

SOLAR PANELED FORECASTING

1

Introduction:-

During Our Short-term internship with Smart Bridge, we have delved into the world of data analytics, with a primary focus on Solar panel forecasting. In this introductory section, we will provide an overview of the importance of data visualization in conveying insights and our objective to create informative visualizations, including dashboard reports and data stories.

Overview:-

Short-term forecasting provides predictions up to seven days ahead. Due to the power market regulation in many jurisdictions, intra-day forecasts and day-ahead solar power forecasts are the most important time horizon in this category. Basically all highly accurate short-term forecasting methods leverage several data input streams such as meteorological variables, local weather phenomena and ground.

Purpose

Solar power forecasting is the process of the gathering and analyzing data in order to predict Solar power generation On Various time horizons with the goal to mitigate the impact of Solar intermittency Solar power forecasts are used for Efficient management of the Electric grid for power trading.

Literature Survey:

Before delving into Our Own works, it is Essential to review the Existing literature On Solar panel forecasting. This section will provide a comprehensive look at prior research and Established methods in the field. We will Explore how data analytics and Visualization have been applied in the Context of Solar Energy predictions

Existing Problem

Solar panels are not always Efficient in Converting Sunlight into Energy

Solar panels Can be damaged by Severe weather also Environment problem Solar panels.

Solar panels require regular maintenance

Solar panels can be aesthetically displeasing
Electrical issues; Solar panels are connected to
the Electrical grid. If not fixed, this can
lead to a loss of power or even a fire.

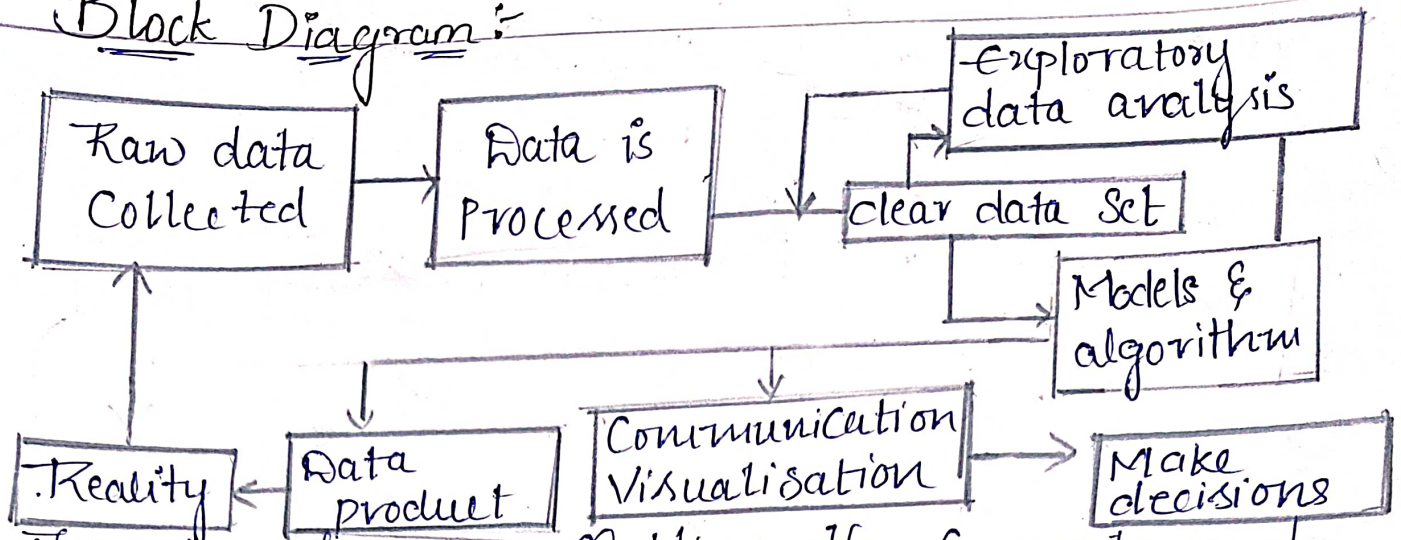
Proposed Solution

Solar forecasting solutions must leverage
a reliable and proven solar dataset as the
basis for delivering a quality forecast. The
solar forecast must be built on a foundation
of trusted reliable and accurate solar
data.

