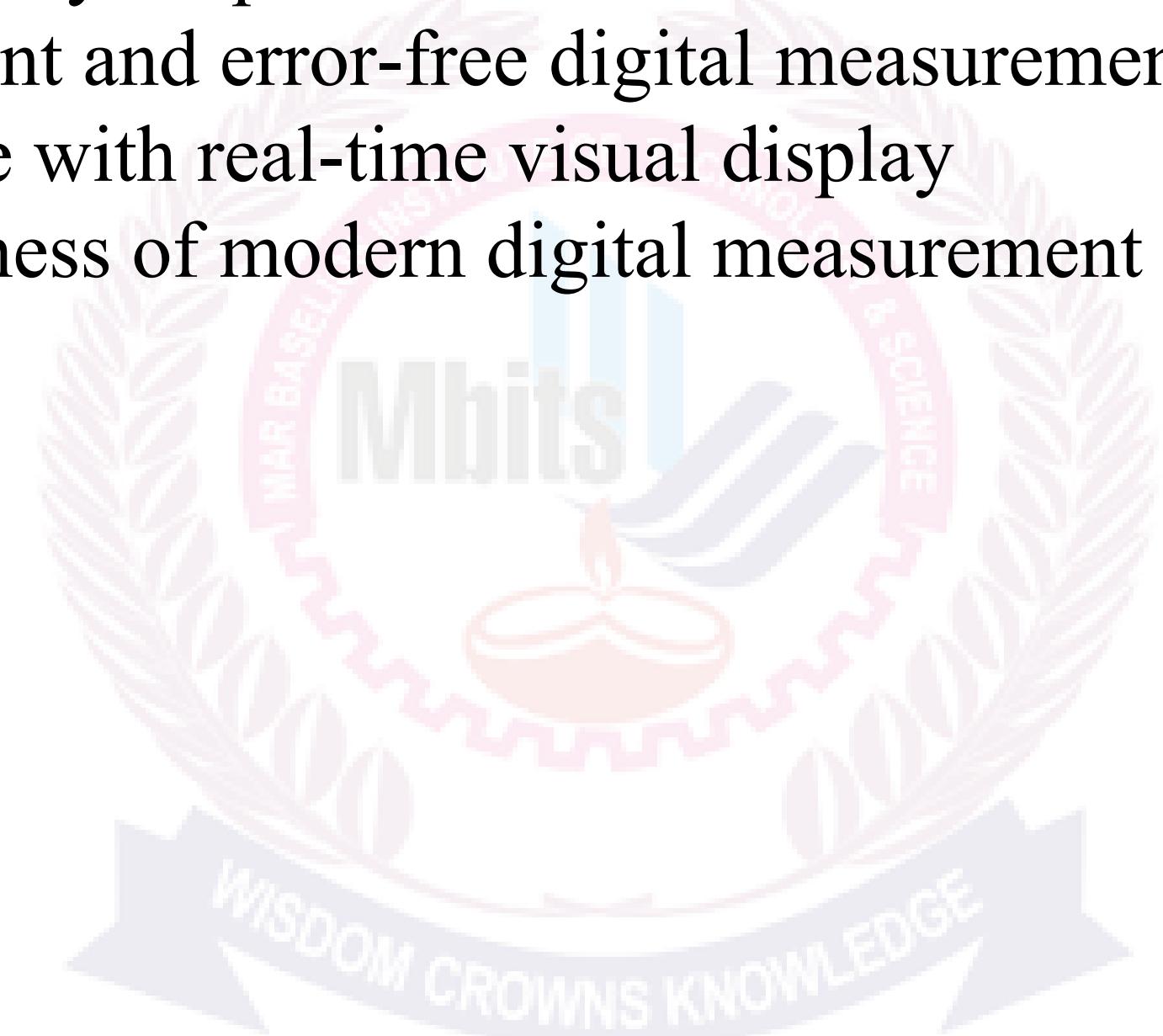
1500M CROWNS KNOWLEDGE

LITERATURE REVIEW

SL.NO	TOPIC	AUTHOR	YEAR OF PUBLICATION	DESCRIPTION
2.	Digital Tape Measure Using Rotary Encoder	Arduino Forum Community	2024	Discusses technical challenges and solutions in decoding encoder pulses for accurate distance measurement using Arduino.

