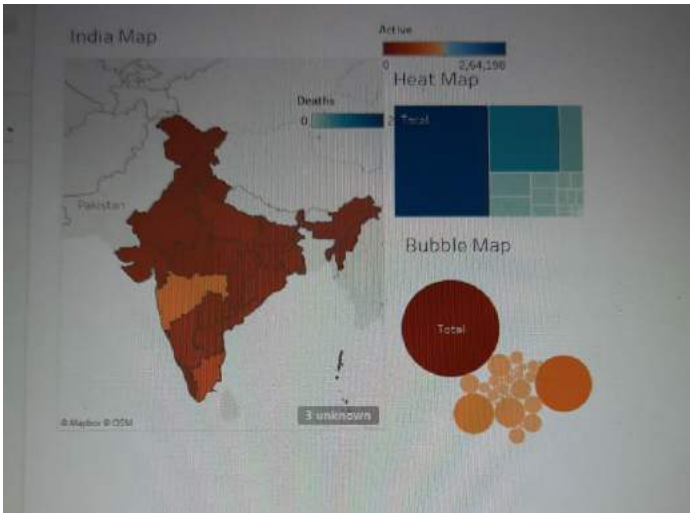
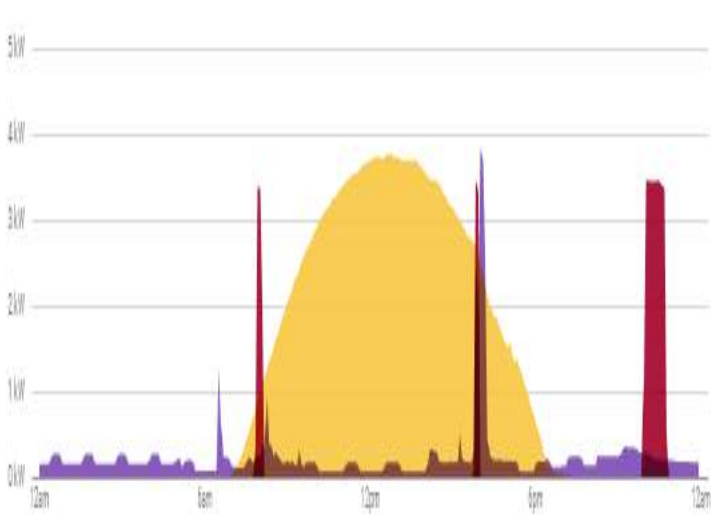
SOLAR ANALYTICS

PROGRAM DATE: 14th December to 18TH December & 15TH FEBURARY to 19TH FEBURARY
PROGRAM SCHEDULE: 10:30 AM TO 12:00 NOON & 2:30 PM TO 4:00 PM
Training Mode: Online

ONE WEEKS ONLINE CERTIFICATE PROGRAM ON SOLAR ANALYTICS: PLANT DATA MODELLING WITH MACHINE LEARNING USING PYTHON





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SOLAR PLANT DATA ANALYSIS APPLYING DESCRIPTIVE ANALYTICS, DIAGNOSTIC ANALYTICS & PREDICITVE ANALYTICS IN ASSESSING PLANT CONDITION AND FUTURE OUPUT WITH REAL TIME ANALYTICS OF BIG DATA (PLANT PARAMTERS , RADIATION , SENSORS, SCADA ETC) APPLYING MACHINE LEARNING PRINCIPLES

About NISE

National Institute of Solar Energy (NISE), an autonomous center of excellence of Ministry of New and Renewable Energy, Government of India, is conducting national skill development programs to meet the needs and upgrade the technical expertise of solar professionals.

About PRAGYA SOLAR

Pragya Solar, is a social startup in solar with the vision to bring solar adoption awareness in India aligned with National Solar Mission principles. Pragya Solar has conducted Entrepreneurial development workshop for 250 individuals and 1500 students across the nation of which 25 individuals are standing on their on feet. Pragya Solar is represented by profession from IIT/NIT & Harvard University Alumni. Pragya is a step towards innovation & transformation with niche offering aimed at social upliftment thru skill enhancement and opportunity creation.

