Mini Project Work (22IDT28)
Phase 1 Presentation
MAY 2025, 2nd Semester

Mini Project Batch No:A7

Dayananda Sagar College of Engineering

(An Autonomous Institute affiliated to Visvesvaraya Technological University (VTU), Belagavi,
Approved by AICTE and UGC, Accredited by NAAC with 'A' grade & ISO 9001-2015 Certified Institution)
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SOLAR TRACKER USING DATA LOGGER

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Overview of the mini project : phase-1 presentation

USE THIS FOR REFERENCE

1. Introduction
2. Literature Review (related works in the IEEE papers and books, journals)
3. Problem Statement
4. Objective
5. Methodology adopted with Block-Diagrams & Flow- Charts
6. Hardware and Software tools used (explanation about every component used, details about software)
7. Work done (should be 50% complete)
8. Timeline (week wise till week 7)
9. Stratergy for completion

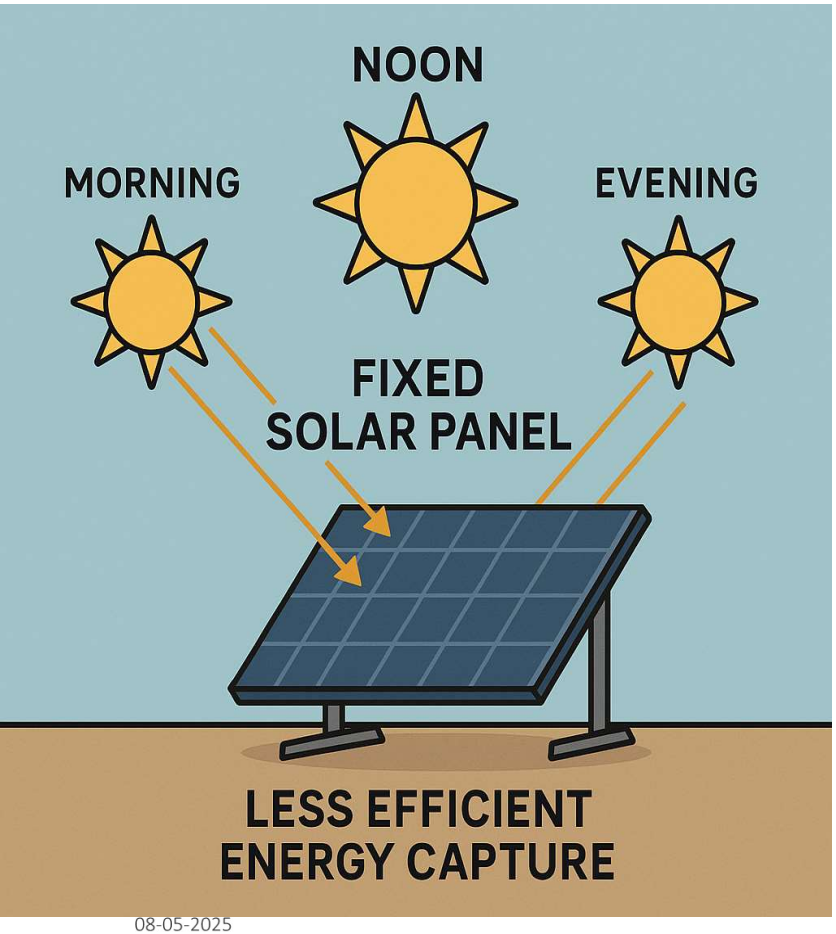
INTRODUCTION

– When facing the sun energy will be stored in solar panels. Fixed panels, however, are unable to monitor the sun's movement during the day. The efficiency is increased with a solar tracker device that automatically moves the panel to follow the sun. In order to analyse and improve the system's performance, crucial factors like power output and sunlight intensity can be collected and stored by adding a data logger.

Literature Review

PAPER TITLE	AUTHOR NAME	PUBLISHER NAME	ABSTRACT	CONS
Technologies of solar tracking system	Ramesh B dhokat	IOP Publishing Ltd. [2019]	This paper aims to review various technologies of solar tracking to determine the best photovoltaic (PV) panel orientation. The different types of solar tracking systems discussed include passive solar trackers, active solar trackers, and chronological tracker systems.	❖ No Adaptability ❖ Lower efficiency ❖ Poor Performance in Morning & Evening ❖ Less Efficient in Cloudy Weather ❖ Fixed Orientation = No Real-Time Optimization
Solar panel technologies for light to chemical conversion.	Virgil Andrei, Qianwang Tayloruekert	American chemical society. [2022]	This artical reviewed panel technologies that convert sunlight into chemical fuels.it foucused on thin films system using materials like carbon nitrides for processes co2 reduction and water splitting highlighting performanc	❖ Reduced efficiency at larger scale ❖ Larger Area Needed for Same Output ❖ . Fixed Orientation = No Real-Time Optimization ❖ Poor Performance in Morning & Evening

