

# A Seminar on Building the Future with AI: Applications in Civil Engineering

**Dr. Sonali Patil**

**Civil Engg**

## Activity Report

Academic Year	2024-25
Program Driven by	
Quarter	III
Program / Activity Name	Capacity Building Program
Program Type	
Program Theme	Innovation and startups
Start Date	29-03-2025
End Date	29-03-2025
Duration of the Activity (in Mins)	60
Number of Student Participant	0
Number of Faculty Participant	70
Number of external Participant	--
Expenditure Amount in Rs.	
Any Remark	--
Mode of Session Delivery	Offline
Objective	
Benefit in terms of Learning / Skills / Knowledge obtained	
Feedback	
Video url (mp4)	
Photograph 1 (jpg)	Attached
Photograph 2 (jpg)	Attached
Overall report of the Activity (pdf)	As given below





Dr. P. H. Zope Convener IIC

**Title:**

**Building the Future with AI: Applications in Civil Engineering**

**Speaker:**

**Dr. Sonali Patil**

**Date:**

[29-03-25]

**Venue:**

[SSBT COET Bambhori]

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## **1. Introduction**

The seminar titled "**Building the Future with AI: Applications in Civil Engineering**" was presented by **Dr. Sonali Patil**, an expert in the intersection of artificial intelligence and civil engineering. Dr. Patil shared her extensive knowledge of how AI technologies are revolutionizing the civil engineering industry, improving the design, construction, and maintenance of infrastructure. The seminar attracted a diverse audience, including students, professionals, and academics from both AI and civil engineering backgrounds.

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## **2. Objectives of the Seminar**

- To explore how AI is transforming civil engineering.
  - To identify key AI applications in design, construction, and project management.
  - To understand the integration of AI in predictive maintenance and safety management.
  - To discuss future trends and challenges in AI adoption within civil engineering.
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### 3. Highlights of the Seminar

#### a. Introduction to AI in Civil Engineering

Dr. Patil began by explaining the transformative role of **Artificial Intelligence** in the civil engineering industry. She emphasized that civil engineering projects are increasingly becoming complex, requiring sophisticated tools for efficient planning, design, and execution. AI's potential in these domains lies in its ability to process vast amounts of data, optimize processes, and make predictive decisions, all of which were once impossible or too time-consuming for traditional methods.

#### b. Key Applications of AI in Civil Engineering

Dr. Patil highlighted various AI-driven applications that are making a significant impact on civil engineering:

- **AI in Structural Design:**  
AI-powered design tools allow for better, more efficient structures by optimizing material use, energy consumption, and load-bearing capabilities. **Generative design** software is now being used to create innovative and efficient designs based on predefined constraints.
- **Predictive Analytics for Construction Projects:**  
Machine learning models are being used to forecast project risks, such as budget overruns, delays, or resource shortages. By analyzing historical data, AI can help project managers make informed decisions early on to mitigate risks.
- **AI in Construction Robotics:**  
Robotics, combined with AI, is changing the construction landscape. Autonomous construction robots, drones, and AI-based 3D printing are helping reduce human labor, minimize errors, and speed up construction processes.
- **Smart Cities and Infrastructure:**  
AI is central to the development of smart cities, where infrastructure is integrated with AI technologies for real-time monitoring and optimization. AI-driven systems are being used to manage traffic, waste disposal, water supply, and energy usage, creating more sustainable urban environments.
- **AI in Predictive Maintenance:**  
AI is being applied to monitor the health of infrastructure such as bridges, roads, and buildings. Sensors collect data, which is then analyzed using AI algorithms to predict potential maintenance needs, allowing for **preventative actions** before failures occur.

- **Safety Management:**

AI tools are being used to monitor and predict potential safety hazards at construction sites. Through real-time analysis of video feeds, AI can detect unsafe behaviors and conditions, alerting supervisors to take corrective action immediately.

### c. Case Studies and Real-world Examples

Dr. Patil shared several case studies that demonstrated the successful application of AI in civil engineering:

- **AI in Traffic Management:** AI algorithms have been used to design smart traffic systems that adapt to real-time conditions, reducing congestion and improving traffic flow.
- **Autonomous Construction Vehicles:** AI-controlled construction vehicles that help in excavation, material transport, and site surveying are gaining popularity on construction sites.

