AI and Data Analytics for Healthcare

Date:20th February - 3rd March 2023,
Indira Gandhi Delhi Technical University for Women

AI AND DATA ANALYTICS FOR HEALTHCARE

Department of Electronics and Communication Engineering, IGDTUW, organized a two-week PM Gati Shakti AICTE ATAL FDP on "AI and Data Analytics for Healthcare" from 20th February to 03rd March 2023. in which around 50 participants from different colleges across various parts of the country, including faculty members, industry personnel, and research scholars of IGDTUW attended the FDP.

The speakers for the two-week AICTE ATAL FDP on "AI AND DATA ANALYTICS FOR HEALTHCARE" were:

Speaker Name	Designation/ Affiliation/ Education/ Experience
Mr. Ramdas Menon	**Education:** • M.Tech in Chemical Engineering from IIT, Madras in 1990 • MBA in HR from ICFAI **Experience:** • 12 years of consulting and 18 years of corporate experience in M. N. Dastur & Co, General Electric, TVS Electronics and Pfizer. • Senior Member of the American Society for Quality (ASQ) since July 2006
Dr. Subrahmanyam Murala	**Designation:** Associate Professor **Affiliation**: Department of Electrical Engineering, IIT Ropar, Rupnagar, Punjab, India **Education:** • B.E. degree in Electrical and Electronics Engineering from Andhra University, Andhra Pradesh, India, in 2007 • M. Tech. degree from the Department of Electrical Engineering, Indian Institute of Technology Roorkee, Roorkee, India, in 2009 • Ph.D. degree from the Department of Electrical Engineering, Indian Institute of Technology Roorkee, Roorkee, India, in 2012 **Experience:** • Post-Doctoral Researcher in the Department of Electrical and Computer Engineering at University of Windsor, Windsor, ON, Canada from July 01, 2012 to June 30, 2014 • Associate Professor in the Department of Electrical Engineering, IIT Ropar, Rupnagar, Punjab, India.

Dr. AmithaDomalpally	**Designation:** Research Director **Affiliation:** Wisconsin Reading Center, University of Wisconsin, Madison, USA Education: MD, PhD **Experience:** • Leads the Artificial Intelligence Research Unit within her department • Research focus on retinal diseases and developing diagnostic artificial intelligence algorithms.
Prof. Dinesh Kumar Vishwakarma	**Designation:** Professor **Affiliation:** Department of Information Technology, Delhi Technological University **Education:** • Ph.D. degree in Computer Vision and Machine Learning from Delhi Technological University, New Delhi, India, in 2016 **Experience:** • Currently a Professor with the Department of Information Technology, Delhi Technological University.
Dr. Ahlad Kumar	**Education:** • B.Tech. degree in Electronics and Communication Engineering from Jamia Millia Islamia, New Delhi, India, in 2005 • M. Tech. degree from ABV-IIITM, Gwalior, India, in 2005 • Ph.D. degree from the University of Malaya, Kuala Lumpur, Malaysia, in 2016 **Experience:** • Postdoctoral Research Fellow with Concordia University, Montreal, QC, Canada, from 2017 to 2019 • Currently an Assistant Professor with National Forensic Sciences University (NFSU), Gandhinagar, Gujarat
Ms. Sri Ramaswamy	**Designation:** Founder and CEO of Charlee.ai **Affiliation:** Charlee.ai, a Silicon Valley technology company **Experience:** • More than 20 years of experience in architecting and launching business intelligence, advanced data analytics, and artificial intelligence solutions for banking and insurance industries.