Problem Statement



- Fixed solar panels are unable to adjust their angle based on the sun's position.
- As the sun moves across the sky, energy capture by static panels decreases.
- This results in reduced efficiency and lower power output throughout the day.
- There is a need for a system that dynamically aligns panels with the sun to maximize energy generation.

Objective

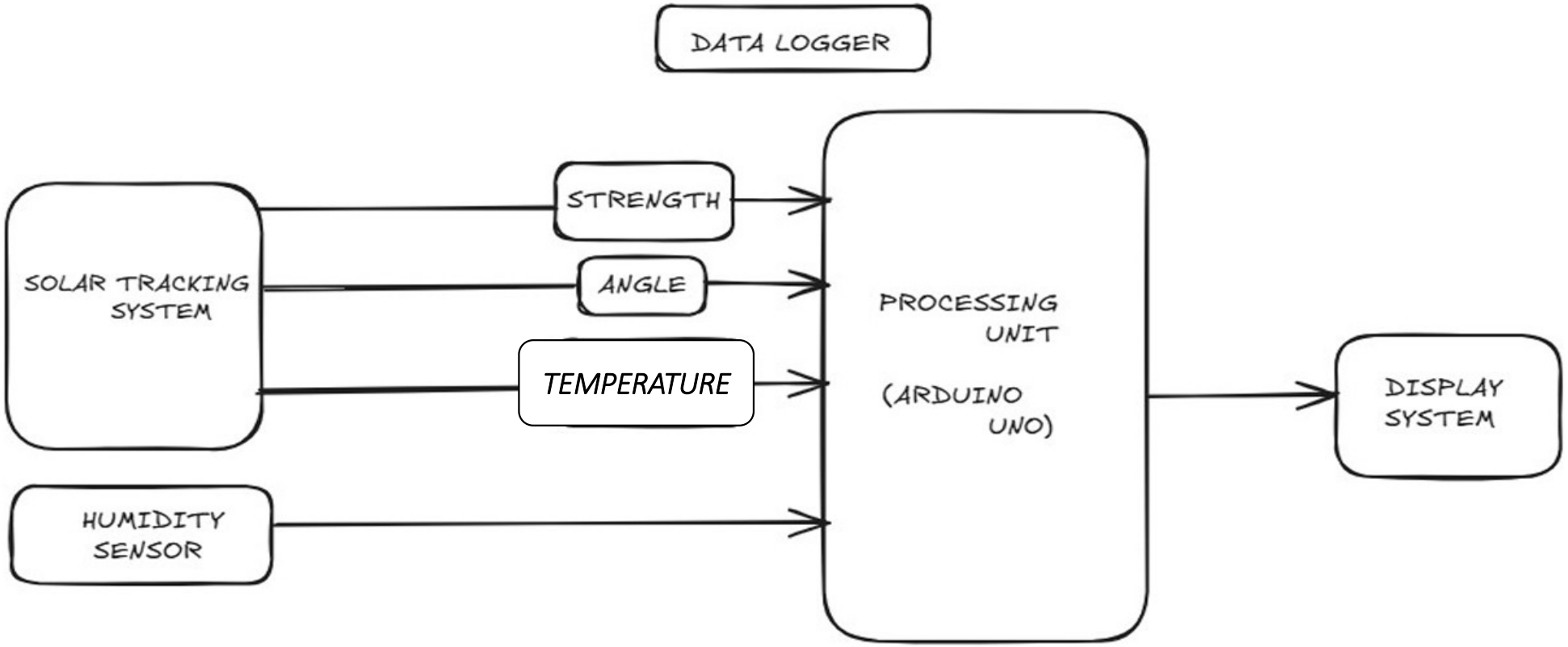
To develop a System that tracks sun position for optimal solar tracking system.

To implement a data logging system that records solar tracking system performance,temperature and humidity

Store and visualize the logged data to evaluate system performance over time and under different conditions (e.g., weather, time of day).

