



**Faculty Development Program (FDP) on**

**CONSTRUCTION AUTOMATION AND ROBOTICS TOWARDS  
SUSTAINABLE INFRASTRUCTURE**

**7<sup>th</sup> December to 13<sup>th</sup> December 2023**



**Sponsored by AICTE Training and & Learning Academy**

**Coordinator**

**Dr. R. Kumutha**

**Professor and Head  
Dept. of Civil Engineering**

**Co - Coordinator**

**Ms. Ruby Freya**

**Assistant Professor  
Dept. of Civil Engineering**

**Organised By**

**DEPARTMENT OF CIVIL ENGINEERING**

**SRI VENKATESWARA COLLEGE OF ENGINEERING**

**(an Autonomous Institution affiliated to Anna University, Chennai)  
Pennalur, Sriperumbudur Tk – 602117**

## **ACKNOWLEDGEMENT**

Our sincere thanks to **Dr. S. Ganesh Vaidyanathan, Principal, and Dr. M. Sivanandham, Secretary**, Sri Venkateswara College of Engineering for granting me permission to apply for the ATAL FDP.

It is a great Initiative by ATAL Academy. We are thankful to **AICTE** for giving us this opportunity to conduct online FDP for faculty members of technical institute of India free of cost.

We are indebted to all the **Resource Persons** for their contribution in this FDP by sharing their expertise.

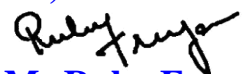
We are grateful to all the **Participants** who showed interest and actively participated. We also thank them for all the positive feedback they have given.

We would like to extend our thanks to all the **Department faculty and non-teaching staff** who helped in the conduct of this program.

Above all, we are thankful to the **God Almighty** for the successful completion of the program.



**Dr. R. Kumutha**  
**Coordinator, ATAL FDP**



**Ms. Ruby Freya**  
**Co -coordinator, ATAL FDP**

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## **INTRODUCTION**

### **ABOUT THE COLLEGE**

Sri Venkateswara College of Engineering (Autonomous), a premier self-financing engineering college was established in the year 1985 and is managed by Sri Venkateswara Educational and Health Trust. The college offers 12 B.E/B.Tech Degree Courses and 7 PG Courses in Engineering/ Technology. The courses are approved by AICTE and affiliated to Anna University, Chennai, The College attained autonomous status in the year 2016. The college is accredited by National Assessment and Accreditation Council (NAAC A+). The college is situated in serene environment about 37 kms from Chennai and situated on the way of Chennai – Bangalore National Highway (NH4) at Pennalur, Sriperumbudur, in Kanchipuram district.

### **ABOUT THE DEPARTMENT**

The Department of Civil Engineering has started functioning from the year 2008, offering B.E. degree program in Civil Engineering. The Department is accredited by NBA. At present, the Department has 10 faculty members having P.G. specialization in different areas of Civil Engineering such as Structural Engineering, Transportation Engineering, Construction Planning & Management, Water Resources Engineering, Geotechnical Engineering & Environmental Engineering. The Department has excellent infrastructure in terms of well-established Laboratories and class room facilities. Department has expertise and facilities for undertaking consultancy works on testing of building materials, traffic studies, structural analysis and design etc. The department is a recognized research centre by the Anna University. The vision of the department is to become a department of excellence in Civil Engineering education producing globally competent civil engineers with an emphasis on research for the benefit of the industry and society.

### **ABOUT ATAL**

All India council for Technical Education (AICTE) through its newly established AICTE training and learning (ATAL) Academy have started unique faculty development programs in various thrust areas of modern technology. The main objective of Atal Academy is to plan and help in imparting quality technical education in the country and to support technical institutions in fostering research, innovation and entrepreneurship through training in various emerging areas.

## **TARGET AUDIENCE**

- Faculty Members of AICTE Approved institutions
- Researchers from Universities /Colleges / Research Institutions
- R & D Personnel of Industries

## **PROGRAMME OBJECTIVE**

- To provide participants in Academics, Indian architecture, Engineering and Construction industries with an understanding of the path that automation and digitalization will take in the future of the Construction sectors.
- To impart knowledge on how cutting-edge technological advances such as BIM, Artificial Intelligence/Machine Learning, Quantum Computing, 3D Printing, Robotics and their implementation will impact the construction industry.

## **TOPICS COVERED IN FDP**

- Automation in Infrastructure using BENTLEY BIM Software tools
- National Education Policy 2020
- Decision Support System for Automated and Optimized Resource Management in Construction
- BIM for Project Information Management
- Building Information Modeling (BIM) and Automation and BIM-Based Automated Code Compliance Checking
- Role of Structural Health Monitoring for Sustainable Infrastructure
- Roadmap for low Carbon built environment
- Sustainable development and state-of-the-art in construction automation and robotics
- Applications of AI in Structural Engineering - from Design to Diagnostics

# BROCHURE



**AICTE Training and Learning (ATAL) Academy**  
*Sponsored*

**FDP on  
CONSTRUCTION AUTOMATION  
AND ROBOTICS TOWARDS  
SUSTAINABLE  
INFRASTRUCTURE**

**DECEMBER  
7<sup>th</sup> to 13<sup>th</sup>  
2023**



**Indian Concrete Institute  
Chennai Centre**



**DEPARTMENT OF CIVIL ENGINEERING**  
Sri Venkateswara  
College of  
Engineering  
**(AN AUTONOMOUS INSTITUTION)**  
Sriperumpudur - 602117, Tamilnadu, India



