National Conference

Role of Artificial Intelligence (AI) in the Power and Water Resources Sectors

Under the aegis of CIGRE NSC D2 on Information Systems and Telecommunication

Date: 24th – 25th April 2025

Venue: CBIP Conference Hall, CBIP, New Delhi

Organized by

CENTRAL BOARD OF IRRIGATION & POWER
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New Delhi
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ANNOUNCEMENT

CBIP has been at the forefront of organizing conferences and workshops on emerging and important topics in the Water Resources, Power, and Renewable Energy sectors. These programs have been highly appreciated by delegates from across India and abroad. Building on this success, CBIP is once again taking the initiative to organize a National Conference on the Role of Artificial Intelligence (AI) in the Power and Water Resources Sectors, scheduled for 24-25 April 2025 at New Delhi. The aim of this conference is to enhance the knowledge of professionals on the subject and to discuss the challenges and opportunities related to AI in these sectors.

Background and Overview

Since computers and machines were first invented, their ability to perform tasks has grown rapidly. Over time, we've made computers faster, smaller, and able to handle more diverse tasks.

Artificial Intelligence (AI) is now a powerful tool transforming how we solve problems, make decisions, and innovate. In simple terms, AI is the ability of machines or software to mimic human intelligence — learning from data, recognizing patterns, and making decisions on their own. Over the years, AI technologies like machine learning, natural language processing, and robotics have shown great potential in changing industries worldwide.

AI aims to make computers, robots, or software think in a way that is similar to how humans think. To do this, AI studies how the human brain works—how we learn, decide, and solve problems—and then uses this knowledge to create smart software and systems.

AI focuses on building intelligent computers that can perform tasks similar to what humans do, but more efficiently. The goal is to develop systems that can process information and make decisions on their own. To do this, AI uses tools like predicate logic to represent knowledge in a way that machines can understand. Sometimes AI is also called computational intelligence.

While AI is still in the early stages compared to the overall growth of computer technology, it has already improved our quality of life. To explain AI simply, think of it as making computers "think" and "act" like humans. Today, we have systems that monitor production in factories, machines that follow instructions and even AI programs that can play and win at chess against world champions. However, it is still unclear whether AI can ever fully replace the human mind in all situations, as it continues to evolve.

Given the paramount significance of the topic, and to enlighten the professionals and engineers about this subject and to engage in a comprehensive discourse, the Central Board of Irrigation & Power and CIGRE-India jointly with CEA is organizing National Conference on the Role of Artificial Intelligence (AI) in the Power and Water Resources Sectors on 24-25 April, 2025, at the CBIP conference Hall, New Delhi.

Key Themes to be covered:

1. Introduction to Artificial Intelligence and its evolving role
2. AI applications in Power Generation, Distribution, and Management
3. Harnessing AI for Water Resource Management and Conservation
4. AI for Climate Change Adaptation and Sustainability
5. Case Studies on AI-driven Innovations in Power and Water sectors

Understanding AI: From Basics to Innovation

At its core, AI is about enabling machines to perform tasks that traditionally require human intelligence.

As AI technologies evolve, their integration into various sectors is becoming more profound, allowing for smarter decision-making, enhanced operational efficiency, and improved safety.

However, an increased electronic/Artificial Intelligence usage also poses security threats and privacy issues.

AI in the Power Sector

The application of AI in the power sector is paving the way for smarter grids, optimized energy management, and enhanced predictive maintenance, among other advancements. Key areas where AI is making an impact include, but not restricted to it only:

- *Grid Management* : AI systems can optimize the distribution of electricity in real time, improving grid reliability and efficiency while enabling better integration of renewable energy sources.
- *Predictive Maintenance* : AI models can analyse sensor data to predict equipment failures before they occur, reducing downtime and maintenance costs.

- *AI in Renewable Energy Integration*: optimisation of solar, wind energy generation, AI in storage management & Forecasting renewable energy output.
- *Energy Efficiency* : By analysing consumption patterns, AI can help consumers and utility companies optimize energy use, reducing waste and improving sustainability.
- *Demand Forecasting*: AI helps predict energy demand more accurately, allowing utilities to better plan for generation and distribution needs.

AI in the Water Resources Sector

In the water sector, AI is emerging as a powerful tool to address challenges such as water scarcity, pollution control, and efficient resource management. AI can contribute in the following ways, but not restricted to it only:

- *AI in Disaster Management*: forecasting natural disasters like floods and cyclones; real-time decision making during emergencies; enhascing disaster recovery using AI tools.
- *Water Distribution Optimization*: AI-driven systems can analyse water usage patterns to optimize the distribution of water, ensuring equitable access and minimizing waste.
- *Leak Detection and Maintenance*: AI can be used to identify leaks in water pipes through pattern recognition and sensor data analysis, allowing for quicker repairs and less water loss.
- *Water Quality Monitoring*: AI algorithms can analyze data from sensors to detect changes in water quality in real time, enabling immediate responses to contamination or pollution.
- Predictive Water Demand and Supply: Using historical data, AI can help forecast water demand and supply fluctuations, improving management of water resources and ensuring sustainability.