Ms. Sowmya Moni 	**Designation:** Director **Affiliation:** Incture Technologies, Pvt. Ltd. **Experience:** 22 years in technology marketing
Dr. Ekata Mehul 	**Designation:** Director and CEO **Affiliation:** Orena Solution Pvt. Ltd. **Experience:** • 25 years of career equally divided in Industry and Academia • Working to set the ecosystem through technology generating Human Talent with the support of Training and Research
Dr. Abhilasha Vyas 	**Designation:** Business Unit Head **Affiliation:** CloudThat Technologies, Suraj Sansthan, Jaipur **Experience:** • 19 years of experience in Technology, Education, and Training in Information Technology.
Dr. Shelly Sachdev 	**Designation:** Associate Professor, Dean Student Welfare **Affiliation:** Department of Computer Science and Engineering, NIT Delhi **Education**: PhD in Computer Science from The University of Aizu **Experience:** • Experienced Associate Professor with expertise in Requirements Analysis, C++, Databases, Healthcare Information Technology (HIT), and Java.

Dr. Aradhana Sharma	**Designation:** Consultant Psychologist **Affiliation:** Anubhuti Clinic, Kulkarni Children's Medical Center, Paschim Vihar **Experience:** • 22 years of experience in various fields of consulting, psychology, and social work • Former consultant at Bhartiya Vidya Bhavan's Usha & Laxmi Narain Mittal Institute of management (BULMIM)
Dr. Swati Sinha	**Education:** • Graduated from Maulana Azad Medical College, New Delhi • Post Graduation and Senior Residency from Lady Hardinge Medical College, New Delhi **Experience:** Over 20 years of experience in Obstetrics and Gynecology
Prof. Nidhi Gooel	**Designation:** Professor **Affiliation:** Indira Gandhi Delhi Technical University for Women, New Delhi **Education:** • B.E. Degree in Electronics and Communication • M. Tech. Degree in Digital Communication • Ph.D. from Indian Institute of Technology Roorkee, India **Experience:** • More than 20 years of teaching and research experience • Headed the ECE Department since May 2018 • Previously associated with Delhi Technical University (Formerly, DCE)
Dr. Shalini Mishra	**Designation:** Consultant Pediatric Surgical Oncology, **Affiliation:** Rajiv Gandhi Cancer Institute and Research Centre **Experience:** • More than 15 years of experience in Paediatric Surgery including paediatric surgical oncology, paediatric urology, paediatric thoracic surgery, and neonatal surgery • Routinely performs surgeries for solid tumors in children and adolescents like Wilms tumor, neuroblastoma, rhabdomyosarcoma, malignant germ cell tumor, Primitive neuroectodermal tumor (Ewing's sarcoma), testicular/ ovarian tumor, hepatoblastoma, and other soft tissue sarcoma

PM Gati Shakti AICTE ATAL FDP on AI and Data Analytics for Healthcare

The schedule of the workshop was as below-

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Day 1 20/02/2023	Day 2 21/02/2023	Day 3 22/02/2023	Day 4 23/02/2023	Day 5 24/02/2023	Day 6 25/02/2023
7:00-7:50 Mr. Ramdas Menon Ekaagra Solutions Tamil Nadu	**7:00-7:50** Dr. Subrahmanyam Murala IIT Ropar	**7:30-8:20** Dr. AmithaDomalpally University of Wisconsin, Madison, USA	**7:00-7:50** Prof. DK Vishvakarma DTU, Delhi	**7:00-7:50** Dr. Ahlad Kumar National Forensic Sciences University (NFSU), Gandhinagar, Gujarat.	**7:00-7:50** Sri Ramaswamy Charlee.ai. San Francisco Bay Area
8:00-8:50 Mr. Ramdas MeonEkaagra Solutions Tamil Nadu	**8:00-8:50** Dr. Subrahmanyam Murala IIT Ropar	**8:30-9:00** Dr. AmithaDomalpally University of Wisconsin, Madison, USA	**8:00- 8:50** Prof. DK Vishvakarma DTU, Delhi	**8:00-8:50** Dr. Ahlad Kumar National Forensic Sciences University (NFSU), Gandhinagar, Gujarat.	**8:00-8:50** Sri Ramaswamy Charlee.ai. San Francisco Bay Area
9:00-9:30 Session 1 Interactions	**9:00-9:30** Session 2 Interactions	**9:10-9:30** Session 3 Interactions	**9:00-9:30** Session 4 Interactions	**9:00-9:30** Session 5 Interactions	**9:00-9:30** MCQ

