SOLAR POWER SYSTEMS

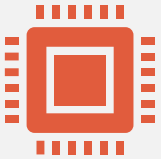
PREDICTIVE MAINTENANCE

PROBLEM STATEMENT

- solar power plants play a crucial role in the transition toward clean energy.
- However, maintaining large solar farms is challenging,as breakdowns or inefficiencies can significantly reduce power output and cause financial losses.
- Traditionally maintenance schedules of equipment.
- The introduction of AI-driven predictive maintenance.

REAL LIFE EXAMPLE

A solar farm in California experienced frequent inventer failures,leading to a 15% reduction in power output during peak hours .



By integrating machine learning algorithms, the company was able to predict inventer failures by analysing historical data from sensors,and energy output.

The predictive model reduced downtime by 30%, increased energy production,and lowered maintenance costs.

WASTE SORTING USING COMPUTER VISION

- PROBLEM STATEMENT
  - Waste management is a critical aspect of sustainability.
  - A major problem faced by recycling facilities is the incorrect sorting of waste.
  - Sorting waste manually is labour –intensive and prone tohuman error.
- REAL TIME EXAMPLE
  - A recycling plant in Sweden implemented a computer vision system that used a convolutional neural network (CNN)to sort recyclable materials such as plastic, glass,and metal from general waste.
- DATASET
  - Different types of waste (plastic,glass,metal,paper) labelled for classification

ENERGY EFFICIENCY IN SMART BUILDING

PROBLEM STATEMENT

Buildings account for nearly 40% of global energy consumption.

Improving energy efficiency in buildings is essential for meeting sustainability targets.

REAL – LIFE EXAMPLE:

A smart office building in Singapore implemented an AI-based energy management system to optimize it's HVAC (heating, ventilation,and air conditioning) system.

By analysing real- time occupancy data, Weather forecasts,and historical energy consumption,the system automatically adjusted temperatures

DATASET:

You are provided with building energy usage data, occupancy data, and weather conditions over a two – year period