

REGISTRATION FEES

There is no registration fee. Participants can apply online : <https://atalacademy.aicte-india.org/login>

REGISTRATION FORM

Online Reg. Ref. No. : _____

Name (In Block Letters): _____

Gender: _____

Designation: _____

Institutional Address: _____

Highest Qualification: _____

Area of Specialization: _____

Research Interests: _____

Address for Correspondence: _____

Mobile No. _____

Email: _____

Date: _____ **Signature of Applicant**

The candidate Mr./Mrs./Dr./Prof. _____

is hereby officially permitted by the institute to attend the FDP titled "**AI and Explainable AI in Healthcare: Current Trends and Future Research Possibilities**" during the period **25th to 30th November 2024**.

SIGNATURE OF DIRECTOR / PRINCIPAL with SEAL

PATRON

Dr. Hiren Patel, Principal, SCET

HEAD OF THE DEPARTMENT

Dr. Dipali Kasat (Computer Engineering)

Dr. Vivaksha Jariwala (Information Technology)

COORDINATOR

Dr. Mayuri Mehta, Professor, Computer Engineering Department, SCET, Surat

CO-COORDINATOR

Dr. Dhruti Sharma, Associate Professor, Information Technology Department, SCET, Surat

ORGANISING COMMITTEE

- 1) Dr. Nirali Nanavati, Associate Professor, Computer Engineering Department, SCET
- 2) Prof. Mukesh Patel, Assistant Professor, Information Technology Department, SCET
- 3) Prof. Jaydeep Barad, Assistant Professor, Computer Engineering Department, SCET
- 4) Prof. Nitya Komlan, Assistant Professor, Information Technology Department, SCET

FDP CONTENTS

- AI-based medical image processing
- Medical image segmentation
- Cancer detection using Genome deep learning
- Robot-assisted minimally invasive surgery
- Adversarial machine learning for E-Health
- AI-Blockchain for electronic health records
- AI-powered healthcare solutions
- Significance of Explainable AI in healthcare
- Explainable AI methods for healthcare applications
- Research opportunities in healthcare using AI and explainable AI

IMPORTANT DATES

Last date for registration: **16th Nov, 2024**

List of eligible candidates: **18th Nov, 2024**

(E-mail will be sent to eligible candidates)



Sarvajanik University



Sarvajanik College of Engineering and Technology

Dr. R. K. Desai Marg, Athwalines, Surat, Gujarat

AICTE TRAINING AND LEARNING (ATAL) ACADEMY



One Week



Faculty Development Programme On

***AI and Explainable AI
in Healthcare:
Current Trends and Future
Research Possibilities***

25th to 30th November 2024

Organized By:

**Dept. of Computer Engineering
and**

Dept. of Information Technology

**Sarvajanik College of Engineering
and Technology (SCET), Surat**

ABOUT ORGANIZING INSTITUTE- SCET

Sarvajanik College of Engineering and Technology (SCET) is one of the prime institutions offering technical education in the field of Engineering & MCA. It is one of the constituent institutes of Sarvajanik University, Surat. SCET being one of the institutes of the biggest Philanthropic society of the country has a strong base of values and commitments to create a progressive civilization.

SCET located in the heart of the city presently enrolls more than 2000 students in various disciplines of Engineering and MCA with 9 UG courses and 5 PG courses. Five of its undergraduate programs namely Civil Engineering, Computer Engineering, Electrical Engineering, Electronics and Communication Engineering, Instrumentation and Control, are accredited by National Board of Accreditation (NBA).

Since its establishment in 1995 SCET continuously keeps on upgrading its resources in terms of its human as well as infrastructure. It continues to foster the innovativeminds who have carved a successful and a special niche in this competitive world of academics for technical education and is marching ahead to become one of the most premier academic institutes in the country.

ABOUT THE DEPARTMENTS

The Computer Engineering Department was established in year 1997 with the current intake of 180 students. It also offers PG course in 'Computer Science and engineering (Artificial Intelligence and Machine Learning)'. The department imparts high quality technical education to its students with the help of its state-of-the-art computing facilities and highly qualified teaching staff.

The Department of Information Technology was established in 2001 with the current intake of 120 students. It provides one of the best learning opportunities to students with its contemporary course design, curriculum and state-of-the-art learning resources. The department continues the journey towards the goal of creating technical excellence which imparts the best knowledge and skills to students with the objective of producing high calibre engineering graduates.