OBJECTIVES

- Improve accessibility to quick and accurate distance measurement
- Promote convenient and error-free digital measurement
- Ensure ease of use with real-time visual display
- Encourage awareness of modern digital measurement techniques



BLOCK DIAGRAM

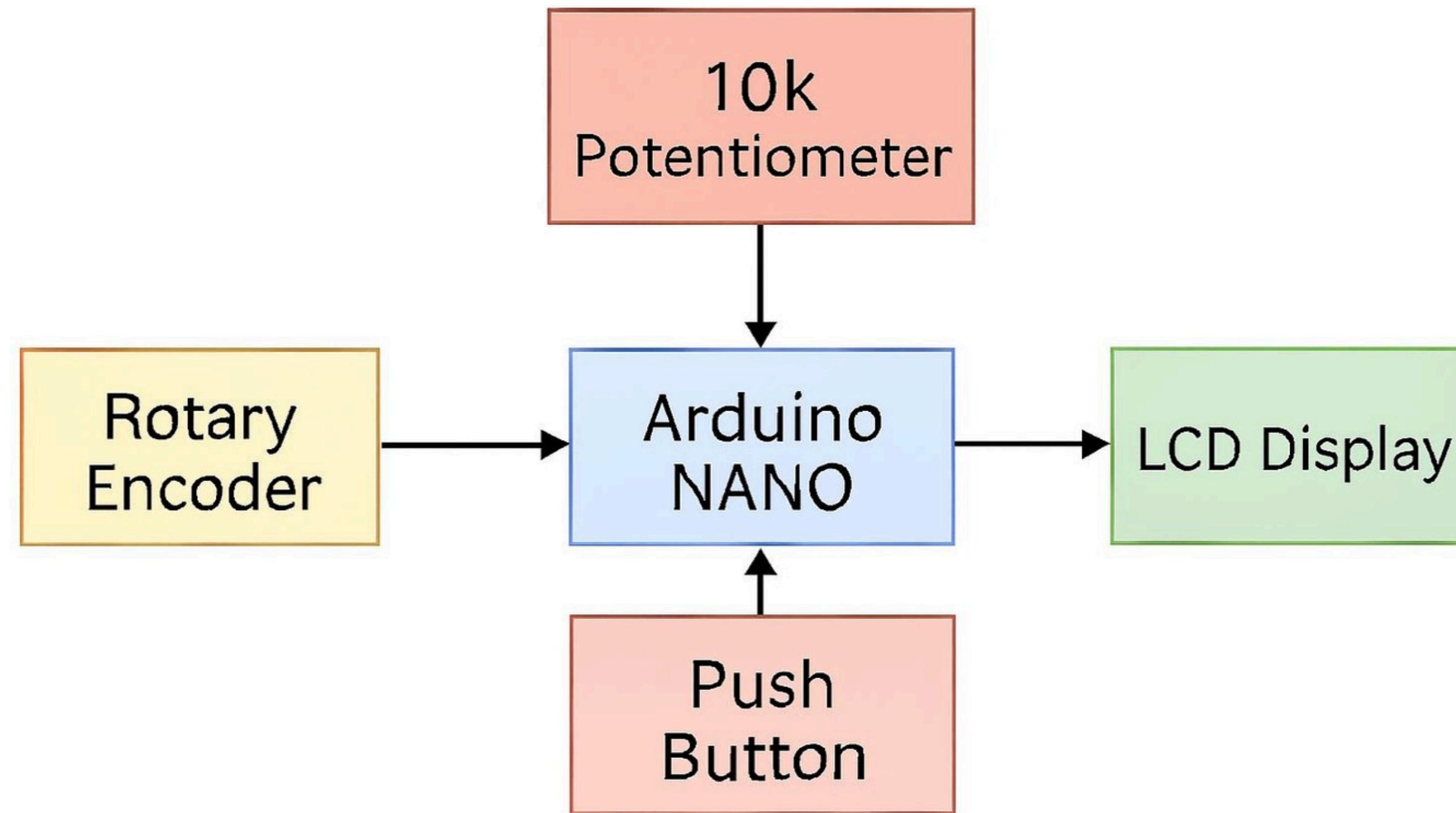


FIG 1: BLOCK DIAGRAM