AI in Power and Water Resources Conference - Purpose and Call for Nominations

This conference aims to bring together experts, professionals, and stakeholders from the Power and Water Resources sectors to explore the transformative role of AI in these industries. Through important presentations, interactive discussions, and case studies, participants will gain a deeper understanding of how AI technologies can be leveraged to address current challenges and create more efficient, sustainable, and resilient systems.

We invite nominations from professionals, researchers, and innovators who are working on AI-related projects or applications in the power and water sectors. These individuals will have the opportunity to share their insights, experiences, and research with a diverse audience of industry leaders and experts.

FACULTY - CALL FOR PAPERS

We encourage experts in the above areas to contribute to this important conversation and help shape the future of AI in the power and water industries. Eminent experts from Utilities, Manufacturing organizations and Academic field shall be drawn as faculty and have been invited to deliver expert lectures during the Conference. The professionals who desire to make presentations/case studies on the above subject are also welcomed.

TIME LINES

- Last date of receipt of full-length paper/PPT : 7th April 2025
- Intimation of acceptance of paper   : 11th April 2025

WHO SHOULD ATTEND

The conference will be of special interest to:

- Planners, Independent power producers, Operators, Consultants, Electrical Contractors, OEM
- Researchers / Academicians, Manufacturers, Power Utilities / Corporations, State Govt. / SEBs, etc.

REGISTRATION FEE

All those who wish to participate in the conference are expected to register in advance by sending the details through email to the organizers along with payment of registration fee as indicated under:

1. Non – Member fee is Rs. 12,000/- per participant
2. Discounted fee for Members of CBIP/CIGRE-India is Rs. 10,000/- per participant
3. Special Discounted fee for Students is Rs. 2,500/- per student

GST @ 18% shall be charged extra GST No. 07AAAJC0237F1ZU

The Registration fee covers the registration kit, tea/coffee/lunch during the conference. The conference is non-residential. Participants will have to make their own arrangements for travel, boarding and lodging etc.

All payments be made through cheque at par in favour of "Central Board of Irrigation & Power", payable at Delhi or amount deposited/ transferred to :

HDFC Bank, CBIP A/c no. 00031110004411,   MICR No. 110240001,

Swift Code : HDFCINBBDEL, IFSC: HDFC 0000003,

Address: 209-214, Kailash Building, 26 Kasturba Gandhi Marg, New Delhi.

After making of the payment online in respect of the event, the details like UTR/Organization name to be furnished immediately.

DATE AND VENUE

The conference will be held on 24 – 25 April, 2025 (Thursday and Friday) at Conference Hall, CBIP, New Delhi.

The conference timings will be 10.00 AM to 5.30 PM on both the days. The registration will start at 9.00 AM on 24 April 2025.

SPONSORSHIP OPPORTUNITIES

The conference provides an effective opportunity for sponsoring companies to promote their products/services to a focused audience, besides networking with engineers of utility, manufacturers and academic institutions during tea/coffee and lunch intervals. Main banner and other publicity material related to conference and will have the privilege of distribution of their product's pamphlets/catalogues during the event. Sponsors will also have the privilege of sending delegates exempted from payment of registration fee as indicated hereunder:

Platinum Sponsor : Rs. 3,50,000/-	Gold Sponsor : Rs. 2,50,000/-	Silver sponsor : Rs. 1,50,000/-
• 10 delegate passes for participation in the Conference • Speaking Opportunity • Invitation to the key person of the organization as special invitee during Inaugural session • Circulation of Company Literature during the event • Company logo on main backdrop and other banners • Complimentary Advertisement in the Key Journal Published immediately after the event covering report of the event. • Announcement -Thanking sponsor	• 05 delegate passes for participation in the Conference • Company logo on main backdrop and other banners • Circulation of Company Literature during the event • Announcement - Thanking sponsor • Complimentary Advertisement in the Key Journal Published immediately after the event covering report of the event.	• 03 delegate passes for participation in the Conference • Company logo on main Backdrop • Announcement – Thanking sponsor

CONFERENCE SECRETARIAT

Shri A.K. Dinkar, *Secretary, CBIP*

Shri Sanjeev Singh, *Director (Energy)*, *CBIP*   **Shri K.K. Singh,** *Director (WR)*, *CBIP*

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Note:

• Spot registration facilities will also be available, provided the prior information is received.