S P E A K E R S

<div style="text-align: center; margin-bottom: 10px;">  <p><b>Dr. V. SUDHAKARAN</b> Professor Department of Civil &amp; Environmental Engineering NITTE, Chennai</p> <p>TOPIC: National Education Policy 2020</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p><b>Dr. SHAKUMAR PALANISWAMI</b> Associate Professor Department of Civil Engineering IIT Madras - Chennai</p> <p>TOPIC: Roadmap for low Carbon built environment</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p><b>Dr. S. JARIN SUNDARAM</b> Associate Scientist Structural Health Monitoring Laboratory CSIR - Structural Engineering Research Centre</p> <p>TOPIC: Role of Structural Health Monitoring for Sustainable Infrastructure</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p><b>Dr. S. G. RAJASEKARAN</b> Program Director (IMA A/CN), NCMAR University, Pune</p> <p>TOPIC: BIM for Project Information Management</p> </div>	<div style="text-align: center; margin-bottom: 10px;">  <p><b>Dr. MOGHI BIRNIA</b> Director, Social &amp; Head Structural Health Monitoring Laboratory CSIR - Structural Engineering Research Centre</p> <p>TOPIC: Applications of AI in Structural Engineering - from Design to Diagnostics</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p><b>Dr. VEENKATRAMAN</b> Associate Professor Department of Civil Engineering IIT Palakkad</p> <p>TOPIC: Digitalization in Infrastructure Project Development and Maintenance - an Experience from a Public Project Delivery</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p><b>Dr. SANTU KAR</b> Assistant Professor Department of Civil Engineering IIT Guwahati</p> <p>TOPIC: Digital-Enabled Systems for Automated and Optimized Resource Management in Construction</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p><b>Mr. SUNDARAMAN KESHAVAMOORTHY</b> Building Technology and Construction Management (BTCM) Division IIT Madras, Chennai</p> <p>TOPIC: Sustainable development &amp; state-of-art in construction automation and robotics</p> </div>
<div style="text-align: center; margin-bottom: 10px;">  <p><b>Ms. ANITA SIVARAJAN</b> Senior Project Sales TechApex Consulting Services, Chennai</p> <p>TOPIC: Automation in Infrastructure using BENTLEY BIM Software tools</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p><b>Ms. ANITA SIVARAJAN</b> Senior Project Sales TechApex Consulting Services, Chennai</p> <p>TOPIC: Building Information Modeling (BIM) and Automation and BIM-Based Automated Code Compliance Checking</p> </div>	<div style="text-align: center; margin-bottom: 10px;">  <p><b>Mr. S. G. RAJASEKARAN</b> Program Director (IMA A/CN), NCMAR University, Pune</p> <p>TOPIC: BIM for Project Information Management</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p><b>Ms. ANITA SIVARAJAN</b> Senior Project Sales TechApex Consulting Services, Chennai</p> <p>TOPIC: Automation in Infrastructure using BENTLEY BIM Software tools</p> </div>

## SCHEDULE

**AICTE Training and Learning (ATAL) Academy Sponsored FDP on**  
**“Construction Automation and Robotics towards Sustainable Infrastructure”**  
 (7<sup>th</sup> December to 13<sup>th</sup> December 2023)

Day-1, 07.12.2023 Thursday	Day-2, 08.12.2023 Friday	Day-3, 09.12.2023 Saturday	Day-4, 11.12.2023 Monday	Day-5, 12.12.2023 Tuesday	Day-6, 13.12.2023 Wednesday
9:00 – 9:30 Inauguration					
9:30 – 12:00 Session-1 <b>Topic: Automation in Infrastructure using BENTLEY-BIM Software tools (Part-I)</b> <b>Mr. Rajesh Kumar</b> Director-Technical Sales, TechApps Consulting Services Chennai	9:30 – 12:00 Session-3 <b>Topic: National Education Policy-2020</b> <b>Dr. G. Janardhanan</b> Professor Department of Civil and Environmental Engineering NITTTR, Chennai	9:30 – 12:00 Session-4 <b>Topic: Decision Support System for Automated and Optimized Resource Management in Construction</b> <b>Dr. Santu Kar</b> Assistant Professor Department of Civil Engineering IIT-Guwahati	9:30 – 12:00 Session-6 <b>Topic: Building Information Modeling (BIM) and Automation and BIM-Based Automated Code Compliance Checking</b> <b>Ms. Sandya Devarajan</b> Managing Partner Lupiter Technologies LLP Chennai	9:30 – 12:00 Session-8 <b>Topic: Roadmap for low Carbon built environment</b> <b>Dr. Sivakumar Palaniappan</b> Associate Professor Department of Civil Engineering IITM, Chennai	9:30 – 12:00 Session-10 <b>Topic: Applications of AI in Structural Engineering- From Design to Diagnostics</b> <b>Dr. V. V. Srinivas</b> Chief Scientist & Head Structural Health Monitoring Laboratory, CSIR-SERC, Taramani
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 MCQ	12:00 – 1:00 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	1:00 – 4:30 Industrial/Lab visit

2:00 – 4:30 Session-2 <b>Topic: Automation in Infrastructure using BENTLEY-BIM Software tools (Part-II)</b> <b>Mr. Rajesh Kumar</b> Director-Technical Sales, TechApps Consulting Services Chennai	2:00 – 4:00 Practical sessions/Labs	2:00 – 4:30 Session-5 <b>Topic: BIM for Project Information Management</b> <b>Dr. Sagar Malsane</b> Associate Professor Program Director (MBA-ACM), NICMAR University, Pune	2:00 – 4:30 Session-7 <b>Topic: Role of Structural Health Monitoring for Sustainable Infrastructure</b> <b>Dr. B. Arun Sundaram</b> Principal Scientist Structural Health Monitoring Laboratory CSIR-SERC, Taramani	2:00 – 4:30 Session-9 <b>Topic: Sustainable development and state-of-the-art in construction automation and robotics</b> <b>Mr. Sundararaman Krishnamoorthi</b> Doctoral Researcher BTCM Division, Dept. of Civil Engineering, IITM, Chennai	
4:30 – 5:30 Practical sessions/Labs		4:30 – 5:30 Practical sessions/Labs	4:30 – 5:30 Practical sessions/Labs	4:30 – 5:30 Reflection Journal	4:30 – 6:30 Feedback and Valedictory Session

## SPEAKERS' PROFILES



**Mr. Rajesh Kumar** is Director- Tehnical Sales, TechApps Consulting, Chennai which is an Engineering Software distribution and training company.

