Gujarat Technological University

INTERNATIONAL INNOVATIVE UNIVERSITY

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R & D Newsletter Gujarat Technological University, Ahmedabad

Volume 2, Issue 3 July-September, 2025

- Collaborations/Interactions
- Research Oriented Talks

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Message From Hon'ble Vice Chancellor

Dear Faculty Members and Researchers,

We are delighted to bring you quarterly edition of our R&D Newsletter, an initiative of Research & Development Cell, to focus on our growing research culture built across the University and its affiliated colleges.

These newsletters present a brief summary of our recent research activities and initiatives, and other events to advance and promote a research ecosystem. The one of the objectives of this newsletter is to inspire our faculties and research scholars to strengthen the research landscape. We encourage you to actively engage in these research activities and initiatives, and also share this newsletter across your networks.

With your support, we aim to expand our reach across leading research institutions and industries, both nationally and internationally. We look forward for your suggestions that can further enrich and promote our research environment.

Congratulations to the R&D Cell for their hard work and dedication in bringing out this quarterly newsletter. We invite you to connect with R&D Cell for contributing in establishing partnerships and collaborations aimed towards advancing research in emerging areas and built a culture of innovation.

Best wishes,
(Dr. R. K. Gajjar)

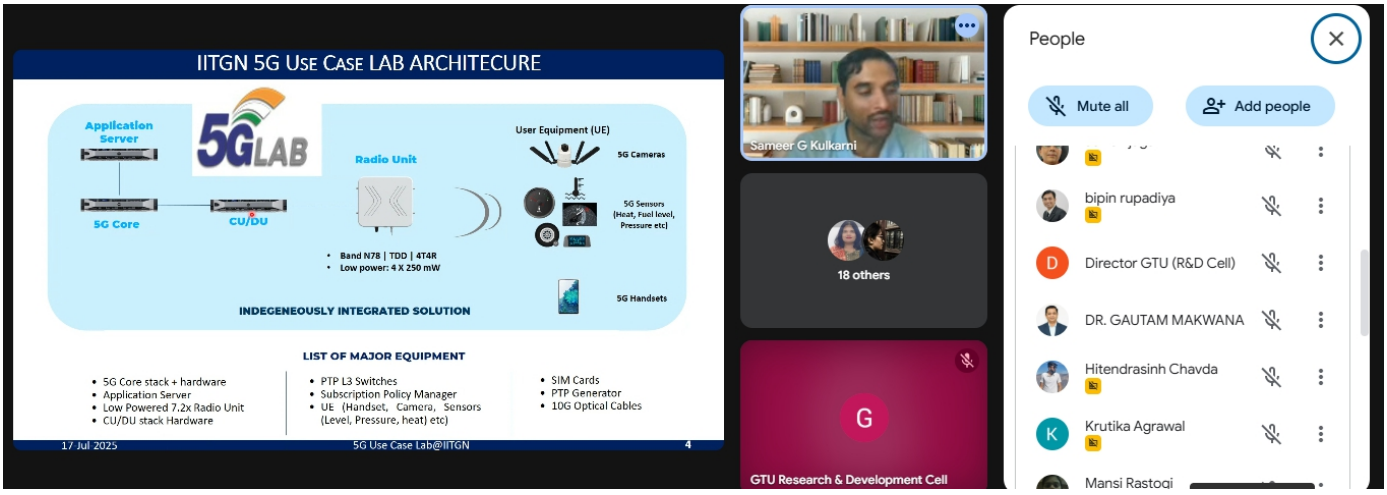
Session *on* 5G *and* its Applications – Research Facilities *at* IIT Gandhinagar

An online awareness session on 5G and its Applications – Research Facilities at IIT Gandhinagar was organized on July 17, 2025. This session was delivered by Dr. Sameer Kulkarni, Assistant Professor in the Computer Science and Engineering Department at IIT Gandhinagar.

Dr. Sameer Kulkarni presented the architecture of the IITGN 5G Use Case Lab, showcasing its indigenously integrated 5G Core stack, radio unit (Band N78), and key components such as PTP switches, SIMs, and IoT devices. He also outlined the 5G SA Deployment Reference Design, featuring advanced network integration with WiSig CU/DU and NICHD5 5G Core.