DESIGN AND SIMULATION RESULTS

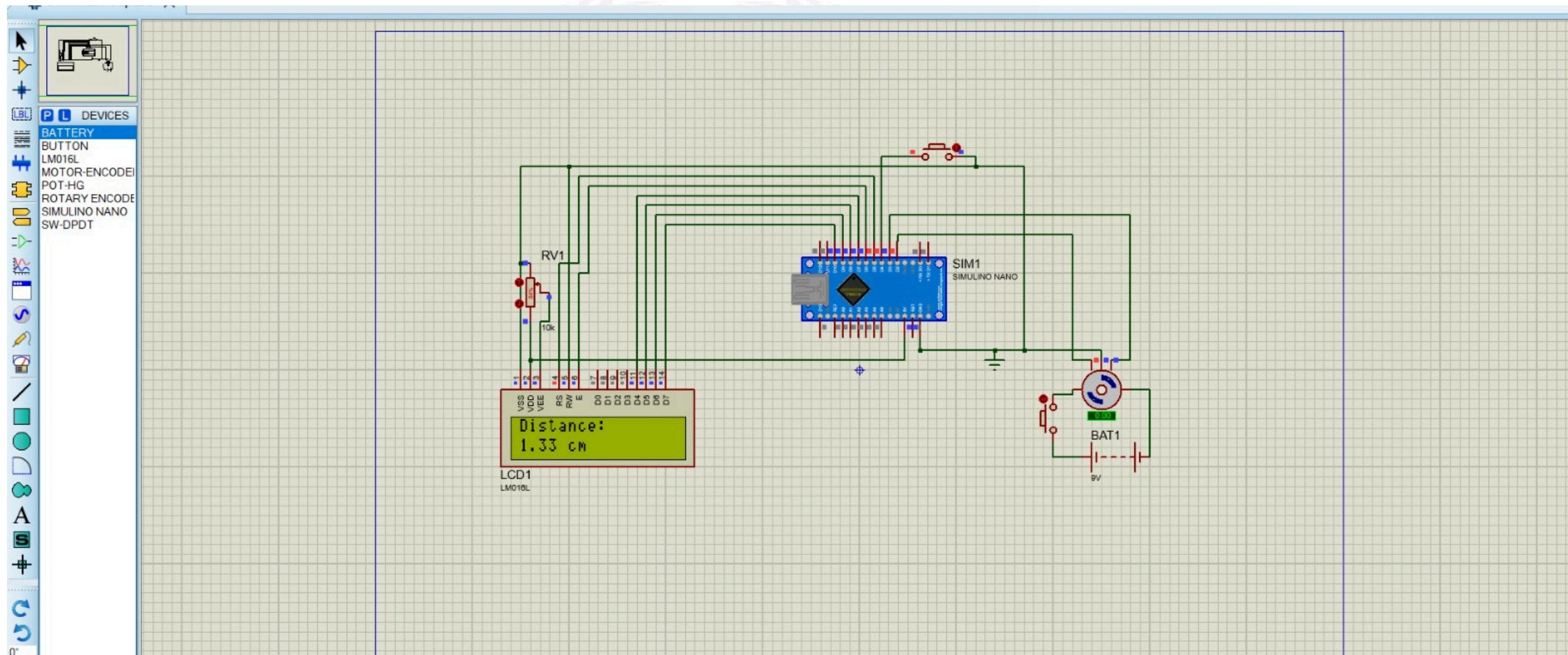


FIG 2: SIMULATION RESULT

BUDGET

Table 2 : Work plan

COMPONENTS	PRICE RANGE (₹)
Arduino Nano	200 – 300
Rotary Encoder	100 – 150
16×2 LCD Display	150 – 250
10k Potentiometer	10 – 30
221Ω Resistor	2 – 10
Breadboard	70 – 120
9V Power Supply	50 – 100
Jumper Wires	40 – 80