Learning Objectives

- How to Gain intelligence on plant data and analyze the output with descriptive modelling to understand the current operation
- Understand the parameters which contribute to the variable generation and diagnostics analytics on assessing their impacts
- Explore the methods of Statistical analysis to analyze the data quality from different sources and making it ready for exploratory and inferential analysis
- Understand the basics of plant sustainability with predictive modelling to assess solar plant output, solar cell efficiencies and degradation, inverter outputs and cables /joints impacts
- How to achieve the optimization at the plant level and parameters contributing to same

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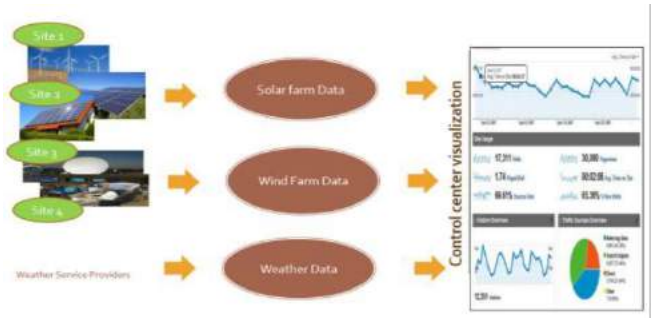
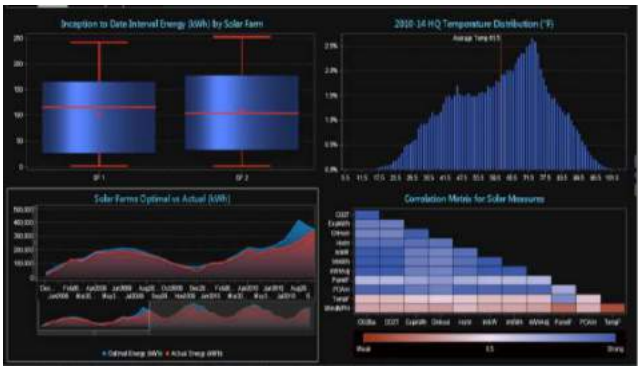
About the Program

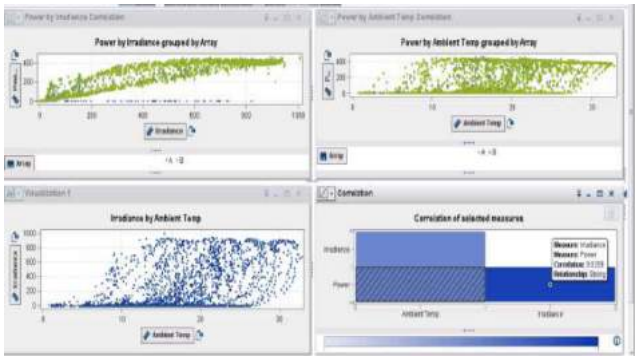
Solar Sector is growing at a tremendous pace with government aiming to achieve 100GW target till 2022. This initiative has seen government directive on solar adoption as grounds up, roof top system across longitude and latitude of India. Solar system works with solar radiation, which create impact on the output energy depending on the quality radiation, cloud cover, ambient temperature, and module technology. Today there is need of knowledge of weather forecasting / solar generation forecasting as it helps the utility professionals with long terms analysis on solar energy generation, O&M, with its relevance and impact on the grid stability , load balancing , addressing peak power demands, creation of power portfolio within utility power purchase basket on renewable energy. Energy Audit of Solar plant is the key objective looked upon for already installed facilities when they are looked upon their quality generation

Like other energy operations SOLAR too generate BIGDATA (radiations, plant parameters etc) which need to be studied for effective operation as large utility power output impacts power evacuation and grid balancing perspective for state as well as central utility.