### d. Challenges and Future of AI in Civil Engineering

Despite the promising benefits, Dr. Patil pointed out the challenges in adopting AI in civil engineering:

- **Data Quality and Availability:** AI models rely on vast amounts of high-quality data, which may not always be available or accurate.
- **Resistance to Change:** Many professionals in the construction industry are still hesitant to adopt AI technologies due to their perceived complexity and cost.
- **Ethical and Legal Concerns:** As AI becomes more involved in critical infrastructure, ethical considerations regarding decision-making autonomy and accountability will arise.

However, she remains optimistic about the future, mentioning that ongoing research and collaboration between AI experts and civil engineers will lead to **more efficient, safe, and sustainable engineering solutions** in the coming years.

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## 4. Interactive Session

An engaging Q&A session followed Dr. Patil's presentation. Some of the key discussions included:

- How can AI be implemented on smaller-scale construction projects with limited resources?
- The role of AI in sustainable infrastructure development.
- Integration of AI with **Building Information Modeling (BIM)** for more efficient project planning and execution.

Dr. Patil provided insightful answers, emphasizing that AI adoption could be scaled gradually, starting with simpler applications before moving toward more advanced ones.

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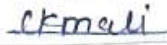

















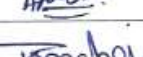
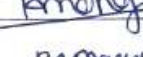
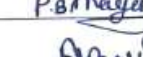

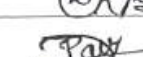

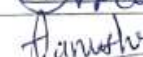
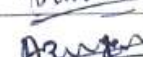
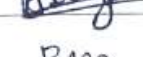


## **5. Conclusion**

The seminar concluded with a summary of the key points discussed. Dr. Sonali Patil stressed that AI is not a distant technology but is already playing a transformative role in the civil engineering field. By leveraging AI, the industry can overcome some of its most significant challenges, including inefficiencies, safety risks, and sustainability issues.

Dr. Patil encouraged attendees to embrace AI as an essential tool in shaping the future of civil engineering. The session was an eye-opener for many, inspiring a sense of urgency in adopting AI-driven strategies for future projects.





Roll no.	Name	Sign
54	Kalyani Bapu pati	
17	Chaitali K. Mali	
60	Megha Manoj Patil	
45	Devayani Samadhan Patil	
74	Shruti Kiran Patil	
73	Shrushti Rakesh Patil	
80	Teena Hemraj Patil	
28	Nizgala Natendra Narkhede	
33	Vishakha Pramod Nikam	
46	Devyani Pravin Patil	
38	Ankita Sanjay Patil	
41	Rutuja Ravindra Patil	
32	Lavanya Santosh Nikam	
83	Pranjal Mukunda Patil	
02	Bhagyashree Anant Khewalkar	
79	Tanvi Vinesh Singh Patil	
70	Ranjana Dnyaneshwar Patil	
19	Prapti Shrawan Mali	
53	Jayshree G. Patil	
08	Bhumiika Dilip Mahajan	
10	Khushi Rajendra Mahajan	
06	Priyanka Bhagwan Magare	
39	Ankita Vilas Patil	
37	Keerti Kaduba Pordeshi	
36	Trupti Dyaneshwar Palve	
55	Khushi Vinayak Patil	
78	Tanushree Pandharinath Patil	
07	Aniket Balwant Mahajan	
05	Prajwal Vinod Machankar	
59	Mayur Sursh Patil	