<div style="background-color: #f4a460; padding: 5px; text-align: center; font-weight: bold;">Education</div> <p>2001 - 2003 ● <b>M.B.A in Marketing Management (Alagappa University)</b></p> <p>1997 - 2001 ● <b>B.E. (Mechanical) (SACET)</b></p>	<div style="background-color: #f4a460; padding: 5px; text-align: center; font-weight: bold;">Experience</div> <p style="text-align: center;">From 2019 ●</p> <p style="text-align: center;">2017 - 2019 ●</p> <p style="text-align: center;">2007 - 2017 ●</p> <p style="text-align: center;">2004 - 2006 ●</p>			
<div style="background-color: #f4a460; padding: 5px; text-align: center; font-weight: bold;">Business Collaborations</div> <p><b>StartUp Company</b></p> <p><b>Service Partner:</b></p> <ul style="list-style-type: none"> <li>• Bentley Systems</li> <li>• ETAP</li> <li>• Unity XR</li> </ul> <p><b>Services:</b></p> <ul style="list-style-type: none"> <li>• Reality Modelling</li> <li>• Drone Surveying</li> <li>• AR/VR</li> <li>• Digital Twins</li> <li>• 3D Printing</li> </ul> <p><b>Domain:</b></p> <ul style="list-style-type: none"> <li>• Infrastructure</li> </ul>	<div style="background-color: #f4a460; padding: 5px; text-align: center; font-weight: bold;">Academic Serviceability</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; vertical-align: top;"> <p><b>Advanced Infrastructure Technology Academic Labs in Function:</b></p> <ul style="list-style-type: none"> <li>• Thiagarajar College of Engineering</li> <li>• VIT Vellore</li> <li>• PSGitech</li> <li>• PSNA</li> <li>• RAMCO</li> </ul> </td> <td style="width: 33%; vertical-align: top;"> <p><b>Academic Partnership:</b></p> <ul style="list-style-type: none"> <li>• Software Certifications</li> <li>• Students Internships</li> <li>• Students Live Projects</li> <li>• Virtual FDP's</li> <li>• Training on Future Infrastructure Technologies on AI/VR/AR/Reality Modelling</li> </ul> </td> <td style="width: 33%; vertical-align: top;"> <p><b>Contributions:</b></p> <ul style="list-style-type: none"> <li>• Digital Learning</li> <li>• Virtual Interns</li> <li>• Research Incubators</li> <li>• Students Design Competions</li> </ul> </td> </tr> </table>	<p><b>Advanced Infrastructure Technology Academic Labs in Function:</b></p> <ul style="list-style-type: none"> <li>• Thiagarajar College of Engineering</li> <li>• VIT Vellore</li> <li>• PSGitech</li> <li>• PSNA</li> <li>• RAMCO</li> </ul>	<p><b>Academic Partnership:</b></p> <ul style="list-style-type: none"> <li>• Software Certifications</li> <li>• Students Internships</li> <li>• Students Live Projects</li> <li>• Virtual FDP's</li> <li>• Training on Future Infrastructure Technologies on AI/VR/AR/Reality Modelling</li> </ul>	<p><b>Contributions:</b></p> <ul style="list-style-type: none"> <li>• Digital Learning</li> <li>• Virtual Interns</li> <li>• Research Incubators</li> <li>• Students Design Competions</li> </ul>
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**Dr. G Janardhanan** is Professor of Civil and Environmental Engineering and Head, Centre for Academic Studies and Research at the National Institute of Technical Teachers Training and Research Chennai. Dr. Janardhanan has over 18 years of research, teaching and consulting experience within the broad fields of civil, environmental engineering, engineering education. His research expertise includes: Technology enabled teaching learning; Sustainable construction Materials, EIA, MOOC. His research and training programme is funded by the ITEC, DST, World Bank, MHRD, PWD and several prominent state government and industries. He has coordinated more than 20 international training programmes and trained around 400 international delegates from 68 different countries across the globe. He has coordinated more than 200 training programmes and trained more than 15000 participants. He has developed and offered six MOOCs with a registration more than 30000. He is serving as a reviewer for various journal and international conference. Dr. Janardhanan has received fellowship and awards (a) UNESCO Invitation to the Asia-Pacific Regional Seminar on MOOCs for Higher Education (b) Institution of Engineers, India - Young Engineer Award (c) American Society of Civil Engineering (ASCE) – Illinois Section – Geotechnical Award; (d) Swiss Federal Institute of Technology (EPFL), Fellowship (e) University of Illinois – Doctoral Fellowship. His doctoral research is from University of Illinois, USA and Bachelors and Master’s degree from College of Engineering, Guindy, Anna University, India. He extensively traveled within and abroad for technical lectures viz., USA, China, Thailand, Malaysia.



**Ms. Sandya Devarajan** is the Managing director of Lupiter Technologies Pvt. Ltd., Chennai. She is a civil engineer with 13 years of vast experience in Building Information Modeling and focuses on providing highly valuable and practical Designs on Projects that focus on High-Quality design with reduced risk, timely delivery, increase productivity, reduce operating costs, increase customer satisfaction, great Visualization, improves scheduling & sequencing. Some of her areas of expertise include Revit Structure, Revit Architecture, Point Cloud BIM, BIM in Interior Design, Standards and supporting documentation that align to delivering projects to achieve Level 2 BIM. Her professional skills include AutoCAD, Revit Structure, Revit Architecture, Navisworks, CoBie, BIM360 and Dynamo. She has worked as Junior Design Engineer at CADENCE Architects, Product Specialist at CADD Center Training Services and Senior Bim Modeler/Arch & Structure at Srinsoft Technologies. Few of her achievements include CERTIFICATE OF APPRECIATION FOR CONDUCTING ONE DAY WORKSHOP IN "APPLICATIONS OF BIM IN CIVIL ENGINEERING INDUSTRY" at BSA Crescef Conducting One Day Workshop in "Bim Job Opportunities" at K.S.R. College of Engineering in August 2020 and Certificate of Appreciation for conducting One Day Workshop in "Energy Simulation" at SRM University in September 2022.



**Dr.B.Arun Sundaram** is working as a principal scientist in the Structural Health Monitoring Laboratory of CSIR-Structural Engineering Research Centre.

He is working in the area of application of sensors and instrumentation for health monitoring and performance evaluation of civil engineering infrastructures. Presently he is working on the development of technologies using fiber optic sensors and artificial intelligence for Indian Railways for the monitoring of high speed railway bridges.

He has carried out several industrial projects on condition assessment and performance evaluation of various structures to name a few Jay Prakash Narayan Setu across river Ganga at Patna, a road cum rail bridge of length approximately 4.5 kms, Pamban bridge connecting the Indian Mainland and the Pamban Island, Testing and inspection of the New Reactor Containment Building for IGCAR Kalpakkam.

He has been recognised as a promising civil engineer by The Hindu Tamil and Ramco Cements. He has been awarded as Outstanding Structural Engineer by the Indian Association of Structural Engineers.

