



SRI VENKATESWARA COLLEGE OF ENGINEERING



DEPARTMENT OF CIVIL ENGINEERING



Report of Webinar on " ADVANCED COMPUTATION TOOLS IN CIVIL ENGINEERING "

Date : Monday, 14th August 2023

Time : 1:00 pm

Mode : Online through Google Meet

Meeting Link: Meeting URL: [https:// meet.google.com/gui-qtzn-zpj](https://meet.google.com/gui-qtzn-zpj)

Speaker

Dr.B.S.Sindu

Principal Scientist

Special and Multifunctional Structures Laboratory

CSIR – Structural Engineering Research Centre, India

Convenor

Dr.R.Kumutha, Professor & Head/Civil Engineering

Coordinator

Ms. Ruby Freya, Assistant Professor/ Civil Engineering

Target Audience : Students and Faculty members

Number of Participants

:40

BROCHURE



DEPARTMENT OF CIVIL ENGINEERING

COORDIALLY INVITES YOU FOR THE
WEBINAR ON

Advanced Computational Tools in Civil Engineering

14th August, 1:00 pm

Meet link : <https://meet.google.com/glo-qtzn-zpj>



Dr.B.S.Sindu

Principal Scientist

Special and Multifunctional Structures Laboratory
CSIR- Structural Engineering Research Centre, India.

ORGANISER

MS. RUBY FREYA
AP / Civil Engg.

CONVENOR

DR.R. KUMUTHA
Professor & Head / Civil Enggg.

AWARDS AND RECOGNITION

- 2022 Received 'IEI Young Engineers Award 2021-2022' in *Civil Engineering Division*
- 2021 Shortlisted as one among the six global finalists for the **Nanocem PhD award** coordinated by EPFL, Switzerland. Funded invitation received to present the doctoral work in the INNOVANDI meeting
- 2020 Received '**Best Ph.D. Thesis in Concrete Award 2020**' (National Level) from Indian Concrete Institute (ICI)
- 2020 Received **Dr. Ramaiah Prize** for the best technical paper from CSIR-SERC
- 2018 International Travel Support to visit TU Delft, The Netherlands from Department of Science and Technology (DST), India
- 2014 Received 'Certificate of Merit' from CSIR-SERC for the best paper

PUBLICATIONS

International Journals (Published)

- J1. Rao R, **Sindu BS**, Sasmal S. Real-time monitoring of structures under extreme loading using smart composite-based embeddable sensors. *Journal of Intelligent Material Systems and Structures*, 2020, 1045389X221128586.
- J2. **Sindu BS**, Thirumalaiselvi A, Sasmal S. Investigations on fracture related properties of strain hardened concrete using digital image correlation and acoustic emission techniques. *European Journal of Environmental and Civil Engineering*, 2022 Nov, 26(14), 6807-6829.
- J3. Thirumalaiselvi A, **Sindu BS**, Sasmal S. Crack propagation studies in strain hardened concrete using acoustic emission and digital image correlation investigations. *European Journal of Environmental and Civil Engineering*. 2022 Jul, 26(10), 4346-73.
- J4. **Sindu BS**, Sasmal S. Molecular dynamics simulations for evaluation of surfactant compatibility and mechanical characteristics of carbon nanotubes incorporated cementitious composite. *Construction and Building Materials*. 2020 Aug 30;253:119190.
- J5. **Sindu BS**, Sasmal S. Multi-Scale Abridged Cement Composite with Enhanced Mechanical Properties. *ACI Materials Journal*. 2020 Jul 1;117(4):105-17.
- J6. **Sindu BS**, Sasmal S. Methodology for predicting the properties of cement composites at different scales. *Magazine of Concrete Research*. 2020 Mar; 72(5):217-31.
- J7. Rao R, **Sindu BS**, Sasmal S. Synthesis, design and piezo-resistive characteristics of cementitious smart nanocomposites with different types of functionalised MWCNTs under long cyclic loading. *Cement and Concrete Composites*. 2020 Jan 10:103517.
- J8. **Sindu BS**, Sasmal S. On the development and studies of nano-and micro-fiber hybridized strain hardened cementitious composite. *Archives of Civil and Mechanical Engineering*. 2019 Mar 1;19(2):348-59.
- J9. **Sindu BS**, Alex A, Sasmal S. Studies on structural interaction and performance of cement composite using Molecular Dynamics. *Advances in Computational Design*. 2018 Apr 1;3(2):147-63.

