

A Seminar on

Personalized Medicine and Treatment Model Using AI

Dr Atul H Karode

E&TC

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	08-03-2025
End Date	08-03-2025
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:

Personalized Medicine and Treatment Model Using AI

Speaker:

Dr. Atul H. Karode

Date:

[08-03-25]

Venue:

[SSBT COET Bambhori]

1. Introduction

The seminar on "**Personalized Medicine and Treatment Model Using AI**" was delivered by **Dr. Atul H. Karode**, a renowned expert in biomedical applications of Artificial Intelligence (AI). The session explored how AI is revolutionizing healthcare by enabling **personalized medicine**—a treatment approach tailored to individual patients based on genetic, environmental, and lifestyle factors. Dr. Karode highlighted how data-driven AI models can significantly improve diagnosis accuracy, predict treatment outcomes, and support clinical decision-making, thereby offering more precise and effective healthcare solutions.

2. Objectives of the Seminar

- To introduce the concept of **personalized medicine** and its importance in modern healthcare.
 - To explore the role of AI in creating individualized treatment plans.
 - To discuss real-world applications of AI in genomics, diagnostics, and drug response predictions.
 - To understand the challenges and ethical considerations in AI-based personalized healthcare.
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3. Key Highlights of the Seminar

a. What is Personalized Medicine?

Dr. Karode began by defining **personalized medicine** as a medical model that customizes healthcare decisions, treatments, and products to individual patient characteristics. Unlike the traditional "one-size-fits-all" model, personalized medicine aims to deliver the **right treatment to the right patient at the right time**. The model is driven by patient-specific data such as:

- **Genetic information**
- **Medical history**
- **Biomarkers**
- **Lifestyle data**

b. Role of AI in Personalized Medicine

AI plays a pivotal role in processing and analyzing the vast and complex datasets required for personalized medicine. Dr. Karode explained how **machine learning**, **deep learning**, and **natural language processing (NLP)** are used to:

- **Analyze genetic data** to identify disease risk factors and mutations.
- **Predict drug response** for individual patients.
- **Optimize treatment plans** using real-time clinical and patient-reported data.
- **Accelerate drug discovery** and development through simulation and modeling.

c. Applications of AI in Personalized Healthcare

Dr. Karode highlighted several areas where AI is enabling personalized treatment models:

- **Genomics and Precision Medicine:**
AI algorithms analyze genetic sequencing data to identify mutations associated with diseases such as cancer, diabetes, and rare genetic disorders. Based on this, clinicians can select the most effective drugs or interventions.

- **Predictive Analytics for Disease Risk:**
AI models can predict a patient's susceptibility to chronic diseases (e.g., cardiovascular disorders) based on family history, biomarkers, and lifestyle data, allowing early intervention.
- **AI in Oncology:**
In cancer treatment, AI helps determine the best chemotherapy or immunotherapy regimen by analyzing tumor genetics and treatment response data. Dr. Karode discussed how AI is being used to create **tumor-specific treatment strategies**.
- **Personalized Drug Recommendations:**
AI-powered platforms assess individual patient profiles to recommend medications that minimize side effects and maximize efficacy. This is particularly useful in treating conditions with multiple therapy options like depression or hypertension.
- **Wearables and Remote Monitoring:**
AI processes data from wearable devices to monitor patient vitals continuously. These insights support personalized treatment adjustments in real-time, especially for chronic diseases like diabetes or heart failure.
- **Clinical Decision Support Systems (CDSS):**
AI-based CDSS provides clinicians with evidence-based suggestions tailored to each patient's profile. This assists in making more informed and timely decisions.

d. Benefits of AI in Personalized Medicine

Dr. Karode emphasized the multiple benefits of AI-powered personalized treatment:

- **Improved Patient Outcomes:** Treatments based on patient-specific data are more effective and have fewer side effects.
- **Early Detection and Prevention:** Predictive models enable early intervention, reducing disease progression.
- **Reduced Healthcare Costs:** By targeting treatments effectively, unnecessary tests and trial-and-error prescriptions are minimized.
- **Faster Drug Development:** AI accelerates the identification of therapeutic targets and the simulation of clinical outcomes.

e. Case Studies and Success Stories

Dr. Karode shared several impactful examples:

- **IBM Watson for Oncology:** An AI system that suggests personalized cancer treatment options based on patient data and vast medical literature.
- **Deep Genomics:** A company using AI to predict how genetic mutations will affect patients and how they can be treated.
- **Tempus Platform:** Uses AI to analyze clinical and molecular data to help doctors make personalized decisions in cancer treatment.