During the session, Dr. Sameer Kulkarni showcased advanced 5G innovations, including a dual-SIM IoT Gateway, 5G Surveillance Camera and 5G-Enabled Drone featuring high-speed connectivity, autonomous navigation and smart monitoring applications. He also highlighted 5G's key features—mmWave bands, beamforming, edge computing, and ultra-low latency (1 ms)—demonstrating its transformative potential for smart cities, defense, industry, and R&D.

Dr. Sameer Kulkarni discussed ONAP-Slice Aware 5G Network Architecture, explaining its role in orchestrating end-to-end network slicing for eMBB, massive IoT, and critical applications. He highlighted the 5G Use Case Lab Infrastructure and emerging research opportunities, emphasizing the importance of SDN (Software-Defined Networking), NFV (Network Functions Virtualization) and hardware accelerators like SmartNICs, DPUs, GPUs, and IPUs in advancing next-generation communication networks.



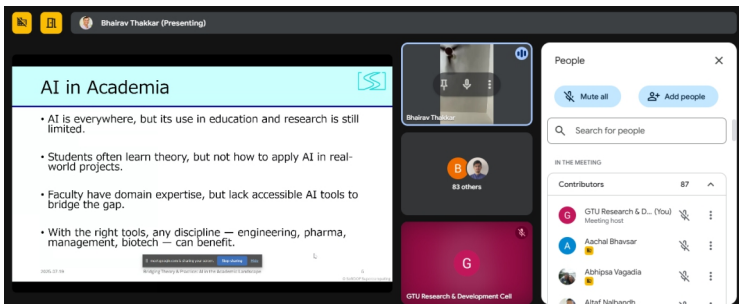
Session *on* Bridging Theory *and* Practice: AI *in* the Academic Landscape

R&D Cell organized an online session on "Bridging Theory and Practice: AI in the Academic Landscape" on July 19, 2025. This session was delivered by Dr. Bhairav Thakkar, -Director-SoftDOF Supercomputing Pvt. Ltd.

During his talk, he provided an insightful overview of Artificial Intelligence (AI) as a field focused on developing machines that think and act like humans, encompassing reasoning, learning, and decision-making. He emphasized the importance of bridging theory and practice through hands-on learning, interdisciplinary collaboration, and real-world tools to enhance academic engagement and prepare learners for AI-driven research, innovation, and industry applications.

He elaborated the core components of Artificial Intelligence, including Machine Learning for data-driven predictions, Natural Language Processing for human–machine interaction, and Evolutionary AI for optimized decision-making. He also highlighted Artificial Neural Networks, modelled on the human brain, which power applications like image recognition, language processing, and predictive analytics.

Dr. Bhairav Thakkar explained that neural network learning depends on the learning rate (speed) and momentum (stability), with weights and biases determining feature importance and neuron activation. He highlighted the use of feature sensitivity analysis to understand the impact of inputs on outputs, illustrating its application in evaluating aircraft mission readiness using NI-Processors. This approach enables data-driven decision-making and enhances operational efficiency in critical scenarios.



Brainstorming session *on* Setting up *of* Quantum Labs *in* Gujarat

A brainstorming session on the establishment of Quantum Labs across various institutes was organized by GUJCOST at GTU, Ahmedabad on 24th July 2025, starting at 11:00 AM. The session focused on introducing structured UG and PG programs in Quantum Technologies, offering majors, minors, or micro-specializations in line with AICTE's 18-credit curriculum, covering Quantum Computing, Communication, Sensing & Metrology, and Materials & Devices.

The discussions centered on nationally standardized course structures, Faculty Development Programmes (FDPs), and the establishment of laboratories with remote access to national facilities such as IBM Quantum and QKET (Quantum Key Distribution Transmitter).

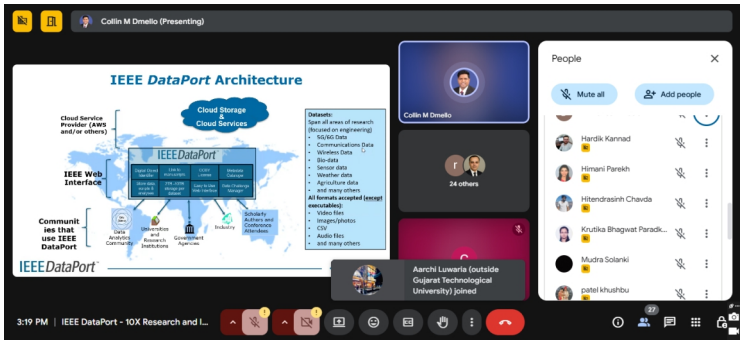
Universities such as PDPU, Nirma, IIT-RAM, IIT-Gn, KSV, RSU, and Ganpat University shared their ongoing quantum initiatives. The session concluded with key takeaways on – forming a standardized curricula, establishing industry linkages, shared CoEs, and collaborative research, with follow-up actions including course framework development, organizing FDPs, CoE establishment, and forming a consortium for research and curriculum exchange to position India as a global leader in Quantum Technologies.