- J10. **Sindu BS**, Saravanan B, Sasmal S. Evaluation of micro-mechanical properties of nonlinear cementitious composite using large displacement transient nanoindentation analysis. *Sadhana*. Feb 2018; 43 (2): 29
- J11. **Sindu BS**, Sasmal S. Properties of carbon nanotube reinforced cement composite synthesized using different types of surfactants. *Construction and Building Materials*. 2017 Nov 30; 155:389-99.
- J12. Gautham S, **Sindu BS**, Sasmal S. Evaluation of the phase properties of hydrating cement composite using simulated nanoindentation technique. *Modelling and Simulation in Materials Science and Engineering*. 2017 Sep 15; 25(7):075012.
- J13. Sasmal S, Ravivarman N, **Sindu BS**, Vignesh K. Electrical conductivity and piezo-resistive characteristics of CNT and CNF incorporated cementitious nanocomposites under static and dynamic loading. *Composites Part A: Applied Science and Manufacturing*. 2017 Sep 1; 100:227-43.
- J14. Sasmal S, Ravivarman N, **Sindu BS**. Synthesis, characterisation and performance of piezo-resistive cementitious nanocomposites. *Cement and Concrete Composites*. 2017 Jan 1; 75:10-21.
- J15. Aleena A, **Sindu BS**, Saptarshi Sasmal. Uniaxial tension and compression studies on cement clinkers using molecular dynamic simulations. *Journal of Structural Engineering*, Apr - May 2015, 42:22-27
- J16. **Sindu BS**, Sasmal S. Evaluation of mechanical characteristics of nano modified epoxy based polymers using molecular dynamics. *Computational materials science*. 2015 Jan 1; 96:146-58.
- J17. **Sindu BS**, Sasmal S, Gopinath S. Methodology for Evaluating the properties of Carbon Nano Tubes for Engineering Applications. *Journal of Nanotechnology and Materials Science*. 2014; 1(1):1-8
- J18. **Sindu BS**, Sasmal S, Gopinath S. A multi-scale approach for evaluating the mechanical characteristics of carbon nanotube incorporated cementitious composites. *Construction and Building Materials*. 2014 Jan 15;50:317-27

ENGINEERING CONSULTANCY PROJECTS

11. Evaluation and Management of Longitudinal force on Substructure of Railway Bridge - Phase I (Research Designs & Standards Organization (RDSO), Lucknow)
12. Investigations on the structural adequacy of the selected superstructure spans of BR No.-11 in HJP-BCA section of Sonepur Division of East Central Railway, Patna (IRCON International Limited)
13. Assessment of structural adequacy of three numbers of composite bridge spans (BR78, BR 130 AND BR 134) near Renukut of Dhanbad division of ECR for 25T axle load (East Central Railway)
14. Design checking of approach spans of rail-cum-road bridge across river Ganga at Munger ghat, Munger, Bihar (East Central Railway (ECR))
15. Assessing the structural adequacy of Existing RCC Vehicular underpass (South Western Railway)
16. Evaluation of capacity and performance of rock anchor bolt for an underground defense project (L&T Defense)

17. Finite element analysis and checking the structural adequacy of non-standard twin steel box composite super-structure span for ROB at Mithapur, Danapur (IRCON International Limited)
18. Technical evaluation of the under construction office building and residential-cum hostel building for Defence Estate Organization at Chennai and recommendation for possible remedial measures (Military Eng. Services, Shivalaya Eng. Associates)
19. Analytical and experimental investigations on typical span of bridge No. 7DB at Mokameh to evaluate the response of road cross girders and formulate remedial measures (East Central Railway)
110. Investigation on structural resonance of Unit#1 TG foundation for 2X600MW Thermal Power Plant of UPCL (Udupi Power Corporation Limited (Adani Group), Udupi District, Karnataka)
111. Design of long term protection measures for 4.5" C2+Hydrocarbon pipeline and 28" ETP pipeline (M/s Brahmaputra Crackers and Polymer Limited (BCPL), Dibrugarh)
112. Checking the structural adequacy of bridge across Renuka river for carrying additional ash pipe lines from Obra Thermal Power Station (Obra Thermal Power Station(OTPS), Obra-Sonebhadra UP)
113. Condition assessment and performance evaluation of four number of bridges at VPT and formulation of remedial measures (Visakhapatnam Port Trust,Visakhapatnam,A.P.)
114. Experimental studies to investigate the efficacies of induction furnace slag as a substitute for river sand (Agni Steel Pvt Ltd., Erode, Tamilnadu)