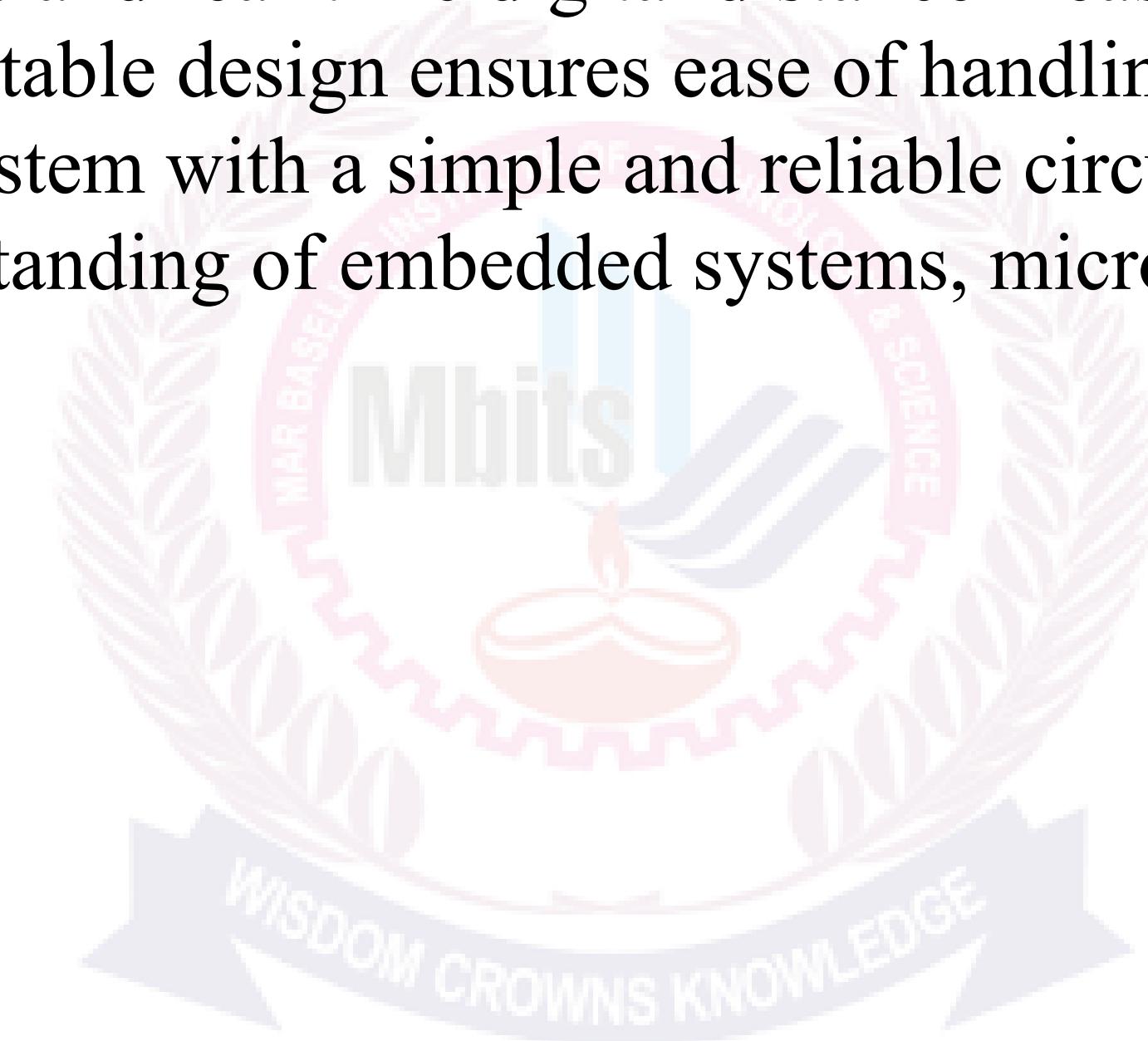
WORK PLAN

Table 2 : Work plan

DATE	WORK DONE	WORK TO BE DONE
11/12/2025	Decided the project topic	—
15/12/2025	Submitted abstract	—
18/12/2025	Conducted zeroth review presentation	—
15/01/2026	Partially Completed the simulation part using Arduino IDE	
05/02/2026	Completed the simulation part using Arduino IDE	—
11/02/2026	—	First review presentation