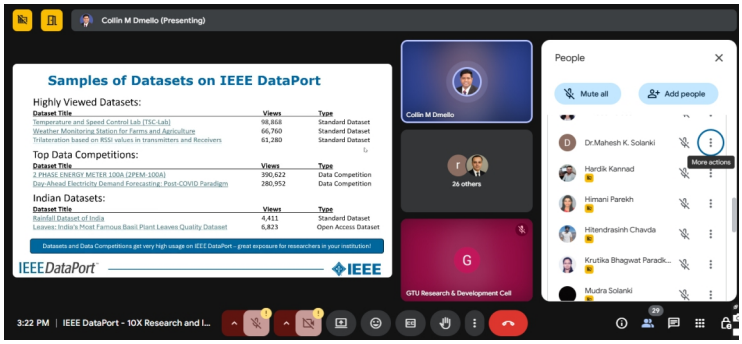
Session *on* IEEE DataPort - 10X Research *and* Innovation *at* GTU

An online awareness session on IEEE DataPort - 10X Research and Innovation at GTU was organized on August 01, 2025. This session was delivered by Mr. Colin D'Mello who is serving as an International Area Manager for IEEE operations in India, Sri Lanka, Bangladesh and Nepal. He supports researchers and IP professionals across South Asian region with IEEE's literature, standards and patent solutions.

Mr. Collin D'Mello emphasized that "Data is the Key to the Future," highlighting the importance of high-quality datasets for research and innovation. He discussed how IEEE datasets support verification, interdisciplinary studies, and innovation; while addressing challenges like dataset discovery, global visibility, and citations. He also emphasized the need for effective research data management to ensure access, creation, and validation of high-quality datasets, strengthening the research ecosystem.

He demonstrated IEEE DataPort as a gateway for researchers, offering open-access, and citable datasets with DOIs, 10TB storage, and integration with IEEE Xplore. The platform supports high-performance storage and retrieval, while its user-friendly interface allows easy browsing, uploading, and sharing of datasets across various categories.



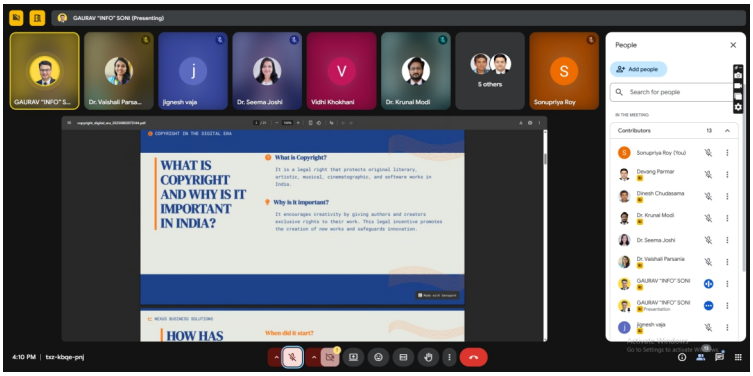


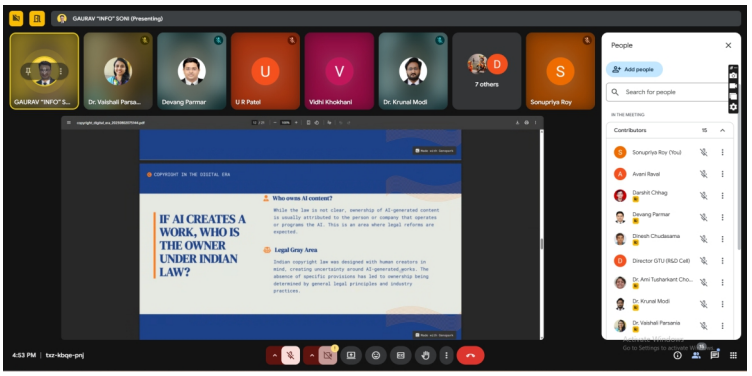
Session *on* the Role *of* Copyright *in* the Digital Era

On 2nd August 2025, GTU-IPFC, GTU R&D Cell, and DPIIT-SPRIHA jointly organized an expert talk on "The Role of Copyright in the Digital Era" by Dr. Gaurav Soni, a professional with over a decade of experience in IPR, Copyright, and Trademark Law.