Week 2: Offline mode (9:30-5:30 pm)

Day 1 27/02/2023	Day 2 28/02/2023	Day 3 01/03/2023	Day 4 02/03/2023	Day 5 03/03/2023
9:30-11:30 Ms. Sowmya Moni Incture Technologies, Karnataka	**9:30-10:30** Article 1 Discussion	**9:30-1:00** Visit to NIC/PM Museum	**9:30-11:30** Dr. Swati Sinha Madhukar Rainbow Children's Hospital, Delhi	**9:30-10:00** MCQ
11:30-12:30 Inauguration	**10:30-12:30** Dr. Shelly Sachdev NIT Delhi	**1:00-2:00** Travel Back	**11:30-12:30** Visit Report	**10:00-12:30** Dr. Shalini Mishra Rajiv Gandhi Cancer Institute, Delhi
12:30-1:15 Lunch	**12:30-1:30** Lunch	**2:00-3:00** Lunch	**12:30-1:30** Lunch	**12:30-1:30** Lunch
1:15-3:15 Dr. Ekata Mehul Orena Solutions, Gujarat	**1:30-3:30** Dr. Aradhna Sharma Anubhuti Clinic	**3:00-4:00** Article 2 Discussion	**1:30-3:30** Prof. Nidhi Gooel Professor, ECE Department, IGDTUW, Delhi	**1:30-3:30** Reflection Journal and Feedback
3:15-5:15 Dr. Abhilasha Vyas CloudThat, Gujarat	**3:30-4:45** Teaching Practice 1	**4:00-5:15** Teaching Practice 2	**3:30-4:45** Teaching Practice 3	**3:30-5:30** Valedictory

The inaugural ceremony of the PM Gati Shakti AICTE ATAL FDP'23 on AI and Data Analytics for Healthcare was held on February 27, 2023. The FDP was organized by the Department of Electronics and Communication Engineering of IGDTUW. Dr. (Mrs.) Amita Dev, Hon'ble Vice Chancellor- IGDTUW agreed to be the chief guest of the occasion and graced the inaugural ceremony with her presence. Dr. Ekata Mehul, Orena Solutions and Ms. Sowmya Moni, Incture Technologies were the guest on honor on the dias. The ceremony included the signing of an MOU with the WIBD India Chapter and the release of the FDP ATAL Booklet, making it a splendid event.

Prof. Nidhi Goeel, the coordinator of two-week AICTE ATAL FDP thanked AICTE-ATAL for expressing their trust on the co-ordinator, co-coordinator and the IGDTUW by grating the prestigious PM Gatishakti ATAL-FDP to IGDTUW. Prof. Gooel welcomed the participants to the program in a message that highlighted the program's objective and benefits. She expressed her excitement about providing the participants with a comprehensive understanding of how AI and data analytics are transforming the healthcare industry. She expressed her intention to equip the participants with the necessary skills to apply the concepts, technologies in their respective domains. She encouraged the participants to actively participate in all sessions and engage with their fellow participants to make the most out of the program.

Hon'ble Vice chancellor of IGDTUW, Dr. (Mrs.) Amita Dev delivered a welcoming speech to the participants and highlighted the significance of this program, which will enable the participants to gain valuable insights into the latest advancements in AI and data analytics, and their applications in the healthcare industry. She emphasized the importance of knowledge-sharing and collaboration in advancing research and innovation, and how this program presents a unique opportunity for participants to learn from experienced faculty members and experts in the field.

The guest of honor, Dr. Ekata Mehul and Ms. Sowmya Moni began by acknowledging the importance of diversity and inclusivity in the technology industry and highlighted the significant under-representation of women in the field of data science. They spoke about the potential of AI and data analytics in healthcare and how having more women in the field would lead to a diverse range of perspectives and insights. They emphasized the importance of providing opportunities for women to develop their skills and knowledge in data science and encouraged the participants to support and mentor women in the field. Prof. Jasdeep Dhanoa, Co-coordinator of the program, proposed the Vote of Thanks. She highlighted the University's commitment to fostering research and innovation in healthcare and also thanked the organizing committee and support staff for

their tireless efforts in ensuring the program's success. Some snapshots of the inaugural ceremony are as below.

