
1-Day Workshop: AI Applications in Renewable Energy

To introduce participants to how Artificial Intelligence can optimize, forecast, automate, and scale renewable energy systems across solar, wind, hydro, bioenergy, and smart grids.

” Suitable for engineers, researchers, utility professionals, government professionals, Senior Managers, Stakeholders, Investors, Startup, and students.

09:30 AM – 10:00 AM | Registration + Welcome

- Welcome address
- Workshop objectives
- Introduction to participants

10:00 AM – 11:00 AM | Session 1: Fundamentals of AI in Renewable Energy

Topics Covered

- AI, ML, Deep Learning basics
- Role of AI in energy transition
- Data required in renewable energy
 - Solar irradiation
 - Wind speed
 - Weather datasets
 - Load demand data

Key Outcomes

Participants understand how AI fits inside the renewable energy ecosystem.

11:00 AM – 12:00 PM | Session 2: AI for Solar Energy

Applications

- Solar power forecasting using ML
- PV performance prediction
- Solar panel fault detection via image analytics
- Smart inverters optimization

Mini-Demo:

Forecast next-day solar output using a simple regression model.

12:00 PM – 01:00 PM | Session 3: AI for Wind Energy

Applications

- Wind speed and power curve prediction
- Turbine health monitoring (vibration + SCADA data)
- Blade fault detection using image processing
- Optimal turbine placement using data analytics

Industry Use Cases

- Siemens Gamesa predictive maintenance
- GE Digital wind turbine analytics

01:00 PM – 02:00 PM | Lunch Break

02:00 PM – 03:00 PM | Session 4: AI for Smart Grids & Energy Storage

Applications

- Load forecasting for utility companies
- Dynamic pricing using AI
- Battery State of Health (SOH) modelling
- Smart meter analytics
- Energy theft detection using ML

Hands-on Mini Activity:

Predict household energy consumption using sample smart-meter data.

03:00 PM – 04:00 PM | Session 5: AI in Hydro & Bioenergy

Hydro Energy

- Water flow & inflow prediction
- Dam operations optimization
- Turbine efficiency modeling

Bioenergy

- Waste-to-energy prediction models
- AI-based plant efficiency optimization

04:00 PM – 05:00 PM | Practical Lab / Hands-On

Participants will build small AI models using sample datasets:

- Solar power forecasting
- Wind speed prediction
- Load prediction for smart grids
- Tools:
- Python + Jupyter Notebook
- Scikit-learn / TensorFlow Lite
- Open data sources (NREL, Kaggle weather data)

05:00 PM – 05:30 PM | Panel Discussion + Q&A

- Future of AI in renewable energy (2025–2035)
- Career opportunities
- Consulting & startup ideas

Deliverables to Participants

- Workshop PPT (if needed, I can create it)
- Python notebooks
- Renewable energy AI datasets
- Certificate template

Instructor: Mr Suresh Tripathi is a founder of Geosun Pty Ltd an Australian company registered in year 2000 to provide AI corporate training, data center solutions and data pipeline end-to-end cloud platform. He has nearly 25+ years of work experience in digital data analytics integrated with AI and tech platforms. His education qualifications include master degree in Statistics from India, master degree in Geostatistics from Australia and master degree in Geoscience from Australia. He completed his AI certificate courses from Stanford Business School from California and High Impact Leadership from Cambridge University, UK. He has worked in Australia and US focusing his career on data strategy, tech platforms, and developing in-house training. He has worked with range of industries in Australia and US that include Deloitte, Flybuys, Ambulance Victoria, CFA (Emergencies Services), Avexa, Covance, Avance Clinical (Pharmaceuticals), Intelligen, Commonwealth Bank, Hackett Group (US), Health and Safety Sphera Solutions(US), Vic Government (Environment, water and energy), Waste Management (US), Outfront Media (US), Adani Mining (Australia) and Fura Gems Industries (Dubai).

Fee: Rs 25,000 per participant plus GST payable to GeosunAI Tech Cloud Pvt Ltd. RTGS/Cheque/ PhonePe via below link form.

Bank: Punjab National Bank

Account Name: NB, GeosunAI Tech Cloud Pvt Ltd

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