Theoretical Analysis;

In this section, we will transition from
the literature survey to our own theoretical
analysis. we will delve into the principles,
models and methodologies we have employed
to forecast solar panel performance.

Block Diagram:-



This is where we Outline the Concepts and theories that underpin Our work including the factors Considered in Solar Energy Prediction.

Hardware/Software designing

Aurora Solar design software that helps Solar Companies quickly design photovoltaic System that are tailored to each clients Specific needs.

Open Solar is a free Solar design, sales and management Software with a built-in CRM, digital Scheduling, real-time Customer alerts.

The Collected data

First hour of period

Is Daylight

Distance to Solar noon.

Average temperature (day)

Average wind direction (day)

Average wind Speed (day)

Sky Cover

Visibility

Humidity

Average wind Speed (period)

Result:

The result section will delve into the specific findings we have uncovered during our internship. It will include a summary of the insights gained from our data visualizations and analytical work. This section should highlight key takeaways from the project, such as notable trends, performance indicators and data driven recommendations.

Advantages & Disadvantages

Advantages

- Clear Energy Source
- Reduction in Electricity bill
- Multiple Applications
- Low maintenance Cost
- Independent Source of Energy
- Sustainable
- Lower water pollution

Disadvantages

- Installation Cost is too high
- Reliability
- Lost of Space required for Installation
- Not Efficient
- Pollution and impact On Environment
- Applications.

Our work Extends beyond the theoretical realm, as we aim to apply our finding

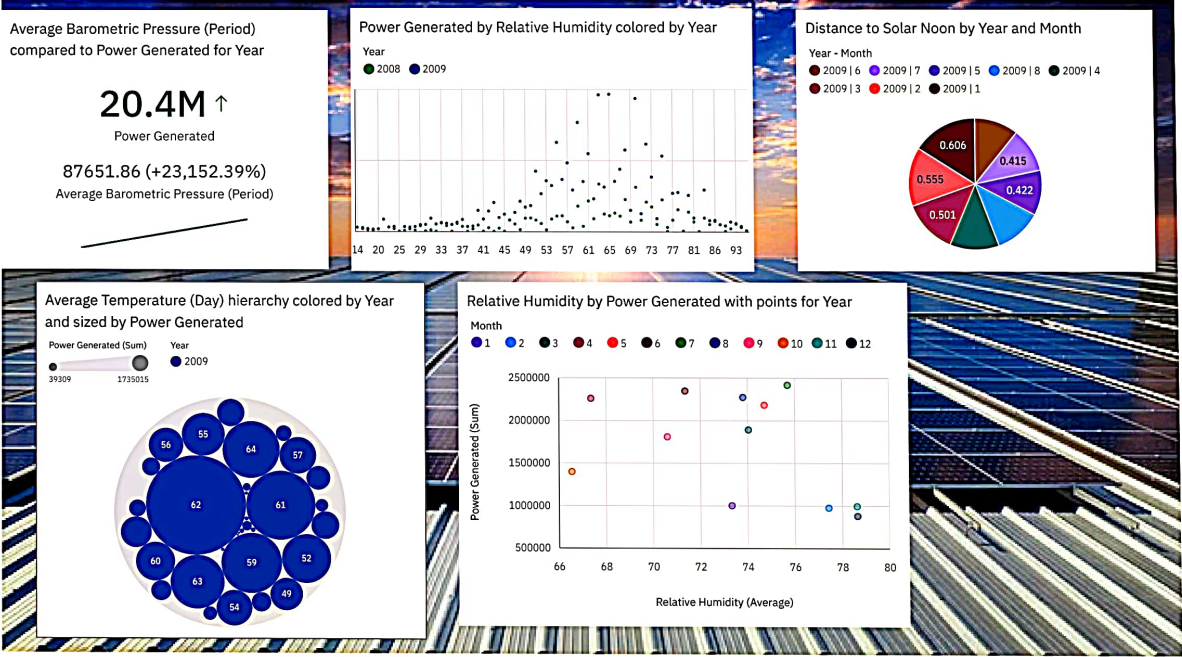
In practical scenarios. This section will explore the real-world applications of solar panel forecasting, including how our data analytics and visualizations can be used in energy management, solar panel installation planning and sustainable energy initiatives.