Inaugural Ceremony and Release of PM Gati Shakti AICTE ATAL FDP booklet by Chief Guest-Honourable Vice Chancellor, Dr. (Mrs) Amita Dev on 27th March 2023

PM Gati Shakti AICTE ATAL FDP on AI and Data Analytics for Healthcare

The list of registered participants for the FDP on ATAL portal was: -

S. N0	Name	Organization	Mobile	Email Id.
1	Dr. Md Tabrez Nafis	Jamia Hamdard	9953448275	tabrez.nafis@gmail.com
2	Mrs. Sulekha Saxena	AKGEC Ghaziabad	9650895115	sulekha.saxena@imsec.ac.in
3	Dr. Rahul Johari	USICT, GGSIP UNIVERSITY	9910185349	rahul@ipu.ac.in
4	Mr. Hillol Biswas	WAPCOS	9873978781	hillolbiswas@wapcosindia.com
5	Dr. Charu Agarwal	AJAY KUMAR GARG ENGINEERING COLLEGE, GHAZIABAD	9891994775	agarwalcharu@akgec.ac.in
6	Mr. Amul Gupta	Netaji Subhash University of Technology, West Campus	9599353969	amulgt2@gmail.com
7	Mr. Manoj Kumar	ABES Engineering College	9891491765	manojkumar@abes.ac.in
8	Mr. Ganesha H S	JSS Academy of Technical Education Noida	9964944390	ganeshahs@jssaten.ac.in
9	Dr. Dhanjay Yadav	Indira Gandhi Delhi Technical University for Women	9990147077	dhananjayyadav@igdtuw.ac.in
10	Mr. Bhawanand Jha	BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, NEW DELHI	9716537955	bhawanandjha@gmail.com
11	Miss Anupama	Delhi Technological University	9716930416	anupama.nsit@gmail.com
12	Dr. Viveak Kumar Chawla	IGDTUW	9818104101	vivekchawla@igdtuw.ac.in
13	Miss Megha Dua	IGDTUW	8826945775	megha053phd20@igdtuw.ac.in
14	Miss Palak Handa	Delhi technological University	8851443252	palak006mtece19@igdtuw.ac.in
15	Mrs. Monica Gupta	Bharati Vidyapeeth's College of Engineering, New Delhi	9873367792	monica.gupta.me@gmail.com
16	Dr. Saji M Antony	Bharati Vidyapeeth's College of Engineering	9810157540	saji.antony@bharatividyapeeth.edu
17	Mrs. Vidhi Bishnoi	Indira Gandhi Delhi Technical University for Women, Delhi	8077965109	vidhibishnoi@gmail.com
18	Mrs. Isha Malhotra	Indira Gandhi Delhi Technical University for Women	8285261600	isha.malhotra2691@gmail.com
19	Dr. Vrinda Sachdeva	ITS Engineering college	9812367679	vrinda.cse@its.edu.in
20	Mr. Varun Sangwan	Delhi Technological University Delhi	9416117030	sangwan.varun@gmail.com