He has published around 45 papers in various international journals and conferences and over 100 technical reports.



**Dr. Santu Kar** is Assistant Professor in the Department of Civil Engineering, Indian Institute of Technology Guwahati. He has pursued Ph.D., Civil Engineering (Construction Technology and Management) at, Indian Institute of Technology Delhi (IIT Delhi), New Delhi, India [2021], MTech., Construction Technology and Management, Indian Institute of Technology Delhi (IIT Delhi), New Delhi, India [2013] and Bachelor of Civil Engineering, Jadavpur University, Kolkata, India [2009]. His research interests are Construction Project Management, Resource Management, ICT and Automation in Construction, Decision Support System, Advanced Statistical Techniques and Optimization in Construction Management, Building Information Modelling, Construction Leadership, Sustainable Construction, Risk Management and Construction Productivity. His experience includes

- Assistant Professor, Indian Institute of Technology Guwahati (IIT Guwahati), Guwahati, India [October 2021 – Till date]
- Assistant Professor, Mahindra University, Hyderabad, India [July 2021 to October 2021]
- Early-Doc. Fellow, Indian Institute of Technology Delhi (IIT Delhi), New Delhi, India [April 2021 to July 2021]
- Expert lectures on Project Management and its application using MS Project and Primavera P6 in different programs, including training and development for RVNL, SPCL, CRPF, IIT Jodhpur, CLW, faculty development program at NIT Patna, Eruditus executive education program, and IIT Delhi TEQIP-III program [From 2018]
- Assistant Manager, Larsen & Toubro (L&T) Construction, Chennai, India [July 2009-March 2015]

**AWARDS, HONORS, AND FELLOWSHIPS**

- Early-Doc Fellowship, IIT Delhi, India [April 2021 to July 2021]
- MoUD Award, Transportation Research and Injury Prevention Programme (TRIPP), IIT Delhi, India [August 2019-July 2020 and August 2018-July 2019]
- Build India Scholarship Award, Larsen & Toubro Construction, Chennai, India [July 2011-June 2013]
- Editor's Best Paper in ASCE Journal of Construction Engineering and Management [2021]

#### INDUSTRY EXPERIENCE

Larsen & Toubro (L&T) Construction, Chennai, India [July 2009-March 2015]

Involved in planning and execution work, including schedule preparation, progress monitoring, resource management, defining effective construction techniques, rate analysis, preparation of bar bending schedule, preparation of invoice, and cost allocation in the following projects:

- Western Dedicated Freight Corridor Project (1483 km) in Rajasthan
- Ratle Hydro-electric Project (850 MW) in J&K
- Subansiri Lower Hydro-electric Project (2000 MW) in Assam

#### SPONSORED PROJECT

Project Title: A Building information modelling integrated decision support system for automated and optimized material management in construction

Funding Agency: IIT Guwahati Principal Investigator: Dr. Santu Kar Duration/Starting Year: 2022 (2 Years)

#### CONSULTANCY PROJECTS

- Performance audit of implementation of Phase-III of Delhi Mass Rapid Transit System by Delhi Metro Rail Corporation Limited
- Performance audit of implementation of Phase I and II of Bangalore Metro Project
- Valuation of assets of 850 MW GVK Ratle Hydro Electric Project, Jammu & Kashmir



**Dr. Sagar Malsane** is an Associate Professor and Interim Dean of the School of Architecture, Planning, and Real Estate at the NICMAR University, Pune (NUP). His current involvement in NUP is in the form of carrying out teaching duties for courses like Applications of BIM, Lean Construction, Construction Execution and Management, etc. Further, he is conducting research in areas like Critical factors for the uptake of BIM, Usability analysis of BIM 4D, Identification of Critical Challenges for Adoption of Integrated Project Delivery, Adoption of Drone in Construction, etc. His qualifications include a Ph.D. in the area of Automated Code Compliance using Building Information Modelling (BIM) (Northumbria University, UK), and a Post Graduate Degree in Construction Management (Loughborough University). Sagar received a Ph.D. Studentship Funding from the Northumbria University in association with a co-operating partner: Royal Institute of British Architects Enterprises (RIBAE). Sagar recently conceptualized the Centre for Digital Construction at NICMAR and is one of the active members. He is also working on a VC Grant Research Project titled establishing DRI for Construction Organizations.



**Dr. Sivakumar Palaniappan** is a faculty member in the Department of Civil Engineering at IIT Madras since July 2010. His research interests are in the areas of Embodied energy assessment of construction materials and buildings, life cycle energy of buildings, Green building ratings, Quality and safety management, Construction Project Management and Construction Scheduling, Monitoring & Control. His research areas include Planning and control of construction projects, Sustainable construction, Simulation based analysis of construction operations and Information technology application in construction.

#### EARNED DEGREES

**Ph.D. in Civil & Environmental Engineering,**

Arizona State University, Tempe, AZ.,

**M.S. in Building Tech. and Construction Management,**

Indian Institute of Technology Madras ,

**B.E. in Civil Engineering,,**

Madurai Kamaraj University,

WARDS AND HONOURS

- Best Academic Performance Award, Bachelor of Civil Engineering., ,
- Best Presentation Award, 2016 REAS Symposium, Arizona State University, Tempe., ,
- Built Environment Project and Asset Management (BEPAM) Highly Commended Paper Award, 2018., ,



**Mr. Sundararaman Krishnamoorthi** is a Doctoral Research Scholar at Building Technology and Construction Management (BTCM), Dept. of Civil Engineering, Indian Institute of Technology Madras. He is also Principal Architect at vyomSaroop –Form, Space, & Order, Associate Professor at Rajalakshmi School of Architecture and Founder of Bharati Vishwavidyapeetham. He has 18 years of experience in industry, research and academics. His areas of interest include Architecture, Sustainability and Green Buildings, Building Science and Technology, Construction Automation and Management, Operations Research and Lean Construction Practices, Artificial Intelligence, Machine Learning, and Robotics, Economy, Entrepreneurship, Education and Ethos, Character Building and Nation Building, Cultural Sustainability and Global Engagement and Natural Language, Mind Patterns, and Consciousness.