SOLAR ANALYTICS is aimed at Developing **CoE (Centre of Excellence) on analytics** for organization as well as developing skills for managing the same . The program encompass the combination of solar domain with the technology like Internet of things (IOT), Machine Learning, predictive modelling, forecasting, optimization which has to be understood by utility/solar plant engineers and decision makers to carve differentiator for their utility operations in resolving day to day problems . For private sector solar generators Analytics in today's scenario is used by organization in creating a competitive edge, wherein market share is getting limited and margins are shrinking with each passing day as well as address long term perspective of operational efficiency, Energy Audit, Financial return on investment. In today's scenario organizations are preferring to onboard professional who are prepared in taking responsibility at business with less project deployment expenses/learning. This program would help professional/organization carve a difference for themselves at workplace and help establish a foundation of deep analytics for organization they are part of.







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PROGRAM Coverage

SOLAR ANALYTICS: PLANT DATA MODELLING WITH MACHINE LEARNINIG USING PYTHON

SESSION	AREA	TOPIC
Session 1	**Why Solar Analytics INTRODUCTION WITH 48 MW GROUND MOUNTED CASE STUDY**	Challenges of Data Handling in Solar Environment
		Solar Industry Data Roof Top & Ground Mounted Data. Know your data - What kind of data is important for Analysis (ground mounted/ roof top). Data types (structured, unstructured, real time, discrete etc)
		How does analytics play the role in Solar segment
Session 2	**SOALR ANALYTICS Introduction to PYTHON & installation**	What is usefulness of Advanced Analytics for SOLAR
		FUNDAMENTALS OF PYTHON
		BACKGROUND OF THE TOOL
		WHAT IS IDE , FAMILIRATION WITH THE IDE
Session 3	**KRA and KPI in Solar Industry**	How to develop Key Result area(KRA) in Solar Key Performance Indicator (KPI) in relevance with descriptive , diagnostic predictive and prescriptive modelling
Session 4	**Introduction to semantics of PYTHON**	Working on building block of python on IDE (jupyter notebook) working with SOLAR PLANT DATA
Session 5	**Descriptive Analytics**	Using solar plant data Descriptive Analytics , dashboard development
Session 6	**Solar Data Management & How do we get the data Data cleaning and joining /merging**	Solar Radiation data- HOW to get the data - data sources/databases, FIELD sensors/instruments/SRRA/data logger

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Session 7	**Diagnostic Analytics**	solar data sources/parameters/variables - solar irradiance (direct, diffused, reflected, refracted), impact of weather parameters (wind, humidity, precipitation, cloud etc) & Data Management and Data Quality Energy efficiency data - Solar Energy generation data PR & CUF data analysis for the solar plant
Session 8	**Solar Statistical modelling**	Data management & Statistical modelling Measure of central tendency (Mean median, mode, standard deviation, variance) , Correlation
Session 9	**SOALR Analytics**	Machine Learning – Application of finding the weakest inverter in the plant using relation with application Ground mounted to 48 MW plant
Session 10	**SOLAR Analytics**	Machine Learning – Application of linking the weakest inverter with different variables in the plant using relation with application Ground mounted to 48 MW plant

NOTE : NO PRIOR TECHNICAL OR PROGRAMMING BACKGROUND IS REQURIED.

PAST PARTICIPANTS :

- State Utility – DISCOM-
- State Nodal Agency –
- Academicians/Researchers
- Entrepreneur
- Solar EPC player
- Solar Developer

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Batch Size : Batch size max of 100 participants for better interactions

Target Audience :

This Program is focused towards solar industry data and take into account the audience from technical /Non - technical background

Delivery Team

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Working Team

Sumit Gupta

Sumit has been a solution evangelist for Smart Grid, Renewable Energy and Power Management in past. He brings in over 20 years of industry experience spanning over Domain of Energy & Utility, currently provide direction to PRAGYA SOLAR as Founder and CEO, a startup, focusing on solar transformation.

Sumit has been associated with AT Kearney , PricewaterhouseCoopers, SAS, in the past.