21	Mr. Mohd Rehan Ghazi	Delhi Technological University	9548283808	er.rehan.aras@gmail.com
22	Mr. Varun Arora	Institute of Technology & Science, Mohan Nagar, Ghaziabad	9643108842	varunarora.ka@its.edu.in
23	Mrs. Smita Kansal	Institute of Technology & Science	9650050771	smitakansal@its.edu.in
24	Dr. Pooja	The NorthCap University	7015938546	dr.poojasapra@gmail.com
25	Miss Megha Gupta	Ajay Kumar Garg Engineering College	8882652715	meghagupta12502@gmail.com
26	Dr. Ashish Kumar Mourya	GNIOT Institute of Professional Studies	9997072797	ashishkumarmourya@gmail.com
27	Mrs. Shweta Chauhan	Mangalmay Institute of Engineering and Technology	9897837066	chauhanshweta144@gmail.com
28	Mr. Abhay Kumar Yadav	GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI	8756553346	abhaybbdnitm01@gmail.com
29	Mr. Vishwa Pratap Singh	Guru Gobind Singh inderprastha university, Delhi	9555678883	vishwapratap.phd@gmail.com
30	Dr. Hina Bansal	Amity University Uttar Pradesh	9811099082	hbansal@amity.edu
31	Dr. Amandeep Dhaliwal	FMS,Manav Rachna International Institute of Research & Studies	9818010999	amandeep.fms@mriu.edu.in
32	Miss Kavita Bhatt	DELHI TECHNOLOGICAL UNIVERSITY	9717038895	kavitabhatt_2k20phdec510@dtu.ac.in
33	Mrs. Sakshi Kumar	Aravali College of Engineering and Management, Greater Faridabad	7982762371	sachdevasakshi8@gmail.com
34	Mr. Nishant Singh Rana	Gurugram University	9996561322	nishantrana252004@gmail.com
35	Dr. Dr.Anita Singh	Sunder Deep Pharmacy College	9450122446	anitasanitas2001@gmail.com
36	Mrs. Somya Srivastava	ABES Engineering College	9648710515	somya.srivastava0509@gmail.com
37	Mr. Vinay Singh	KRISHNA ENGINEERING COLLEGE	8587843177	vinay.singh@krishnacollege.ac.in
38	Dr. Dr Mamta Madan	Vivekananda Institute of Professional Studies-TC	9953005524	mamta.vips@gmail.com
39	Mr. Sunil Upadhyay	Institute of Technology and Science	7701955487	sunilupadhyay@its.edu.in
40	Mrs. Divya Arora Bhayana	Delhi Technological University	9999621678	divyaa.mtech@gmail.com
41	Mrs. Nandini Tomar	IIMT College of Engineering	9627990000	tomar.nandini@gmail.com
42	Dr. Yogita Arora	BVCOE, New Delhi	9871233070	yogita.arora@bharatividyapeeth.edu
43	Mrs. Ruchika Bala	Kumar Enterprises	9910035075	ruchikabala@gmail.com
44	Dr. Sheetal	gitarattan international business school	9810331467	sheetal.chadda@gmail.com

About the event

Resource persons from reputed academic institutions and several renowned industries having expertise in different relevant areas related to the program delivered talks in the Faculty Development Program.

Mr. Ramdas Menon delivered an informative and interactive session that aimed to explain the fundamental concepts and techniques of hypothesis testing to the participants. He provided examples and case studies to demonstrate how hypothesis testing is applied in real-life scenarios, and used tools like RStudio to provide a brief demonstration of hypothesis testing.

Dr. Subrahmanyam Murala conducted a session on the topic "Deep Generative Models for Computer Vision". He introduced the topic of auto-encoders and provide a brief overview of how they work. The lecture then delves into more detail about specific auto-encoder models, such as U-Net and Generative Adversarial Networks (GANs), which are commonly used for moving object detection and segmentation in computer vision.

Dr. Amitha Domalpally delivered a lecture on the topic of Artificial Intelligence based Screening for Blinding Eye Diseases. She highlighted the importance of using artificial intelligence in screening for blinding eye diseases and explained how it can help in early detection and treatment.

The session on the topic of "Sentiment Analysis using Neural Networks" was conducted by Prof. D.K. Vishvakarma. The speaker shared their expertise on the topic and discussed the various aspects of sentiment analysis, including its applications in machine learning and computer vision.

Dr. Ahlad Kumar handled a session on "Medical Image Denoising". He explained various image processing and analysis techniques that can be used to remove noise from medical images. The speaker highlighted the importance of denoising in medical imaging and how it can improve the quality of diagnosis and treatment.