**Dr. Srinivas Voggu** is Chief Scientist & Head, Structural Health Monitoring Laboratory & Professor, Academy of Scientific & Innovative Research (AcSIR) ], CSIR-Structural Engineering Research Centre, CSIR Complex, Taramani, Chennai. He has 25+ years as Senior Principal Scientist, CSIR-Structural Engineering Research Centre, (A constituent establishment of Council of Scientific and Industrial Research), Chennai, India; from January 1997 – Present. His Research areas of expertise include Structural Health Monitoring for sustainable infrastructures, Full scale static and dynamic testing of in-service structures, Performance evaluation and service life enhancement of structures, Seismic retrofitting and upgradation of age-old structures, Smart materials and sensing techniques, Computational Structural Mechanics and application of artificial intelligence and Nonlinear dynamics, system identification and predictive maintenance. He has International Collaboration which includes International Collaborative project with University of Stuttgart, Germany under CSIR-Fzj cooperative science programme and Raman Research Fellow to carry out research at Intelligent Infrastructure Systems, Drexel University, Philadelphia, US. HE has more than 100 publications in SCI indexed international and national journals, technical reports, book chapters etc. Few highly ranked journals Published : ASCE –Performance of Constructed Facilities; ASCE – Journal of Bridge Engineering; Structural Health Monitoring; Structural Durability and Health Monitoring; Journal of Structural Stability and Dynamics; Engineering Structures; Composite Structures; Construction

and Building Materials; Journal of Structural Engineering ; Archives of Civil and Mechanical Engineering; Mechanical Engineering and Automation; International Journal of Civil Engineering; Sādhanā; Int JI of Measurement ; Smart Structures and Systems; Int. JI. of Pressure Vessels and Piping ; Mechanical Systems and Signal Processing; Advances in Engineering Software etc....

### ***Awards & Recognitions***

- Technical Expert for the Appraisal and Steering Committee (ASC) for the Transport Infrastructure Resilience Program at Coalition for Disaster Resilient Infrastructure (CDRI),
- Dr Jai Krishna Prize for the year 2013 by the Institution of Engineers (India).
- E P Nicolaides Prize for the year 2013 by the Institution of Engineers (India).
- Dr. M. Ramaiah Prize for the best technical paper by CSIR-SERC during 2011-2012.
- Raman Prize by CSIR-SERC during 2008-2009, 2011-2012, 2013-14, 2016-17 and 2018-19.
- Conducted Advanced Courses on (1) Structural Health Assessment, and Management of Bridges Analysis, (2) Design and Construction of Bridges, (3) Instrumentation and Performance Evaluation of Railway Bridges.
- Organising Committee member of Structural Engineering Convention 2008, ICCMS 2014, SEC 2016.
- Four Patents are under process of filing.
- Technology on “Portable Lightweight Modular Structure for Makeshift Hospital and othe needs” (Technology transferred to L&T and other industries)
- Technology on “Threaded end anchors for Indian Rebars”, being transferred to L&T.
- Handled Sponsored Research Projects (Major projects) of more than 1200 lakhs
- Principal Investigator for major R&D and Mission Mode Projects

## LIST OF PARTICIPANTS

S.No.	Name	Institute Name	Designation
1.	Mr. Rajasekar B S	Easwari Engineering College	Student
2.	Dr. Jeyanthi Jebamaniraj	Mepco Schlenk Engineering College, Sivakasi	Associate Professor
3.	Mrs. S.Revathi	Mepco Schlenk Engineering College, Sivakasi	Assistant Professor (Sr.Gr)
4.	Mr. Raja M A	Thamirabharani Engineering College	Assistant Professor
5.	Mr. R Devakandhan	Sri Sairam Engineering College	Assistant Professor
6.	Miss Maria Vensa S	St.Peter's College of Engineering and Technology	Assistant Professor
7.	Mr. R.Shanmugapriyan	Nadar Saraswathi college of Engineering and Technology	Assistant Professor
8.	Mr. Arunprasad J	Erode Sengunthar Engineering college(Autonomous)	Assistant Professor
9.	Dr. Vaidevi C	Aarupadai Veedu Institute of Technology	Associate Professor
10.	Mr. Karthikeyan Kothandapani	Vellore Institute of Technology, Chennai	Assistant Professor
11.	Dr. Senthilpandian	Vellore Institute of Technology, Chennai	Assistant Professor
12.	Mr. Vinoth P	St.Peter's College of Engineering and Technology	Assistant Professor
13.	Dr. Udayabanu	Kings Engineering College	Associate Professor
14.	Miss Kaviswetha K V	Easwari Engineering college	Student
15.	Mr. M Hrithik Aadithyaa	Easwari Engineering College	Student
16.	Mr. Mohamed Yasir.J	Easwari Engineering College	Student
17.	Mr. Ragavendar K	Easwari Engineering College	Student
18.	Mr. Kuldeep V	Easwari engineering college	Pg Student
19.	Dr. Sathia	Sri Venkateswara College of Engineering	Associate Professor
20.	Mr. G Arun	Sri Venkateswara College of Engineering	Assistant Professor
21.	Mr. Mathiyazhagan R	Sri Venkateswara College of Engineering	Assistant Professor
22.	Mr. Kalavannan R	Sri Venkateswara College of Engineering	Assistant Professor

<b>S.No.</b>	<b>Name</b>	<b>Institute Name</b>	<b>Designation</b>
23.	Mr. Hariswaran S	Sri Venkateswara College of Engineering	Assistant Professor
24.	Mr. Vijay Vignesh. A	Sri Venkateswara College of Engineering	Assistant Professor
25.	Mrs. Revathi	Sri Venkateswara College of Engineering	Research Scholar
26.	Mr. Venkatakrishnan M	Sri Venkateswara College of Engineering	Lab Assistant
27.	Miss Bhuvaneshwari S	Sri Venkateswara College of Engineering	Lab Instructor
28.	Mr. Rajesh R	Sri Venkateswara College of Engineering	Instructor
29.	Dr. Vijai K	St.Joseph's College of Engineering	Professor
30.	Dr. S Sindhu Nachiar	SRM Institute of Science and Technology	Assistant Professor
31.	Mr. S.P.Senthil Kumar	St.Joseph's College of Engineering	Associate Professor
32.	Dr. Anandh S	SRM Institute of Science and Technology	Assistant Professor
33.	Mr. Kumaresan M	SRM Institute of Science and Technology	Research Scholar
34.	Mr. B Hemanth Sai Kalyan	SRM Institute of Science and Technology	Research Scholar
35.	Miss Kowsalya M	SRM Institute of Science and Technology	Research Scholar
36.	Mr. Rajesh K	SRM Institute of Science and Technology	Student
37.	Dr. Arokiaprakash A	SRM Institute of Science and Technology	Assistant Professor

## **SESSION DETAILS**

### **INAUGURATION**

The ATAL Academy Sponsored FDP on “Construction Automation and Robotics Towards Sustainable Infrastructure” was inaugurated on 7<sup>th</sup> December at 9:00 am. Dr. R. Kumutha, Professor and Head, Department of Civil Engineering, Sri Venkateswara College of Engineering and also the coordinator of the program welcomed the participants.