ABOUT PROGRAMME

AI is seemingly inseparable today. Healthcare using AI is amongst the fastest growing research area across the globe. A massive amount of heterogeneous data generated in healthcare sector offers enormous opportunities for data analytics using AI models. Recent advancements in AI are proving beneficial in development of applications in various spheres of healthcare such as microbiological analysis, discovery of drug, disease diagnosis, genomics and proteomics, medical imaging and bioinformatics. Due to increasing availability of electronic healthcare data (structured as well as unstructured data) and rapid progress of data analytic techniques, a lot of research is being carried out in this area. Automation using AI can unlock clinically relevant information hidden in the massive amount of structured/unstructured data, which in turn can assist clinical decision making.

Healthcare offers unique challenges for AI techniques. Particularly, there is a challenge in the black box operation of decisions made by AI models which have resulted in a lack of accountability and trust in the decisions made. Explainable AI (XAI) is one of the answers to this problem to bring humans closer to machines. XAI enhances the trust of medical professionals. In future, XAI might be the pathway for many AI-recommended healthcare treatments to get approved.

The FDP topic is emerging and demanding. It connects five contemporary areas of research: AI, XAI, Data Science, Image Processing and Healthcare. The purpose of this FDP is to provide attendees a collective update on developments in healthcare using AI & XAI, challenges, opportunities and future research directions

OBJECTIVES OF FDP

- To introduce and provide conceptual understanding of uses of AI in various spheres of healthcare such as disease diagnosis, genetics and genomics, medical imaging, robotic surgery, privacy persevering of patient data and bioinformatics.
- To make participants familiar with recent advancements in healthcare domain discussing AI-powered healthcare solutions.

- To explain participants how Explainable AI is useful to win the trust of medical professionals and patients.
- To make participants acquainted with challenges and future research possibilities in healthcare using AI and Explainable AI.

SPEAKERS

- Dr. Mayuri Mehta, Professor, Sarvajanik College of Engineering and Technology, Surat
- Dr. Sudeep D. Thepade, Professor and Vice Chancellor, Pimpri Chinchwad University, Pune
- Mr. Dipanjan Sarkar, Head of Community and Principal AI Scientist, Vidhya Analytics, Bangalore
- Dr. Priyank Thakkar, Associate Professor, Nirma University, Ahmedabad
- Dr. Devesh C. Jinwala, Professor, NIT, Surat
- Dr Padmaja Joshi, Senior Director, C-DAC, Mumbai
- Dr. Shilpa Gite, Associate Professor, Symbiosis Institute of Technology, Pune
- Mr. Amar Banerjee, Scientist, Philips Healthcare Innovation Center, Pune
- Dr. Anubha Gupta, Professor, IIIT Delhi
- Prof. Rachana Oza, Assistant Professor, Sarvajanik College of Engineering and Technology, Surat

ELIGIBILITY

The programme is open to Faculty Members, Postgraduate Students, Research Scholars and Industry Professionals.

ADDRESS FOR COMMUNICATION

Dr. Mayuri Mehta, Coordinator,
Computer Engineering Department,
Sarvajanik College of Engineering and Technology,
Dr. R. K. Desai Marg, Athwalines, Surat-395001,
E-mail: mayuri.mehta@scet.ac.in

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Information Technology Department,
Sarvajanik College of Engineering and Technology,
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E-mail: dhruti.sharma@scet.ac.in



ATAL FACULTY DEVELOPMENT PROGRAM

on

AI and Explainable AI in Healthcare: Current Trends and Future Research Possibilities



FDP SPEAKERS



Prof. (Dr.) Mayuri Mehta

Professor

Computer Engineering Department,
Sarvajani College of Engineering &
Technology, Surat

Session Title: *How AI and Explainable AI (XAI) are Transferring the Healthcare Industry*



Prof. (Dr.) Sudeep D. Thepade

Professor and Vice Chancellor

Computer Engineering Department,
Pimpri Chinchwad University, Pune

Session Title: *Disease Identification through Medical Imaging and AI*



Mr. Dipanjan Sarkar

Head of Community and Principal AI Scientist

Analytics Vidhya and Self-employed

Session Title: *Generative AI and Large Language Models in Healthcare*



Prof. (Dr.) Priyank Thakkar

Associate Professor

Computer Science & Engineering
Department,
Nirma University, Ahmedabad

Session Title: *Medical Image Segmentation using Deep Neural Networks for Improved Disease Diagnosis*