Sr.No	Name of Student	Sign.	Roll No.
1)	Utkarsha S. Patil	<u>Utkarsha</u>	2
2)	Tanvi Vinod kulkarni	<u>Kulkarni</u>	62
3)	Utkarsha S. Suryawanshi	<u>US</u>	38
4)	Gayatri Tushar Shingate	<u>Gayatri</u>	26
5)	Simran Shawata Tadari	<u>Tadari</u>	41
6)	Mansi suresh shirade	<u>Shirade</u>	27
7)	Snigdha Ratilal Patil	<u>Patil</u>	71
8)	Sejal Dipak Sandhanshi	<u>Sandhanshi</u>	21
9)	Pradnya Vijay Nikam	<u>Pradnya</u>	67
10)	Saniya Javed Shaikh	<u>Saniya</u>	74
11)	Gauri Vijay Sonar	<u>Gauri</u>	75
12)	Chhayashree Pralhal Patil	<u>Patil</u>	69
13)	Vaibhavi Vinayak patil	<u>Vaibhavi</u>	3
14)	Troiveni Ashok Solanki	<u>Troiveni</u>	29
15)	Abhijeet Girish Patil	<u>Patil</u>	68
16)	Shreyas Vijay Sangore	<u>Shreyas</u>	72
17)	Varad Anil Akkavadi	<u>Varad</u>	55
18)	Aryan Kamal Bajaj	<u>Aryan</u>	53
19)	Reham Akiloddin Shaikh	<u>Reham</u>	73
20)	Ganesh P. Sushir	<u>G.P. Sushir</u>	40
21)	Yogeshwar Sapan Wagh	<u>Yogeshwar</u>	51
22)	OM Rajendra Talele	<u>Talele</u>	43
23)	Chandheesant Devadas Ahire	<u>Ahire</u>	54
24)	Faizan Lukman Tadvi	<u>Faizan</u>	79
25)	Kalpesh Ananda Sonawane	<u>Kalpesh</u>	31
26)	Chiranjy Digambar Rajput	<u>Chiranjy</u>	16

Roll No	Name	Sign
23	Aditya Arun more	<u>Aditya</u>
65	Pratik Rajesh Patil	<u>Pratik</u>
66	Prathmesh Avinash Patil	<u>Prathesh</u>
26	Kunal Vasant Nannaware	<u>Kunal</u>
03	Amol Govinda Kumbhar	<u>Amol</u>
04	Ramchandra Bhatu Lohar	<u>Ramchandra</u>
50	Harshal Bharat Patil	<u>Harshal</u>
12	Pranav Bhaskar Mahajan	<u>Pranav</u>
13	Sumit Vinod Mahajan	<u>Sumit</u>

Attendance Sheet

Date and Sign		15/03/25	29/03/25	
SN	Name of faculty Member	Dept.		
1	Dr. P.A. Shirule	Civil		02
2	Dr. F.I. Chavan	Civil		04
3	Dr. Sonali B. Patil	Civil		03
4	Mr. J.N. Kale	Civil		03
5	Ms. Jyoti R. Mali	Civil		05
6	Pankaj Ramdas Punase	Civil		03
7	Ms. Dipika Purushottam Mali	Civil		01
8	Kalyani Ganesh Bendale	Civil		00
9	Dr. K.P. Adhiya	Computer		04
10	Dr. Manoj E Patil	Computer		04
11	Mr. Ashish T. Bhole	Computer		04
12	Dr. Akash D. Waghmare	Computer		06
13	Dr. Dnyaneshwar K. Kirange	Computer		06
14	Dr. Pankaj H. Zope	Computer		03
15	Dr. Surendra P. Ramteke	Computer		06
16	Ms. Shital A. Patil	Computer		03
17	Mr. Sarkarsinha Harshinha Rajput	Computer		05
18	Mr. Mohan Pramod Patil	Computer		05
19	Mr. Ramkrishna Hari Patil	Computer		05
20	Mr. Pramodgiri B. Gosavi	Computer		02
21	Ms. Priyanka Vinod Medhe	Computer		06
22	Mr. Krunal Chadrashekhwar Pawar	Computer		03
23	Ms. Pooja Mukundrao Khandar	Computer		03
24	Ms. Ashwini Arun Kakde	Computer		03
25	Ms. Mayuri Rajesh Chandratre	Computer		04
26	Ms. Shama S Pawar	Computer		03
27	Mr. Mohammed Shafique Shaikh	Computer		05
28	Ms. Tejashri Anil Patil	Computer		—
29	Ms. Prachi Pushkaraj Chaudhari	Computer		—
30	Ms. Utkarsha Prmod Narkhede	Computer		—
31	Ms. Soniya Premraj Chaudhari	Computer		—
32	Ms. Dipali Daulatrao Phadat	Computer		—
33	Mr. V. S. Pawar	Electrical		03
Pranesh S. Sarda		02/12		02