Ms. Sri Ramaswamy delivered lecture on Data Analysis for NLP based Applications and Data, ETL and Architecture for Achieving Success in NLP. The lecture covered topics such as data pre-processing, feature extraction, machine learning models for NLP, and best practices for NLP data ETL and architecture. She also emphasized on the future of Insurtech like Autonomous Vehicles, Embedded Insurance and Parametric Insurance. The speaker discussed various data analysis techniques for natural language processing (NLP) based applications, and shared insights on how to achieve success in NLP through effective data extraction, transformation and loading (ETL) techniques and appropriate architecture.

The lecture on Introduction to Big Data and Analytics by Ms. Sowmya Moni began with

an overview of the topic. She explained the concept of big data and its significance in today's world. She also discussed the different sources of big data and the challenges involved in processing and analyzing it. During the lecture, she also provided examples of how big data and analytics are being used in various industries, such as healthcare, finance, and retail.

Dr. Mehul began the lecture by discussing the potential of data analytics and artificial intelligence (AI) in the healthcare sector. She highlighted the need for efficient data management and processing to improve healthcare outcomes.

The session by Dr. Abhilasha Vyas revolved around the topic of "Data Security and Compliance." The speaker began by discussing various security breaches, providing real-time examples of data attacks, and enlightening the audience on how to secure their personal data shared online. She also introduced the basics of CIS (critical security controls) and Microsoft Defender for Cloud computing.

The lecture on "Healthcare Trends and Challenges in Blockchain" was delivered by Dr. Shelly Sachdev. She began the session by introducing the concept of blockchain and how it has the potential to revolutionize the healthcare industry. She also explained the various challenges faced in implementing blockchain technology in healthcare such as data privacy, interoperability, and scalability.

During the session by Dr. Aradhana Sharma on stress management, she discussed the importance of soft skills in academia and how they can contribute to the overall success of an individual's career. She emphasized the need for effective communication, active listening, and teamwork in academic environments, and provided several examples of how these skills can be developed and honed.

The lecture on "AI Transforming or Transgressing Healthcare" was delivered by Dr. Swati Sinha. She discussed the regulatory landscape of AI in healthcare and how different countries are approaching it. She also talked about the need for collaboration between healthcare professionals, policymakers, and technology experts to develop a comprehensive framework for the ethical use of AI in healthcare.

During the session on Challenges in Medical Data for AI Applications by Prof. Nidhi Gooel, the speaker discussed the various difficulties in handling medical data and its applications in AI. She highlighted the challenges in the collection, management, and analysis of medical data, such as data privacy, bias, and quality. She explained the need for proper data management techniques and emphasized the importance of quality data for successful AI applications in healthcare.

The lecture on "Power of AI in Surgery" was delivered by Dr. Shalini Mishra. She began the session by highlighting the role of Artificial Intelligence (AI) in the field of surgery and

how it is transforming the way surgeries are performed. Dr. Mishra explained how AI is helping surgeons in pre-operative planning, intraoperative navigation and post-operative care. She gave examples of AI-powered imaging techniques like MRI and CT scans, which are enabling surgeons to get a more detailed and accurate view of the patient's anatomy, thereby reducing the risk of errors during surgery. She also discussed the use of surgical robots that are being controlled by AI algorithms to perform complex procedures with greater precision.

The event was well-received by the audience, who expressed their appreciation for the thought-provoking topics and engaging discussions. The combination of online and offline lectures provided a convenient and accessible way for attendees to participate, and the interactive elements facilitated meaningful engagement between speakers and participants.

We are extremely grateful to the AICTE ATAL for providing us with the opportunity to conduct a Two-week Faculty Development Program. The initiative by ATAL Academy was truly commendable, and we feel privileged to have been a part of it. We were overwhelmed by the tremendous response we received from participants for the registration, and we are happy to report that the program was a resounding success. We received numerous compliments for the organization of the sessions, the quality of the content, and the hands-on learning opportunities that were provided. It was a truly rewarding experience for us, and we hope to continue to contribute to such initiatives in the future.

The screenshots/snapshots of the event in both online and offline mode are as below: -