Dr. Gaurav Soni discussed the evolving legal dimensions of copyright protection in the digital age, focusing on digital piracy, enforcement mechanisms, and the impact of AI on copyright ownership. He emphasized the importance of copyright laws in protecting creative works—literary, artistic, musical, and cinematographic—from unauthorized digital use.

He also highlighted the legal uncertainties around AI-generated content, explaining that current laws do not recognize non-human authorship. Ownership typically lies with the person or organization directing the AI's creation. Dr. Soni stressed the need for updated legislation to address emerging challenges in the AI-driven creative landscape.





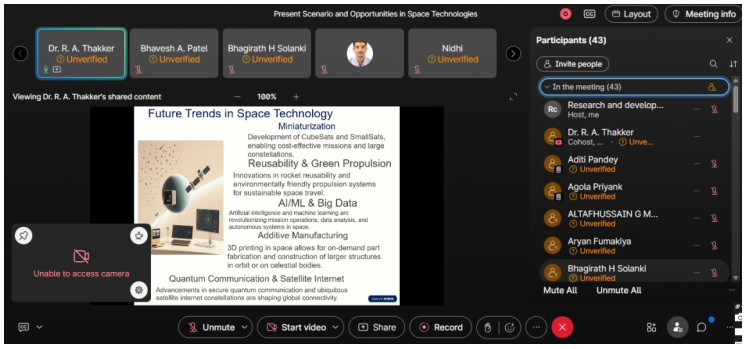
Session *on* Present Scenario *and* Opportunities *in* Space Technologies

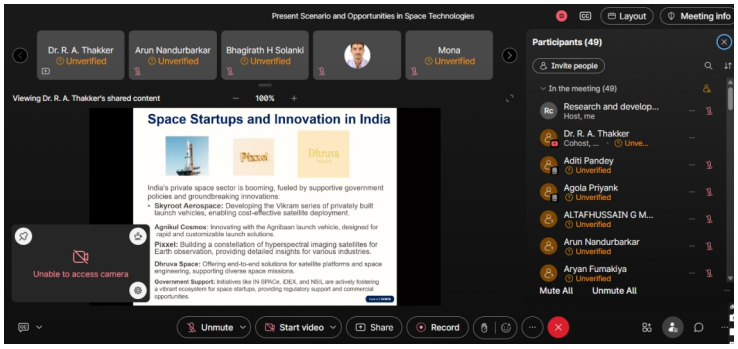
An online awareness session on the ***"Present Scenario and Opportunities in Space Technologies"*** was organized on August 28, 2025. This session was delivered by Dr. Jaimin Thakorbhai Desai, former Deputy Director at SAC- ISRO, Ahmedabad. He is a renowned expert in the field of Mechanical, Opto-Mechanical Engineering, Space Optics, Composite Materials, MicroElectronics Fabrication, Thermal & Vibration Testing. He has also played a pivotal role in India's landmark space missions, including Chandrayaan, Mars Orbiter, and Cartosat-3, and has pioneered the development of indigenous CFRP hardware for satellites. Currently he is serving as Technical Advisor to Gujarat Knowledge Society (GKS) by inspiring future innovators through mentorship, academic contributions, and initiatives in semiconductors and aerospace ecosystems.

Dr. Jaimin Desai delivered an insightful talk on "Why Space Matters Today," emphasizing the vital role of space technology in daily life, defense, and global economy. He highlighted the contributions of leading agencies like NASA, CSA, and key private players such as SpaceX and Blue Origin, who are driving innovations in exploration, robotics, and commercial space ventures that are shaping the future of the global space ecosystem.

Dr. Jaimin Desai presented on "Future Trends in Space Technology," emphasizing manufacturing of miniaturized satellites, reusable rockets, green propulsion, AI-driven mission operations, and 3D printing innovations. He also highlighted India's growing space startup ecosystem, with ventures like Skyroot, Agnikul, Pixxel, and Dhruva Space driving innovation under supportive initiatives such as IN-SPACe, iDEX, and NSIL.