### Attendance Sheet

SN	Date and Sign	Name of faculty Member	Dept.	15/03/25	29/03/25	
34		Mr. M. Mujtahid Ansari	Electrical			05
35		Dr. Suhas M. Shembekar	Electrical		—	04
36		Dr. Rajesh R. Karhe	Electrical			04
37		Mr. Muqem Khan	Electrical	—		04
38		Mr. Tanveer Khatik	Electrical		—	04
39		Mr. Vijay Abaji Shinde	Electrical			02
40		Dr. M.P. Deshmukh	E&TC	—		04
41		Dr. V.M. Deshmukh	E&TC			04
42		Dr. N.M. Kazi	E&TC			04
43		Dr. Atul H. Karode	E&TC		—	04
44		Mr. Sunil K. Khode	E&TC		—	03
45		Ms. Rajashri B. Patil	E&TC			05
46		Dr. P.G. Damle	Mechanical		—	04
47		Mr. N. K. Patil	Mechanical	—		04
48		Dr. K. Shrivastav	Mechanical		—	02
49		Dr. Devendra B. Sadaphale	Mechanical			04
50		Dr. P. M. Solanki	Mechanical		—	04
51		Dr. Ajay R. Bhardwaj	Mechanical			03
52		Dr. Dipak C. Talele	Mechanical			05
53		Dr. Vijay R. Diware	Chemical	—		04
54		Dr. S. A. Thakur	Chemical	—	—	03
55		Mr. V. P. Sangore	Chemical	—		04
56		Mrs. Sarika S. Pawar	Chemical		—	03
57		Mrs. Ruchita S. Naik	Chemical		—	04
58		Dr. Sandip S. Patil	First Year			05
59		Dr. K. S. Patil	First Year	—	—	02
60		Dr. Sunita S. Patil	First Year	—		04
61		Dr. Prashant N. Ulhe	First Year			05
62		Mr. Amol Chandrakan Wani	First Year	—	—	03
63		Ms. Priti Ramesh Sharma	First Year		—	02
64		C.U. Nikam	First Year		—	01

Attendance Sheet

Date and Sign		Dept		Signs 29/01/21	
Sl. No.	Name of Faculty Member	Dept			
61	Mr. Pratik D. Patel	First Year	P	P	04
62	Mr. Dhanraj S. Doshi	First Year			04
63	Mr. Mahendra S. Patel	First Year			01
64	Mr. Manoj Prasad Kulkarni	First Year			04
65	Mr. Dharmendra Chandrakant Vagade	First Year			03
66	Dr. Anand T. Patel	First Year			03
67	Mrs. Nitesh Sawant	First Year			01
68	Mr. Tarun S. Chaudhari	First Year			07
69	Mrs. Anil Dhanraj Patel	First Year			00
70	Mr. Dhanraj S. Vagade	First Year			03
71	Mrs. Poo Manoj Mali	First Year			14
72	Mr. Dhanraj S. Chaudhari	First Year			12
73	Mr. Sachin Tejendra Bhalekar	First Year			13
74	Dr. Mahesh S. Rawlani	MBA			03
75	Dr. Rishi A. Modhwar	MBA			04
76	Mr. Farooq A. Khan	MBA			04
77	Mrs. Bharti F. Joshi	MBA			05
78	Mrs. Sakshi Manoj Modhwar	MBA			04
79	Mr. Rishabh Sunil Patel	MBA			12
80	Mr. Prashant Dhanraj Sonawane	MBA			12
81	Dr. Pankaj Dhanraj Vagade	MBA			12
82	Mr. Tejendra Dhanraj Vagade	MBA			12
83	Mr. Anil S. Chaudhari	MBA			12
84	Mr. Dhanraj S. Chaudhari	MBA			12
85	Mr. Dhanraj S. Chaudhari	MBA			12
86	Mr. Dhanraj S. Chaudhari	MBA			12
87	Mr. Dhanraj S. Chaudhari	MBA			12
88	Mr. Dhanraj S. Chaudhari	MBA			12
89	Mr. Dhanraj S. Chaudhari	MBA			12
90	Mr. Dhanraj S. Chaudhari	MBA			12
91	Mr. Dhanraj S. Chaudhari	MBA			12
92	Mr. Dhanraj S. Chaudhari	MBA			12
93	Mr. Dhanraj S. Chaudhari	MBA			12
94	Mr. Dhanraj S. Chaudhari	MBA			12
95	Mr. Dhanraj S. Chaudhari	MBA			12
96	Mr. Dhanraj S. Chaudhari	MBA			12
97	Mr. Dhanraj S. Chaudhari	MBA			12
98	Mr. Dhanraj S. Chaudhari	MBA			12
99	Mr. Dhanraj S. Chaudhari	MBA			12
100	Mr. Dhanraj S. Chaudhari	MBA			12