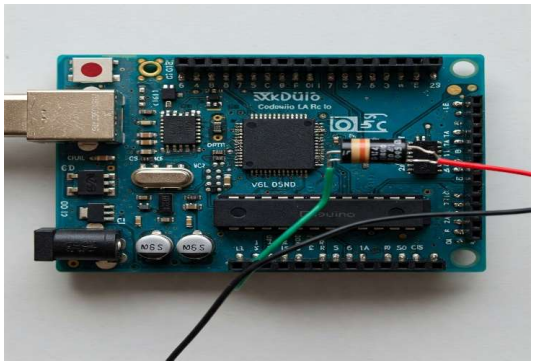
Methodology adopted

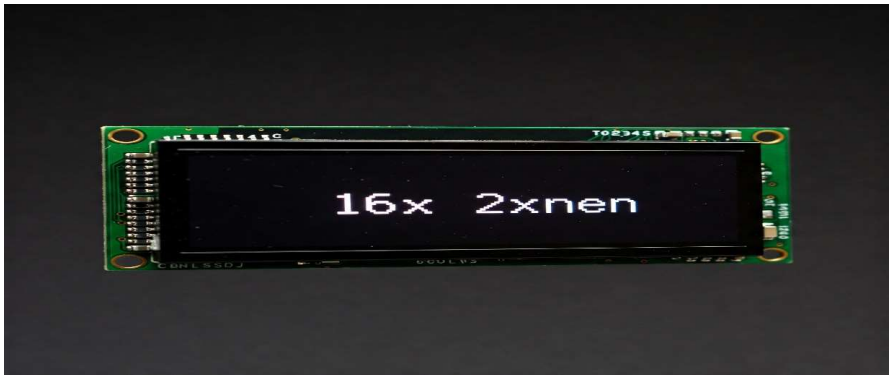
Proposed Block Diagram-



Hardware / Software tools

- Tools Used (Hardware/Software): Microcontrollers: Arduino uno ,
- Sensors: Light Dependent Resistor (LDRs)
- Module Data Storage: SD Card Module
- Actuators: Servo Motors,
- LCD Screen





Work done

- *Identified the project scope and objectives – Solar panel tracking with data logging by literature survey.*
- *Selected components: Arduino UNO, 2 LDRs, 1 Servo Motors, SD card module, LCD screen.*
- *prepared the block diagram of the required circuit.*
- *ordered the required electronics components from amazon.*
- *studied logic behind each and every electronic components used in the project.*
- *prepared synopsis of the project.*

Timeline

- Week 1 (31/03/2025 - 03/04/2025)

Finalized the project topic: “Solar tracking system using data logger”.

- Week 2 (04/04/2025 - 05/04/2025)

Finalized the electronic components: Arduino UNO, LDR sensors, servo motor, solar panel, breadboard, LCD display, SD card.

- Week 3 (07/04/2025 - 12/04/2025)

Prepared the block diagram of the circuit. Tested LDR sensor values for light sensitivity

- Week 4 (14/04/2025 - 19/04/2025)

Programmed Arduino to read LDR values and control servo motor. Implemented logic to move panel toward maximum light.

- Week 5 (21/04/2025 - 26/04/2025)

Ordered required components from e-shopping websites. Week 6 (28/04/2025 - 03/05/2025)Studied the logic behind each component used.

- Week 6 (28/04/2025 - 03/05/2025)

Studied the logic behind each component used.

- week7(5/5/2025-9/5/2025:

Prepared synopsis by analazing the title of the project, and prepared the program

Stratergy for completion

- 1. *First, we finalized the project topic and discussed it with our guide.*
- *2. Then, we listed out all the required components.*
- *3. We studied how each component works (like LDR, servo motor, Arduino UNO, etc.)*
- *4. We tested the LDR sensor to check its light sensitivity.*
- *5. We prepared a block diagram of the project circuit.*
- *6. We started writing and testing basic Arduino code.*
- *7. We planned to build the circuit step-by-step on a breadboard.*
- *8. We are also checking the logic to move the solar panel using LDR values.*
- *9. Next, we will test the whole system together.*
- *10. Finally, we will make a proper presentation and explain the working.*

References

[1] **A.R. Amelia "1st International Symposium on Engineering and Technology (ISETech)" 2019 IOP Conf. Series: Materials Science and Engineering 767 (2020) 012052 IOP Publishing doi:10.1088/1757-899X/767/1/012052**

[2] **Andrei, V.; Reuillard, B.; Reisner, E. Bias-Free SolarSyngas Production by Integrating a Molecular CobaltCatalyst with Perovskite−BiVO4 Tandems. Nat. Mater.2020, 19, 189−194.1**