f. Challenges and Ethical Considerations

Despite its potential, Dr. Karode noted some challenges in implementing AI in personalized medicine:

- **Data Privacy and Security:** Sensitive health and genetic data must be protected with robust encryption and compliance with regulations like HIPAA or GDPR.
- **Bias and Fairness:** AI models can inherit biases from the datasets they are trained on, which can lead to disparities in treatment recommendations.
- **Regulatory Approvals:** The use of AI in healthcare requires rigorous validation and regulatory clearance, which can delay implementation.
- **Integration into Clinical Workflow:** Adapting existing healthcare systems to accommodate AI tools requires changes in infrastructure and clinician training.

g. The Future of Personalized Medicine with AI

Dr. Karode concluded by discussing future trends:

- **AI + Genomics + Big Data** will lead to **hyper-personalized** healthcare.
- Integration with **blockchain** may ensure secure handling of patient data.
- AI will continue to evolve with more interpretable models to gain clinician trust.
- **Digital twins** of patients may be created using AI to simulate treatments before actual implementation.

4. Interactive Session

In the Q&A session, participants asked about:


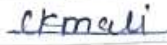

















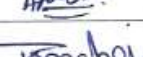
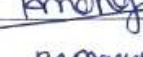
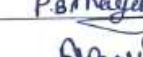

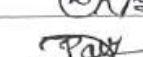

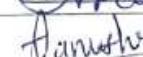
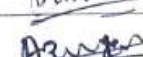
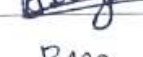


- How AI can be made explainable for use in clinical practice.
- The availability of AI tools for small and medium healthcare providers.
- Legal and ethical implications of using AI-generated treatment plans.

Dr. Karode provided thoughtful responses, emphasizing the need for transparency, collaboration with clinicians, and ethical frameworks for AI adoption.

5. Conclusion

The seminar concluded with a strong message: **AI is not replacing doctors—it is empowering them.** Dr. Atul H. Karode emphasized that the integration of AI in personalized medicine marks a new era of precision healthcare, where treatments are tailored to each individual's unique profile. This shift has the potential to transform how diseases are diagnosed, managed, and prevented.



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>Shingate</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 Sandhanishiv	<u>Sandhanishiv</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 Pralhad 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 Akurkar	<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)	chandheersant Devidas Ahire	<u>Ahire</u>	54
24)	Faigan Lukman Tadvi	<u>Tadvi</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

Date and Sign			15/03/25	29/03/25	
SN	Name of faculty Member	Dept.			
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. Dhanendra J. 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. Anand Dhanraj Patel	First Year			00
70	Mr. Dhanendra S. Vagade	First Year			03
71	Mrs. Poo Manoj Mali	First Year			14
72	Mr. Dhanendra S. Chaudhari	First Year			12
73	Mr. Sachin Tejendra Bhalekar	First Year			13
74	Dr. Mahesh S. Rawlani	MBA			03
75	Dr. Rishi A. Modhyan	MBA			04
76	Mr. Farooq A. Khan	MBA			04
77	Mrs. Bharti F. Joshi	MBA			05
78	Mrs. Sakshi Manoj Modhyan	MBA			04
79	Mr. Rishabh Sunil Patel	MBA			12
80	Mr. Anand Dhanraj Sawant	MBA			12
81	Dr. Pooja Tulsi Vagade	MBA			
82	Mr. Tejendra Dhanraj Vagade	MBA			
83	Mr. Anand Dhanraj	MBA			
84	Mr. Dhanendra Bhalekar	MBA			
85	Mr. Dhanendra Bhalekar	MBA			
86	Mr. Dhanendra Bhalekar	MBA			
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94	Mr. Dhanendra Bhalekar	MBA			
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96	Mr. Dhanendra Bhalekar	MBA			
97	Mr. Dhanendra Bhalekar	MBA			
98	Mr. Dhanendra Bhalekar	MBA			
99	Mr. Dhanendra Bhalekar	MBA			
100	Mr. Dhanendra Bhalekar	MBA			

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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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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				3
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	Puri	Puri	Puri	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	1
95	V. S. Pawan	steriod	V. S. Pawan	V. S. Pawan	V. S. Pawan	1
96	Ganesh Sonawane	civil	G.	—	G.	1