She thanked the Principal for permitting her to apply and AICTE to approve the same. She also thanked all the speakers who had given acceptance for the program. The schedule for the program was briefed. Instructions were given to the participants about the attendance and assessment. Hoping that all participants will be benefitted very much, the program was inaugurated. The special invitee was Mr. Rajesh Kumar from TechApps Consulting, Chennai.



### **SESSION DETAILS – SESSION 1 and 2**

“Automation in Infrastructure using BENTLEY BIM Software tools” by **Rajesh Kumar**,  
Director Technical Sales, TechApps Consulting.



**Snapshot during Session**

### **SESSION DETAILS – SESSION 3**

National Education Policy 2020 by Dr.G.Janardhanan, Professor , Department of  
Civil and Environmental Engineering, NITTTR, Chennai



**Snapshot during Session 3**

### **SESSION DETAILS – SESSION 4**

Decision Support System for Automated and Optimized Resource Management in Construction by Dr. Santu Kar, Assistant Professor , Department of Civil Engineering, Indian Institute of Technology Guwahati



**Snapshot during Session 4**

## **SESSION DETAILS – SESSION 5**

BIM for Project Information Management by Dr. Sagar Malsane, Associate Professor, Program Director (MBA ACM), NICMAR University, Pune



**Snapshot during Session 5**

## **SESSION DETAILS – SESSION 6**

Building Information Modeling (BIM) and Automation and BIM-Based Automated Code Compliance Checking by Ms. Sandya Devarajan, Managing Partner, Lupiter Technologies LLP Chennai



**Snapshot during Session 6**



## **SESSION DETAILS – SESSION 7**

Role of Structural Health Monitoring for Sustainable Infrastructure by Dr.B.Arun Sundaram, Principal Scientist, Structural Health Monitoring Laboratory , CSIR -SERC, Taramani



**Snapshot during Session 7**

## **SESSION DETAILS – SESSION 8**

Roadmap for low Carbon built environment by Dr. Sivakumar Palaniappan Associate Professor Department of Civil Engineering, IITM, Chennai.



**Snapshot during Session 8**

## **SESSION DETAILS – SESSION 9**

Sustainable development and state-of-the-art in construction automation and robotics by **Mr. Sundararaman Krishnamoorthi**, Doctoral Research scholar, BTCM, IIT Madras



**Snapshot during Session**

## **SESSION DETAILS – SESSION 10**

Applications of AI in Structural Engineering - from Design to Diagnostics by **Dr. Srinivas V**, Chief Scientist & Head, Structural Health and Monitoring Laboratory, CSIR-SERC



**Snapshot during Session**

**SESSION DETAILS – Article Discussion**

The participants were split into teams for the article discussion. They finally submitted the summary of articles as an individual and as a team.



**Snapshot during Session**

### **SESSION DETAILS – Reflection Journal and Feedback session**

A few participants gave their feedback regarding the learnings from the FDP. All the participants shared their insights through the reflection journal.

### **SESSION DETAILS – Industrial Visit**

The participants were taken for an Industrial Visit to L and T Construction Skill Training Institute



**Snapshot during industrial visit**

## Assessment Details

### Sample assessment questions and key

Assessment Test - 50 marks

All questions are multiple choice questions. No negative marks.

1. What does 5D mean in BIM? \*

- Time
- Cost
- Construction Safety
- Life cycle assessment
- Other: .....

2. Match the following with respect to the Dimensions of BIM. \*

	management phase	sustainability assessment	construction industrialization	safety during design and construction	lean construction
6D	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7D	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
9D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
10D	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Which one of the following is not the challenges involved in BIM Adoption? \*

- Roles and responsibility
- Resistance & reluctance from the designers
- High training and migration cost
- Increase in environmental impact

4. Match the following with respect to LOD \*

	As-Built	Construction Documentation	Fabrication & Assembly
LOD 350	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
LOD 400	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
LOD 500	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. \_\_\_\_\_ refers to the degree of detail and reliability of information within BIM elements at different stages of a project. LOD ranges from 100 (conceptual) to 500 (as-built), indicating the evolution of information accuracy. \*

- Building Information Modelling
- Common Data Environment
- Level of Development
- BEP

### Assessment Marks

S.No.	Name	Institute Name	Assessment marks (out of 50)
1.	Mr. Rajasekar B S	Easwari Engineering College	43
2.	Dr. Jeyanthi Jebamaniraj	Mepco Schlenk Engineering College, Sivakasi	45
3.	Mrs. S.Revathi	Mepco Schlenk Engineering College, Sivakasi	43
4.	Mr. Raja M A	Thamirabharani Engineering College	44
5.	Mr. R Devakandhan	Sri Sairam Engineering College	47
6.	Miss Maria Vensa S	St.Peter's College of Engineering and Technology	42
7.	Mr. R.Shanmugapriyan	Nadar Saraswathi college of Engineering and Technology	44
8.	Mr. Arunprasad J	Erode Sengunthar Engineering college(Autonomous)	40
9.	Dr. Vaidevi C	Aarupadai Veedu Institute of Technology	45
10.	Mr. Karthikeyan Kothandapani	Vellore Institute of Technology, Chennai	47
11.	Dr. Senthilpandian	Vellore Institute of Technology, Chennai	47
12.	Mr. Vinoth P	St.Peter's College of Engineering and Technology	40
13.	Dr. Udayabanu	Kings Engineering College	45
14.	Miss Kaviswetha K V	Easwari Engineering college	49
15.	Mr. M Hrithik Aadithyaa	Easwari Engineering College	45
16.	Mr. Mohamed Yasir.J	Easwari Engineering College	44
17.	Mr. Ragavendar K	Easwari Engineering College	50
18.	Mr. Kuldeep V	Easwari engineering college	45
19.	Dr. Sathia	Sri Venkateswara College of Engineering	48
20.	Mr. G Arun	Sri Venkateswara College of Engineering	50
21.	Mr. Mathiyazhagan R	Sri Venkateswara College of Engineering	45