Prof. (Dr.) Devesh C. Jinwala

Professor

Department of Computer Science &
Engineering,
Sardar Vallabhbhai National Institute of
Technology, Surat

Session Title: *Adversarial Machine Learning in e-Health*



Dr. Padmaja Joshi

Senior Director

C-DAC, Mumbai

Session Title: *A coupled AI-Blockchain for Electronic Health Records (EHRs) management*



Prof. (Dr.) Shilpa Gite

Associate Professor

Computer Science & Engineering,
Symbiosis Institute of Technology, Pune

Session Title: *Explainable AI in Healthcare: Methods, Forms and Frameworks*



Mr. Amar Banerjee

Scientist

Philips Healthcare Innovation Center,
Pune

Session Title: *Role of Explainable AI in Medical Industry*



Prof. (Dr.) Anubha Gupta

Professor

Electronics and Communications
Engineering,
Indraprastha Institute of Information
Technology, Delhi

Session Title: *Designing a gene panel using genomic Biomarkers on Multiple Myeloma Cancer using AI*



Prof. Rachana Oza

Assistant Professor

Computer Engineering Department,
Sarvajani College of Engineering &
Technology, Surat

Session Title: *Robot-assisted Minimally Invasive Surgery using AI-based CAS Systems*

Schedule of BASIC FDP

FDP Application Number: 1715937969

Title of the FDP: AI and Explainable AI in Healthcare: Current Trends and Future Research Possibilities

FDP Start Date: 25th November 2024

FDP End Date: 30th November 2024

Day 1 25 th Nov 2024, Monday	Day 2 26 th Nov 2024, Tuesday	Day 3 27 th Nov 2024, Wednesday	Day 4 28 th Nov 2024, Thursday	Day 5 29 th Nov 2024, Friday	Day 6 30 th Nov 2024, Saturday
9:00 – 9:30 Inauguration					
9:30 – 12:00 Session 1	9:30 – 12:00 Session 3	9:30 – 12:00 Session 5	9:30 – 12:00 Session 7	9:00 – 1:00 Industrial visit	9:30 – 12:00 Session 10
1. Name of the Expert: <i>Dr. Mayuri Mehta</i> 2. Designation: <i>Professor</i> 3. Organization: <i>Sarvajanik College of Engineering and Technology, Surat</i> 4. Experience in Years: <i>23 Years</i> 5. Topic to be taught: <i>How AI and Explainable AI (XAI) are Transferring the Healthcare Industry</i>	1. Name of the Expert : <i>Mr. Dipanjan Sarkar</i> 2. Designation: <i>Head of Community and Principal AI Scientist</i> 3. Organization: <i>Analytics Vidhya and Self-employed</i> 4. Experience in Years: <i>12 Years</i> 5. Topic to be taught: <i>Generative AI and Large Language Models in Healthcare</i>	1. Name of the Expert : <i>Dr. Devesh C. Jinwala</i> 2. Designation: <i>Professor</i> 3. Organization: <i>NIT, Surat</i> 4. Experience in Years: <i>33 Years</i> 5. Topic to be taught: <i>Adversarial Machine Learning in e-Health</i>	1. Name of the Expert : <i>Dr. Shilpa Gite</i> 2. Designation: <i>Associate Professor</i> 3. Organization: <i>Symbiosis Institute of Technology, Pune</i> 4. Experience in Years: <i>18 Years</i> 5. Topic to be taught: <i>Explainable AI in Healthcare: Methods, Forms and Frameworks</i>	1. Name of the Organization: <i>Sahajanand Medical Technologies Pvt. Ltd. (SMT)</i> 2. Complete address with pincode : <i>Sahajanand Estate, Wakhariawadi, Near Dabholi, Ved Road, Surat – 395 004. Gujarat, India.</i> 3. Industry Type: <i>company to manufacture medical equipment using AI technologies</i> 4. Area of specification : <i>Medical stent used to treat narrow or weak arteries</i>	1. Name of the Expert: <i>Prof. Rachana Oza</i> 2. Designation: <i>Assistant Professor</i> 3. Organization: <i>Sarvajanik College of Engineering and Technology, Surat</i> 4. Experience in Years: <i>14 Years</i> 5. Topic to be taught: <i>Robot-assisted Minimally Invasive Surgery using AI-based CAS Systems</i>
12:00 – 1:00 Article Discussion	12:00 – 1:00 Article Discussion	12:00 – 1:00 Article Discussion	12:00 – 1:00 Article Discussion		12:00 – 1:00 Article Summary
1. Title of the Research Paper: <i>Effect of</i>	1. Title of the Research Paper: <i>Tear film</i>	1. Title of the Research Paper : <i>DeepIrisNet2:</i>	1. Title of the Research Paper : <i>Kids' emotion</i>		1. Title of the Research Paper: <i>Analytics of</i>