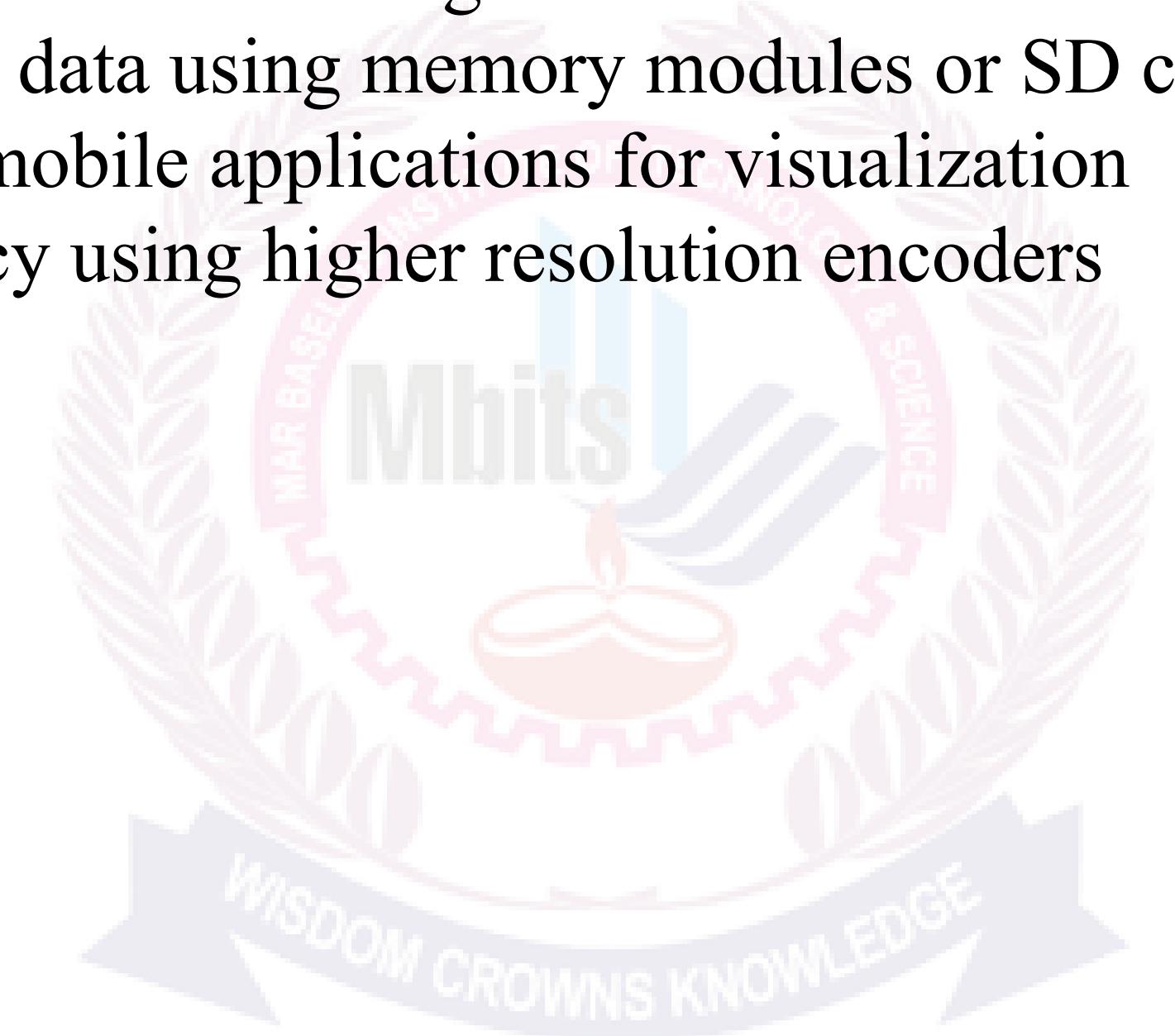
ADVANTAGES

- Provides accurate and real-time digital distance measurement with minimal error
- Compact and portable design ensures ease of handling and operation
- Cost-effective system with a simple and reliable circuit architecture
- Enhances understanding of embedded systems, microcontrollers, and sensor interfacing



FUTURE SCOPE

- Wireless data transmission using Bluetooth or Wi-Fi
- Storing measured data using memory modules or SD card
- Integration with mobile applications for visualization
- Improved accuracy using higher resolution encoders