<b>S.No.</b>	<b>Name</b>	<b>Institute Name</b>	<b>Assessment marks (out of 50)</b>
22.	Mr. Kalaivannan R	Sri Venkateswara College of Engineering	49
23.	Mr. Hariswaran S	Sri Venkateswara College of Engineering	50
24.	Mr. Vijay Vignesh. A	Sri Venkateswara College of Engineering	50
25.	Mrs. Revathi	Sri Venkateswara College of Engineering	45
26.	Mr. Venkatakrishnan M	Sri Venkateswara College of Engineering	47
27.	Miss Bhuvaneswari S	Sri Venkateswara College of Engineering	43
28.	Mr. Rajesh R	Sri Venkateswara College of Engineering	41
29.	Dr. Vijai K	St.Joseph's College of Engineering	48
30.	Dr. S Sindhu Nachiar	SRM Institute of Science and Technology	50
31.	Mr. S.P.Senthil Kumar	St.Joseph's College of Engineering	46
32.	Dr. Anandh S	SRM Institute of Science and Technology	50
33.	Mr. Kumaresan M	SRM Institute of Science and Technology	49
34.	Mr. B Hemanth Sai Kalyan	SRM Institute of Science and Technology	50
35.	Miss Kowsalya M	SRM Institute of Science and Technology	50
36.	Mr. Rajesh K	SRM Institute of Science and Technology	50
37.	Dr. Arokiaprakash A	SRM Institute of Science and Technology	50



## Sample Certificate

ATAL/2023/1701145093



### ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Nelson Mandela Marg, Vasant Kunj, New Delhi – 110 070

AICTE Training and Learning (ATAL) Academy

### *Certificate*

*It is certified that **Mr. Rajasekar B S**, Student of **Easwari Engineering College** has successfully participated & completed **AICTE Training And Learning (ATAL) Academy Faculty Development Program on Construction Automation and Robotics towards Sustainable Infrastructure at SRI VENKATESWARA COLLEGE OF ENGINEERING** from **07/12/2023** to **13/12/2023**.*



Coordinator



Bureau Head (ATAL)

# PUBLICITY COVERAGE

## LinkedIn

The screenshot displays the LinkedIn analytics interface for a user. The browser address bar shows the URL: `linkedin.com/analytics/creator/top-posts?metricType=IMPRESSIONS&resultType=DUMMY&timeRange=past_7_days`. The navigation bar includes icons for Home, My Network, Jobs, Messaging, and Notifications. The main content area is titled "Top performing posts" and lists three posts with their respective impression counts:

- Post 1:** SVCE Civil Engineering posted this • 4d. ATAL Academy sponsored Faculty Development Program on "Construction Automation and Robotics towards Sustainable Infrastructure" - 7th December to 13th December 2023. ...show more. 292 Impressions.
- Post 2:** SVCE Civil Engineering posted this • 3d. ATAL Academy sponsored Faculty Development Program on "Construction Automation and Robotics towards Sustainable Infrastructure" - 7th to 13th December 2023. Vijay Vignesh. A and 1 other. 154 Impressions.
- Post 3:** SVCE Civil Engineering posted this • 2w. Department of Civil Engineering, Sri Venkateswara College of Civil Engineering is organising a AICTE Training and Learning (ATAL) Academy Sponsored Faculty Development Program on "Construction . ...show more. Kalaiyaman Radhakrishnan and 16 others. 1 repost. 153 Impressions.

An advertisement for Hitachi is also visible, featuring the text: "Stay updated on Green-Tech & Decarbonization for a Sustainable Future." and "Hitachi Social Innovation is POWERING GOOD".

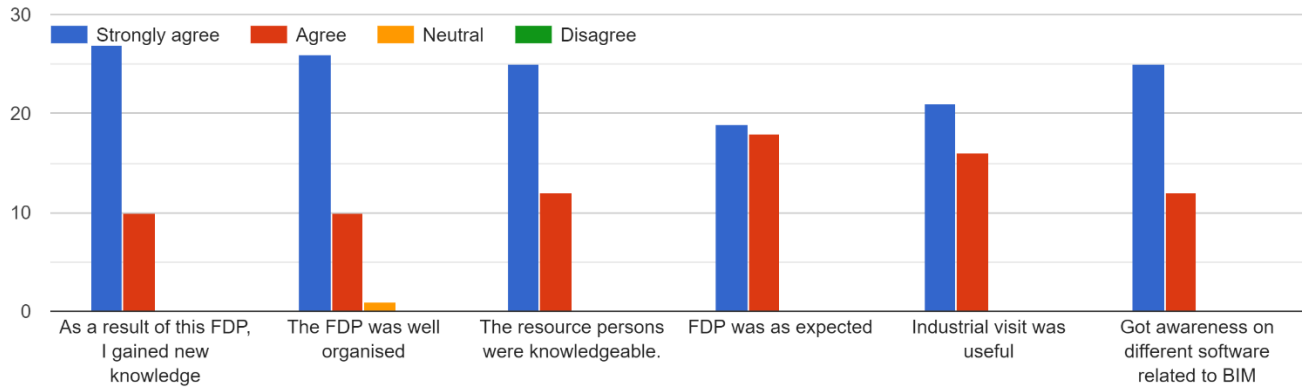
## YOUTUBE LINKS OF RECORDED LECTURES

Playlist link - <https://www.youtube.com/playlist?list=PLrcf5WD3gRS11YwCzHw-xWfa7iAKWuVDZ>