Conclusion:

In the conclusion, we will summarize the significance of our internship project with Grant Bridge. This section will emphasize the value of data analytics and data visualization in the context of solar panel forecasting. We will reiterate the key takeaways from our work and highlight its potential impact on the field.

The future Scope Section will provide insights into what lies ahead. we will discuss potential areas for further research and development in solar panel forecasting as well as how our work can serve as a foundation for future project and innovations. This will open the door to ongoing exploration and improvement in this critical field.

Tab 1



SOLAR PANEL FORECASTING



Target Value of Average Barometric Pressure

- Year 2009 has the highest values of both Average Barometric Pressure (Period) and Power Generated.
- Add insight to favorites
- The overall number of results for Average Barometric Pressure (Period) is nearly three thousand.
- Add insight to favorites
- 2009 exceeds 2008 in Power Generated by 10,252,561.
- Add insight to favorites

Average Barometric Pressure (Period) compared to Power Generated for Year

20.4M ↑

Power Generated

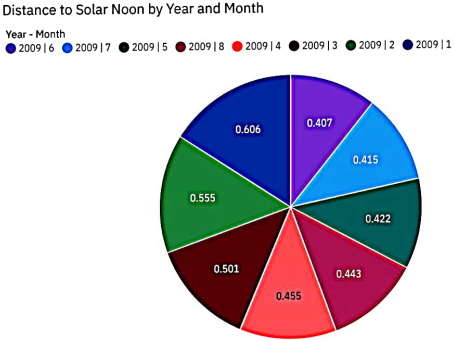
87651.86 (+23,152.39%)

Average Barometric Pressure (Period)



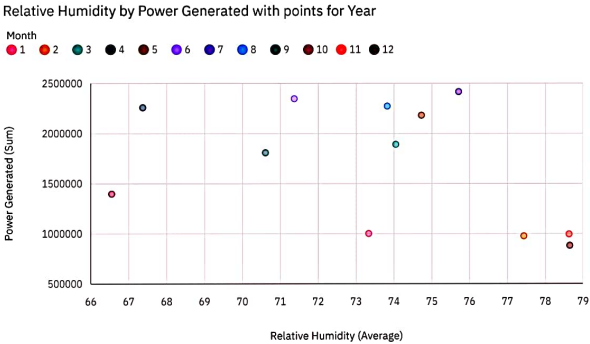
Distance to Solar Noon by Year and Month

- Distance to Solar Noon has a moderate downward trend.
- Add insight to favorites
- Distance to Solar Noon is unusually high when Year - Month is 2009|1.
- Add insight to favorites
- Based on the current forecasting, Distance to Solar Noon may reach 0.4778 by Month 10.
- Add insight to favorites
- Based on the current forecasting, Distance to Solar Noon may reach



Relative Humidity by Power Generate

- Year 2009 has the highest values of both Power Generated and Average Wind Speed (Day).
- Add insight to favorites
- Power Generated has a fitted maximum value of 2,108,699 when Relative Humidity is 71.26.
- Add insight to favorites
- Month 4 has the highest Average Average Wind Speed (Day) but is ranked #4 in Total Power Generated.
- Add insight to favorites



Average Temperature by Power Generate

- Power Generated is unusually high when Average Temperature (Day) is 62.
- Add insight to favorites
- Average Temperature (Day) 45 has the highest Average Relative Humidity but is ranked #37 in Total Power Generated.
-

Average Temperature (Day) hierarchy colored by Year and sized by Power Generated

Power Generated ... 23439 1735015

Year 2008 2009