Dr. Jaimin Desai discussed future opportunities in the space sector, highlighting transformative missions like NISAR, the X-ray Polarimeter, Asteroid Probe, and Solar Sail, along with IN-SPACe's support for startups through missions such as Anand, Shakuntala, and AISAT. He also showcased ISRO's VEDAS platform for AI-driven satellite data analytics and Bhuvan's upgraded satellite data services, which now provide enhanced, frequently updated geospatial insights for over 200 national applications.



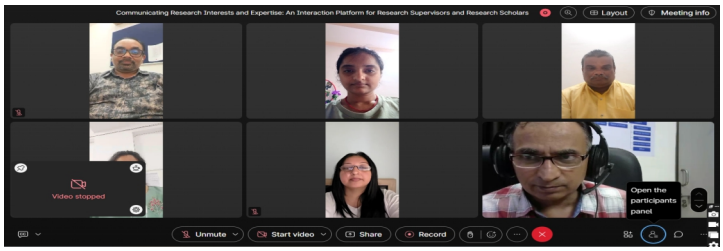


Online Interaction *on* Communicating Research Interests *and* Expertise: An Interaction Platform *for* Research Supervisors *and* Prospective Research Scholars

An online Interaction Session for Prospective Research Scholars was organized from 30th August to 4th September 2025, covering various disciplines including Engineering, Science, Pharmacy, Management, and Interdisciplinary studies.

Dr. R.A. Thakker, Director–Research and Development Cell (RDC), explained that the objective of organizing the week-long interactive sessions which was to connect Research Supervisors and prospective Research Scholars based on mutual research interests. These sessions aimed to guide scholars in refining their research proposals and foster a strong academic ecosystem promoting quality research.

Over the four days, around 100 participants, comprising research supervisors and scholars, engaged in discussions on diverse research domains such as Renewable Energy, AI/ML, IoT, Nanomaterials, Biotechnology, pharmacology, drug delivery, management, and sustainability.



Research Supervisors presented their research areas, ongoing projects, and available Ph.D. seats, while scholars shared their interests and clarified doubts to refine their research ideas and proposals. The sessions fostered academic interaction and collaboration across multiple disciplines, strengthening the research ecosystem within GTU.

Online Address *by* the Hon'ble Vice Chancellor *to* Principals, Directors, *and* Research Supervisors held *on* 2nd September 2025 *at* 3:00 PM

An online meeting of Principals, Directors, and Research Supervisors of GTU Schools and affiliated colleges was held on 2nd September 2025 at 3:00 PM, chaired by the Hon'ble Vice Chancellor of Gujarat Technological University (GTU). During the session, the Vice Chancellor highlighted the university's advanced infrastructure and research facilities, which are accessible to all research scholars. She also emphasized the importance of MoUs with reputed organizations such as ISRO, IPR, PRL, and CSMCRI in fostering strong research collaborations. Furthermore, she mentioned that the GTU Central Library provides extensive digital resources, including e-books, e-journals, and access under the One Nation, One Subscription initiative.

3-Days FDP *on* AI Model Development Multi-Agent Systems *and* Enterprise Applications *on* 09.09.2025 *to* 11.09.2025

The Research and Development Cell, Gujarat Technological University, organized a 3-days Faculty Development Programme on "AI Model Development, Multi-Agent Systems, and Enterprise Applications" from 9th–11th September 2025 at the Chandkheda Campus. The programme received participation of 75 faculty members across various institutes, and was conducted by NVIDIA-certified instructors. It provided hands-on training in AI model creation, collaborative learning, and enterprise applications, enabling faculty to enhance their teaching and research capabilities with advanced AI skills.

National Level Poster Competition *on* AI Powered Research & Innovation *on* 19th & 20th Sep, 2025 *at* GTU Chandkheda Campus

Gujarat Technological University (GTU) organized a two-day National Level Poster Competition on "AI–Powered Research and Innovation" on 19th–20th September 2025, commemorating AICTE's declaration of 2025 as the Year of Artificial Intelligence. This poster completion was coordinated by the R&D Cell in collaboration with GTU-Venture and GTU-IPFC. The event received 295 entries from 32 institutes, 106 posters were shortlisted across different disciplines of Managemen, Engineering, Pharmacy, and Science.