Attendance Sheet

SN	Name of faculty Member	Dept.	08/02/25	15/2/25	08/03/25	
1	Dr. P.A. Shirule	Civil				2
2	Dr. F.I. Chavan	Civil				2
3	Dr. Sonali B. Patil	Civil				1
4	Mr. J.N. Kale	Civil				1
5	Ms. Jyoti R. Mali	Civil				3
6	Pankaj Ramdas Punase	Civil				2
7	Ms. Dipika Purushottam Mali	Civil				0
8	Kalyani Ganesh Bendale	Civil				0
9	Dr. K.P. Adhiya	Computer				2
10	Dr. Manoj E. Patil	Computer				2
11	Mr. Ashish T. Bhole	Computer				3
12	Dr. Akash D. Waghmare	Computer				3
13	Dr. Dnyaneshwar K. Kirange	Computer				2
14	Dr. Pankaj H. Zope	Computer				2
15	Dr. Surendra P. Ramteke	Computer				3
16	Ms. Shital A. Patil	Computer				1
17	Mr. Sarkarsinha Harshinha Rajput	Computer				2
18	Mr. Mohan Pramod Patil	Computer				0
19	Mr. Ramkrishna Hari Patil	Computer				3
20	Mr. Pramodgiri B. Gosavi	Computer				
21	Ms. Priyanka Vinod Medhe	Computer				2
22	Mr. Krunal Chadrashankar Pawar	Computer				2
23	Ms. Pooja Mukundrao Khandar	Computer				2
24	Ms. Ashwini Arun Kakde	Computer				2
25	Ms. Mayuri Rajesh Chandratre	Computer				2
26	Ms. Shama S. Pawar	Computer				2
27	Mr. Mohammed Shafique Shaikh	Computer				2
28	Ms. Tejashri Anil Patil	Computer				
29	Ms. Prachi Pushkaraj Chaudhari	Computer				
30	Ms. Utkarsha Prmod Narkhede	Computer				
31	Ms. Soniya Premraj Chaudhari	Computer				
32	Ms. Dipali Daulatrao Phadat	Computer				
33	Mr. V. S. Pawar	Electrical				2