<p><i>image binarization thresholds on breast cancer identification in mammography images using OTSU, Niblack, Burnsen, Thepade's SBTC</i></p> <p>2. Name of the journal: <i>Intelligent Systems with Applications, Elsevier</i></p> <p>3. Year of Publication: 2021</p>	<p><i>breakup time-based dry eye disease detection using convolutional neural network</i></p> <p>2. Name of the journal: <i>Neural Computing and Applications, Springer</i></p> <p>3. Year of Publication: 2022</p>	<p><i>Learning Deep-IrisCodes from Scratch for Segmentation-Robust Visible Wavelength and Near Infrared Iris Recognition</i></p> <p>2. Name of the journal: <i>Computing Research Repository(CoRR), ACM</i></p> <p>3. Year of Publication: 2019</p>	<p><i>recognition using various deep-learning models with explainable ai</i></p> <p>2. Name of the journal: <i>Sensors</i></p> <p>3. Year of Publication: 2022</p>		<p><i>deep model-based spatiotemporal and spatial feature learning methods for surgical action classification</i></p> <p>2. Name of the journal: <i>Multimedia Tools and Applications, Springer</i></p> <p>3. Year of Publication: 2023</p>
1:00 – 2:00 Lunch	1:00 – 2:00 Lunch	1:00 – 2:00 Lunch	1:00 – 2:00 Lunch	1:00 – 2:00 Lunch	1:00 – 2:00 Lunch
<p>2:00 – 4:30 Session 2</p> <p>1. Name of the Expert : <i>Dr. Sudeep D. Thepade</i></p> <p>2. Designation: <i>Professor and Vice Chancellor</i></p> <p>3. Organization: <i>Pimpri Chinchwad University, Pune</i></p> <p>4. Experience in Years: 22 Years</p> <p>5. Topic to be taught: <i>Disease Identification through Medical Imaging and AI</i></p>	<p>2:00 – 4:30 Session 4</p> <p>1. Name of the Expert : <i>Dr. Priyank Thakkar</i></p> <p>2. Designation: <i>Associate Professor</i></p> <p>3. Organization: <i>Nirma University, Ahmedabad</i></p> <p>4. Experience in Years: 23 Years</p> <p>5. Topic to be taught: <i>Medical Image Segmentation using Deep Neural Networks for Improved Disease Diagnosis</i></p>	<p>2:00 – 4:30 Session 6</p> <p>1. Name of the Expert : <i>Dr Padmaja Joshi</i></p> <p>2. Designation : <i>Senior Director</i></p> <p>3. Organization: <i>C-DAC, Mumbai</i></p> <p>4. Experience in Years: 32 Years</p> <p>5. Topic to be taught: <i>A coupled AI-Blockchain for Electronic Health Records (EHRs) management</i></p>	<p>2:00 – 4:30 Session 8</p> <p>1. Name of the Expert : <i>Mr. Amar Banerjee</i></p> <p>2. Designation : <i>Scientist</i></p> <p>3. Organization: <i>Philips Healthcare Innovation Center, Pune</i></p> <p>4. Experience in Years: 12 Years</p> <p>5. Topic to be taught: <i>Role of Explainable AI in Medical Industry</i></p>	<p>2:00 – 4:30 Session 9</p> <p>1. Name of the Expert : <i>Dr. Anubha Gupta</i></p> <p>2. Designation : <i>Professor</i></p> <p>3. Organization: <i>IIIT Delhi</i></p> <p>4. Experience in Years: 31 Years</p> <p>5. Topic to be taught: <i>Designing a gene panel using genomic Biomarkers on Multiple Myeloma Cancer using AI</i></p>	<p>2:00 – 4:00 MCQ & Reflection Journal</p>
4:30 – 5:30 Hands on training on Computer Vision Python libraries	4:30 – 5:30 Hands on training on Model Building Python libraries	4:30 – 5:30 Hands on training on Blockchain Python libraries	4:30 – 5:30 Hands on training on Explainable AI Python libraries	4:30 – 5:30 Hands on training on Visualization Python libraries	4:00 – 5:00 Valedictory Session