The competition featured expert talks from eminent speakers on the transformative role of Artificial Intelligence across disciplines. Dr. Vaibhav Bhatt (GTU-SAST) highlighted AI in applied science, while Dr. Jignesh Amin (GTU-SET) focused on engineering applications including smart manufacturing and predictive maintenance. Dr. Vinay Palaparthy (DAIICT) discussed AI in agriculture, and Dr. Sanjay Chauhan (GTU-SP) presented its impact on pharmacy and personalized medicine. Dr. Pankaj Patel (GTU-SMS) emphasized AI in management, covering decision-making and ethical considerations. Dr. Anu Gokhale (Saint Augustine's University, USA) shared a global perspective, Dr. Amit Prashant (IIT Gandhinagar) addressed AI in core engineering research, and Dr. Nilesh Desai (SAC-ISRO, Ahmedabad) showcased AI applications in space and satellite technologies. Collectively, the sessions provided participants with a comprehensive view of AI's interdisciplinary applications, practical implications, and future potential.

The event concluded with awards for outstanding posters and reflected GTU's commitment to promoting AI-driven research, innovation, and interdisciplinary collaboration.

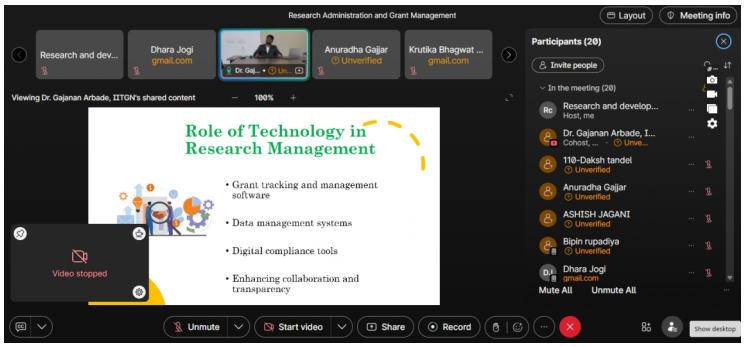
Session *on* Research Administration *and* Grant Management *on* September 25, 2025

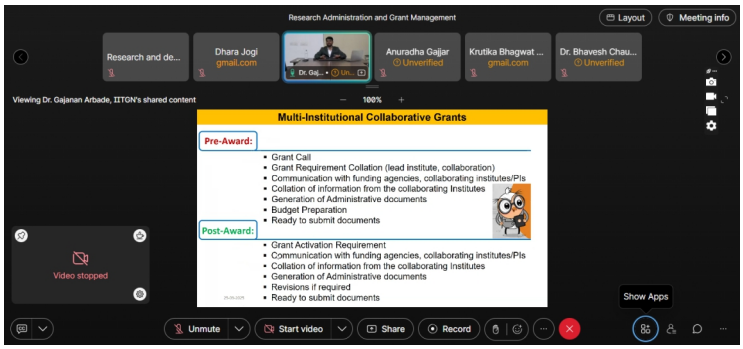
The R&D Cell organized an online session on "Research Administration and Grant Management" on September 25, 2025, delivered by Dr. Gajanan Arbade, Grants Manager at IIT Gandhinagar. With experience across premier institutes like DRDO, DBT-NCCS, IISER Pune, and CDFD Hyderabad, he is an award-winning researcher with 20+ international publications and expertise in grants management, research writing, and funding liaison.

Dr. Gajanan Arbade discussed Research and Grants Management, emphasizing key elements such as pre- and post-award processes, compliance, budgeting, and financial oversight essential for achieving institutional goals. He highlighted the role of technology in enhancing research management through grant tracking, data management systems, and digital compliance tools that ensure accuracy, transparency, and effective collaboration among researchers and institutions.

Dr. Gajanan Arbade highlighted various fellowship schemes such as Institutional and SERB-National Postdoctoral Fellowships, DBT–MKBhan, ICMR, DST Women Scientist, and DBT BioCARe Awards, which support research and career development of young scientists. He also emphasized the significance of International Team Grants, including multi-institutional, industry–academia, and consortium grants, as key drivers for fostering global collaboration, interdisciplinary research, and large-scale innovation.

Dr. Gajanan Arbade explained the essentials of writing successful research grant proposals, emphasizing alignment with funding agency goals and program requirements. He also outlined common pitfalls, such as insufficient technical detail, lack of supporting evidence for feasibility, and limited awareness of related research, which often weaken proposals.





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