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SN	Name of faculty Member	Dept.	08/02/25	15/02/25	08/03/25	
34	Mr. M. Mujtahid Ansari	Electrical				3
35	Dr. Suhas M. Shembekar	Electrical				3
36	Dr. Rajesh R Karhe	Electrical				3
37	Mr. Muqem Khan	Electrical				3
38	Mr. Tanveer Khatik	Electrical				3
39	Mr. Vijay Abaji Shinde	Electrical				3
40	Dr. M.P. Deshmukh	E&TC				3
41	Dr. V.M. Deshmukh	E&TC				2
42	Dr. N.M. Kazi	E&TC				2
43	Dr. Atul H. Karode	E&TC				3
44	Mr. Sunil K. Khode	E&TC				3
45	Ms. Rajashri B Patil	E&TC				3
46	Dr. P.G. Damle	Mechanical				3
47	Mr. N. K. Patil	Mechanical				3
48	Dr. K. Shrivastav	Mechanical				1
49	Dr. Devendra B. Sadaphale	Mechanical				2
50	Dr. P. M. Solanki	Mechanical				3
51	Dr. Ajay R. Bhardwaj	Mechanical				2
52	Dr. Dipak C. Talele	Mechanical				3
53	Dr. Vijay R. Diware	Chemical				3
54	Dr. S. A. Thakur	Chemical				3
55	Mr. V. P. Sangore	Chemical				3
56	Mrs. Sarika S. Pawar	Chemical				3
57	Mrs. Ruchita S. Naik	Chemical				3
58	Dr. Sandip S. Patil	First Year				1
59	Dr. K. S. Patil	First Year				3
60	Dr. Sunita S. Patil	First Year				3
61	Dr. Prashant N. Ulhe	First Year				3
62	Dr. Amol Chandrakan Wani	First Year				3
63	Ms. Priti Ramesh Sharma	First Year				3
64	C.U. Nikam	First Year				1

Attendance Sheet

SN	Date and Sign	Dept.	08/02/25	15/2/2025	08/03/25	
65	Mr. Pravin D. Patil	First Year	P	P	—	2
66	Ms. Deepmala I. Desai	First Year	Desai	Desai	Desai	6
67	Mr. Mahendra B. Patil	First Year	—	—	—	0
68	Ms. Meera Prassan Kulkarni	First Year	Yashwanth	—	Yashwanth	6
69	Ms. Dhanashree Shashikant Tayade	First Year	D.	—	D.	2
70	Ujawalsing T. Patil	First Year	Patil	Patil	—	2
71	Mrs. Nancy Sawhney	First Year	—	—	—	1
72	Ms. Tanuja Y. Chouhan	First Year	—	—	Tanuja	1
73	Mrs. Anjali Darshan Patil	First Year	—	—	—	0
74	Ms. Jayashree R. Tayade	First Year	R. Tayade	R. Tayade	R. Tayade	3
75	Mrs. Puja Mayur Malu	First Year	—	Malu	Malu	2
76	Mr. Dashrath U. Chaudhari	First Year	DCM	—	DCM	2
77	Mr. Sachin Topalu Bhalerao	First Year	Sachin	Sachin	Sachin	6
78	Dr. Mahesh V. Rawlani	MBA	—	—	—	1
79	Dr. Richa A. Modiyani	MBA	R.	—	R.	2
80	Ms. Farooza A. Kazi	MBA	F.	—	F.	2
81	Mrs. Bharti P. Joshi	MBA	B.P.	B.P.	B.P.	3
82	Mrs. Sakina Mujahid Husain	MBA	Sakina	Sakina	Sakina	3
83	Mr. Rohan Suresh Patil	MBA	—	R. Patil	R. Patil	2
84	Ms. Vrushali Dinkar Sonawane	MBA	V.S.	V.S.	—	2
85	Dr. Puri Dinesh Dagadu	MCA	D.P.	D.P.	D.P.	2
86	Ms. Sapana Ananrao Fegade	MCA	Sapana	Sapana	—	2
87	Mr. Aslan Shaikh	MCA	Aslan	Aslan	—	2
88	Ms. Dhanshee Rajendra Shinde	MCA	—	—	—	0
89	Ms. Chetana Mohan Kawale	MCA	Chetana	Chetana	Chetana	2
90	Ms. Vishakha Yadonao Pande	MCA	V. Pande	V. Pande	V. Pande	2
91	Ms. Bhagyashri Suresh Patil	MCA	—	—	B. Patil	1
92	Ms. Reeta Vinod Patil	MCA	R. Patil	R. Patil	R. Patil	2
93	Dr. Sudhir S. Patil	Library	S.	S.	—	2
94	Nikita Gokul Patil	civil	—	N. Patil	N. Patil	2
95	V. S. Pawan	steriod	V. S. Pawan	V. S. Pawan	V. S. Pawan	2
96	Aravesh Sonawane	civil	—	—	—	0