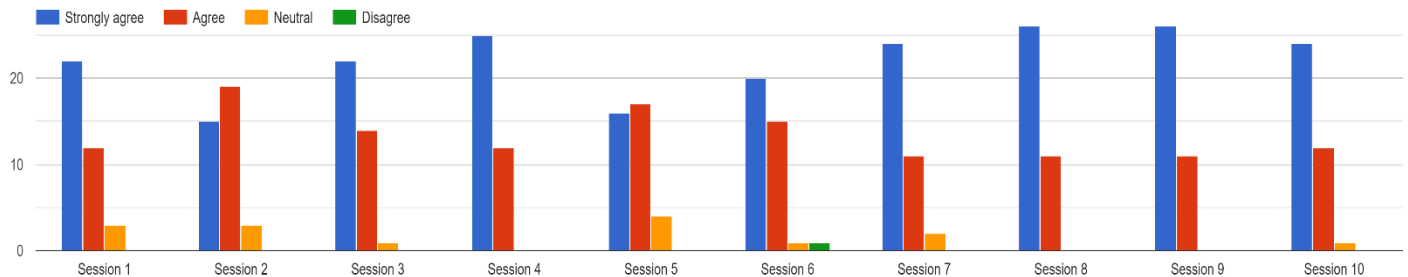
Title of the session	Speaker Details	Video link
1 - Inauguration	Rajesh Kumar TechApps Consulting	<a href="https://youtu.be/qQfJbDlzQhg?si=QGSCLG_wLwJCjhl">https://youtu.be/qQfJbDlzQhg?si=QGSCLG_wLwJCjhl</a>
2 - Automation in Infrastructure using BENTLEY BIM Software	Rajesh Kumar TechApps Consulting	<a href="https://youtu.be/nXxZrBZPkeM?si=Elua-ly1uMIq60vI">https://youtu.be/nXxZrBZPkeM?si=Elua-ly1uMIq60vI</a>
3 - National Education Policy 2020	Dr.G.Janardhanan Professor, Department of Civil and Environmental Engineering, NITTTR, Chennai	<a href="https://youtu.be/IDkJwIw-IeU?si=Y4fw-A2-eWn-ZsJP">https://youtu.be/IDkJwIw-IeU?si=Y4fw-A2-eWn-ZsJP</a>
4 - Decision Support System for Automated and Optimized Resource Management in Construction	Dr. Santu Kar Assistant Professor Department of Civil Engineering IIT Guwahati	<a href="https://youtu.be/8H4xCku4YXc?si=E2Y4ulMqHoL0nph9">https://youtu.be/8H4xCku4YXc?si=E2Y4ulMqHoL0nph9</a>
5 - BIM for Project Information Management	Dr. Sagar Malsane Associate Professor Program Director (MBA ACM), NICMAR University, Pune	<a href="https://youtu.be/zZuZHsUH6NY?si=S2NbLO8IDxbYMTVd">https://youtu.be/zZuZHsUH6NY?si=S2NbLO8IDxbYMTVd</a>
6 - Building Information Modeling (BIM) and Automation and BIM-Based Automated Code Compliance Checking	Ms. Sandya Devarajan Managing Partner Lupiter Technologies LLP Chennai	<a href="https://youtu.be/cHPICoPfyDg?si=9UjVhXgw9fsbjghc">https://youtu.be/cHPICoPfyDg?si=9UjVhXgw9fsbjghc</a>
7 - Role of Structural Health Monitoring for Sustainable Infrastructure	Dr.B.Arun Sundaram Principal Scientist Structural Health Monitoring Laboratory , CSIR -SERC, Taramani	<a href="https://youtu.be/Hng4MOox-eU?si=s_aHEiIOZAI5KvP">https://youtu.be/Hng4MOox-eU?si=s_aHEiIOZAI5KvP</a>
8 - Roadmap for low Carbon built environment	Dr. Sivakumar Palaniappan Associate Professor Department of Civil Engineering, IITM, Chennai	<a href="https://youtu.be/pXXKCg3ntb0">https://youtu.be/pXXKCg3ntb0</a>
9 - Sustainable development and state-of-the-art in construction automation and robotics	Mr. Sundararaman Krishnamoorthi Doctoral Research scholar BTCM, IIT Madras	<a href="https://youtu.be/r6JHcVzQyQ0">https://youtu.be/r6JHcVzQyQ0</a>
10 - Applications of AI in Structural Engineering - from Design to Diagnostics	Dr. Srinivas V Chief Scientist & Head, Structural Health Monitoring Laboratory, CSIR-SERC	<a href="https://youtu.be/KuZZ48gp12Y">https://youtu.be/KuZZ48gp12Y</a>

## FEEDBACK FROM PARTICIPANTS

Kindly choose appropriately

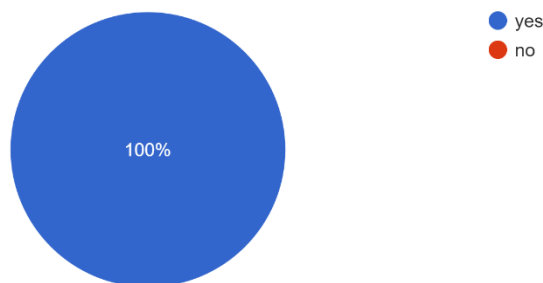


Based on the content delivery, interaction, presentation, pace and delivery of the session, kindly rate your feedback for each session.



Would you like to participate in programs organized by SVCE in the future?

37 responses



## **Summary of the Feedback from participants**

- Got the knowledge about BIM
- The FDP was well organised and useful
- Not as regular FDP. The title of the FDP itself is in line with the recent current trend of civil engineering. It's would have been an eye-opening sessions for most of the participants. Well organized, friendly and good hospitality from the team
- Well Organized Program and learn more knowledge regarding BIM
- New concepts were introduced by knowledgeable speakers. Special mention of appreciation to the organising team for their hospitality and comfort.
- Well organized, very informative and excellent speakers
- Invaluable experience. Very useful for future research purposes.
- Enhanced Knowledge on Automation in Construction and Construction Management
- Eminent speakers from various institutions and organisation delivered lecture. Overall the program was very informative.
- Got a better idea about BIM and automation in construction field
- Eye opening session
- Very Informative advanced topics
- Understand about the Importance of BIM in construction projects towards the sustainable infrastructure. Came to know about the Impact of Automation in construction industry with case studies. FDP was well organised. The speakers interacted and clear all the doubts raised by the participants.
- Program was Insightful and Informative
- I Learned New Things About BIM And Construction Automation of Site Work. It's Very Useful to Know About Global Fundamentals.
- Do keep FDP on Corrosion sensors and hands on training on BIM in Civil Engineering