- *BE in Material Science and Metallurgy(NIT, Rourkela)*
- *Post Graduation in Supply Chain Management (IMT, Ghaziabad) and*
- *One year certificate Program in Leadership from Harvard Business Publishing (affiliate of Harvard Business School, Boston, Massachusetts, USA)*

Navin Kumar

Navin has been a seasoned, result-oriented professional with proven success in solving clients'problems, increasing business growth and improving efficiencies. He brings in over 1o years of industry experience spanning overarea of Predictive Modelling, Data Mining, Machine Learning Big Data and Business Analytics in various domains like Public Sector, Banking, CPG, Retail, Telecom and IPR. He has been associate with Assetplus Consulting, a start-up, focusing on end to end offering for Analytics clients i.e. Consulting, Services and Continued management.

- Navin has been associated with TCS in the past.
- He holds B.Tech in Computer science from JIT, Noida
- Post Graduation in Management (FMS, Delhi)

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Working Team

Prasanna Jha

- Graduate **from IIT Kharagpur in Mechanical Engineering** with more than 15 years of experience in Product Design/Development , Management and Managing technical team. Prassana has been associated with PTC India in the past.
- In 2012, Prasanna has started my entrepreneurial journey by starting JhaMobi which is in mobile application development industry. Starting from market analysis, product planning, requirement gathering and analysis, code development to documentation. Apart from technical contribution, team building and executing ideas, defining process and its imposition to team. Work delegation to team mates.

Ratna Gupta

- **Ratna** bring in 20 years of diversified experience , worked for a decade in IT industry in Financial domain in technical and functional role
- She moved on to academia with the mission to create young mind focused on developing both professionally and spiritually , a combination which is a foundation for a future leader. She has dedicated a decade in Academia
  - *Ratna has been associated with Ramco System, Microsoft, Infosys*
  - *BE in Electronics & Communication (BIT , Mesra, Ranchi),*
  - *MBA Finance (BIT , Mesra, Ranchi),*
  - *Phd in Financial Derivatives (BIT , Mesra, Ranchi)*

Program Perspective:

- **Open source Softwares like Python , Anconda , Jupyter notebook will be installed prior to the program**
- **Laptop with 2 GB ram is sufficient to work**

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Contact information:

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PROGRAM CERTIFICATE

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Program Fees:

Training Fee per participant	**Rs 5,000 plus GST @ 18 % (Rs 5,900/-)** in favor of "National Institute of Solar Energy –Capacity Building " Gurugram
Total	**Rs 5,000 plus GST @ 18 % (Rs 5,900/-)**
Fees Includes	Access all the lectures, online certification will be provided

Faculty subjected to change based on availabity.

How to Apply?

Participants may kindly make the Payment of **Rs 5,000 plus GST @ 18 % (Rs 5,900/-)** through RTGS/NEFT/ in favour of:

Account details are as follows:

ACCOUNT HOLDER NAME: NATIONAL INSTITUTE OF SOLAR ENERGY (NISE)
ACCOUNT TYPE: CURRENT ACCOUNT
BANK NAME: STATE BANK OF INDIA, DLF QUTAB ENCLAVE, SHOP NO.: 109-110 QUTUB PLAZA, SHOPING C, GURGAON HARYANA,

(SBI BRANCH CODE: 6604)

ACCOUNT NO. 37266665652

IFSC CODE: SBIN0006604

Submit your payment details on http://training.nise.res.in/ by 11/12/2020.

Dushyant Kumar Dwivedi , Consultant (Solar Analytics Trainings)
National Institute of Solar Energy (NISE)
Gurgaon Faridabad Road, Gwalpahari, Gurugram-122003, Haryana

Note: The participants must clearly indicate and send their bank transfer details through the above link in advance by 11/12/2020, so that the participants are allowed to attend the online training program.

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Number of Seats:

No. of Seats	Selection criteria
100	First come First serve basis

Note: If you require invoice against your organization it is mandatory to mention GSTN number of your organization. Otherwise your invoice will be generated as an individual

Coordinator at NISE

For any queries please contact between 10:00 am to 17:30 pm during weekdays:	
Dr. Vikrant Sharma	Dy. Director (Skill Development Division) – NISE sharma.vs1982@gmail.com (0124-2853035)
Mr. Dushyant Kumar Dwivedi	CONSULTANT – NISE itcell@nise.res.in (0124-2853075)
For Payment/Accounts :	Mr. Himanshu, Accounts Phone No.: 0124-2853049

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