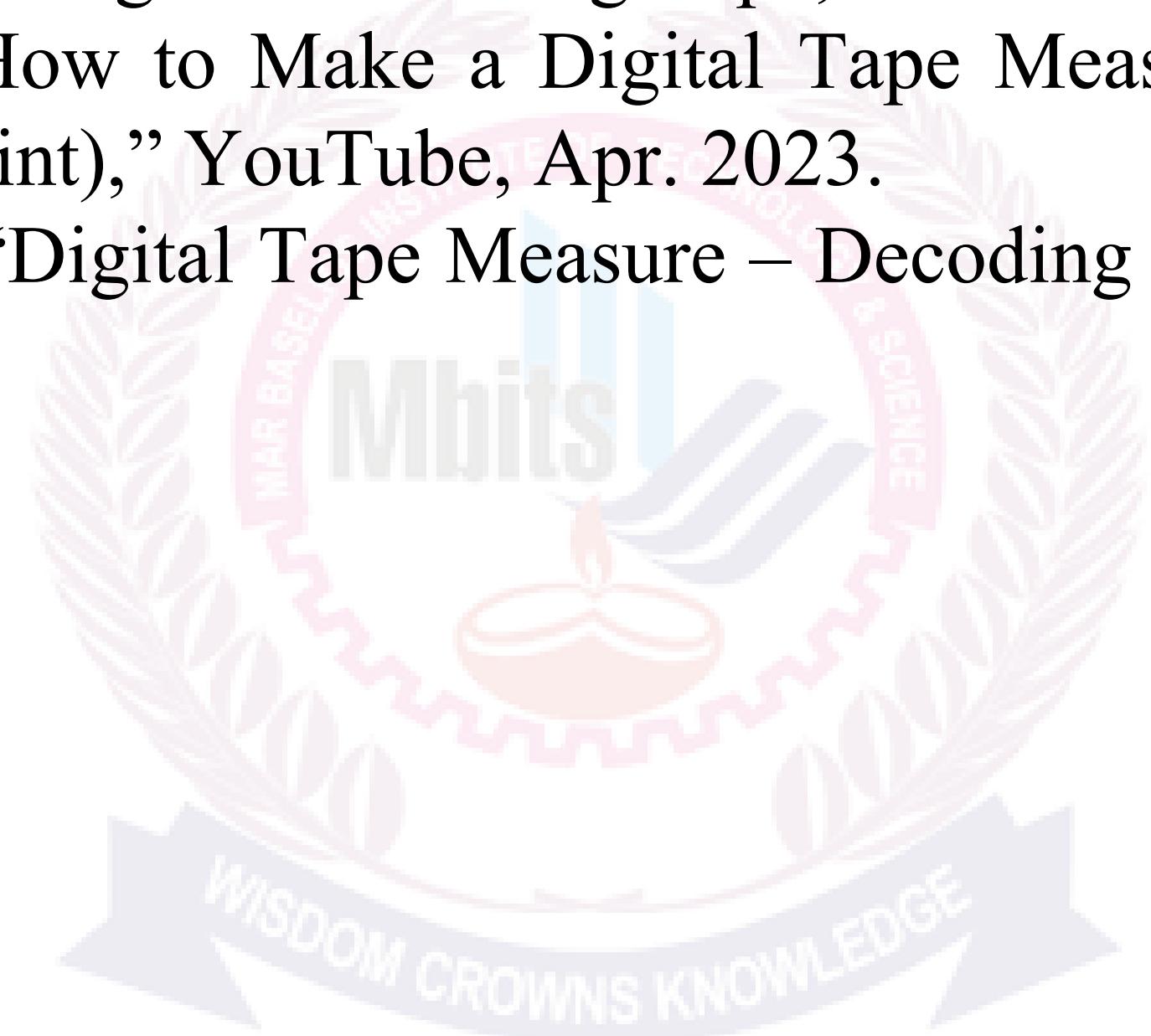


CONCLUSION

- The digital measuring tape successfully measures distance accurately using a rotary encoder and Arduino Nano.
- The project demonstrates effective conversion of mechanical motion into digital data with real-time display.
- It serves as a simple and reliable learning platform for embedded systems and automation concepts.

REFERENCES

- S. P. Sabarinath, “Digital Measuring Tape,” ElectronicWings, Dec. 13, 2021.
- J. Craftsman, “How to Make a Digital Tape Measure: Step-by-Step Guide (Arduino + 3D Print),” YouTube, Apr. 2023.
- Arduino Forum, “Digital Tape Measure – Decoding Serial Data,” Arduino.cc, Dec. 14, 2024.





THANK YOU