RESEARCH AND DEVELOPMENT

In - House R & D

115. Engineering of Large Floating Offshore Structures and Systems for Renewable Energy Farming (MLP20941 : April 2020 to present)
116. Multi-scale damage characterization of laminated FRP composites under fatigue loading. (MLP 20541 : October 2017 – March 2020)
117. Engineered materials for sustainable infrastructure. WP 2. *Development of methodology for performance based design of flyash concrete* (OLP 199 : October 2017 – March 2020)
118. Nanotechnology for Engineering Sustainable Materials. (OLP 16341 : Nov. 2012 – Sep. 2016)

Supra Institutional Network Project

51. Engineering Sustainable Materials and Structures. Action Plan II: Sustainability through Nano-Technology and Bio-Mimetics. WP 2. *Development of computational tools for multi scale modeling of materials* (eNano-Tics : Nov. 2012 – Nov. 2017)

OTHER INFORMATION

- Google Scholar :Citations - 385, h-index - 9, i-10 index - 8
<https://scholar.google.co.in/citations?user=KSDAGVoAAAAJ&hl=en&oi=ag>
- Researchgate : https://www.researchgate.net/profile/Sindu_B_5
- ORCID : <https://orcid.org/0000-0001-7138-7917>

SNAPSHOTS DURING THE WEBINAR

1:28 PM Advanced Computational Tools

CNT - EPOXY POLYMERS



1:28 PM Advanced Computational Tools

1:28 PM Advanced Computational Tools

1:48 PM Advanced Computational Tools

MACHINE LEARNING



Supervised Learning

- Classification
- Regression

Unsupervised Learning

- Clustering
- Association

Reinforcement Learning

- Game playing
- Robotics

Classification

- Distinguish "Yes/No" classes

Regression

- Property prediction
- Optimization
- Feature design
- Feature importance

Clustering

- Group similar data points

Association

- Discover hidden relationships

EXTRACTION AND TEST SET, MODEL

1:48 PM Advanced Computational Tools

1:53 PM Advanced Computational Tools


MACHINE LEARNING : REGRESSION

$Y = f(X)$

Y - Output (vector)

X - Independent variables (matrix)

- Linear Regression
- Ridge Regression
- Lasso Regression
- Decision Tree
- Random Forest
- KNN Model
- Support Vector Machines
- Gaussian Regression
- Polynomial Regression



1:53 PM Advanced Computational Tools

LIST OF PARTICIPANTS

S.No.	Name	Category
1.	SHANTHA GOWTHAM S	Student
2.	DR.R.SATHIA	Faculty
3.	VIJAY VIGNESH	Faculty
4.	AADESHWAR S	Student
5.	AURUDRA ADISESHAIAH KRISHNA	Student
6.	AVINASH S	Student
7.	SIDDHARTH K	Student
8.	SRILEKHA N	Student
9.	BHARATH K CE	Student
10.	ARAVINTAKSHAN N G	Student
11.	BALAJI M	Student
12.	C JAI HANISH BOSE	Student
13.	DHANUSH KANNAN L	Student
14.	GOKUL A	Student
15.	GOPINATH K	Student
16.	JAI SIDDARTH A	Student
17.	LAKSHMAN ANAND S	Student
18.	LOKESHWARAN R	Student
19.	MUTHU MATHI S	Student
20.	PRAVEEN KUMAR .D	Student
21.	R.J.RAMANHUJAM	Student
22.	VARUN BABU C S	Student
23.	VISHVANANTHAN S L	Student
24.	YUGHESWARAN R B	Student
25.	GIRIDHARAN V	Student
26.	PRABHU B	Student
27.	KISHOR M	Student
28.	HARINI A	Student
29.	KALICHARAN A S	Student
30.	KAVIYA R	Student
31.	PRIYADARSHINI R	Student
32.	RAGHAVENDRA B	Student
33.	VELAN S	Student
34.	KALAIVANNAN R	Student
35.	MATHIMITHA	Student
36.	ARUN G	Faculty
37.	SYED AFRIDEEN	Student
38.	PROMOTH MADAVAN	Student
39.	N.M.SANTHOSH KUMAR	Student
40.	ZAAHIR SHA	Student

FEEDBACK FROM PARTICIPANTS – SAMPLE RESPONSE

<https://forms.gle/nRfqSNCcDKJUzDvy7>

Sri Venkateswara College of Engineering Department of Civil Engineering

Feedback Form

Webinar : Expansive Soil - Challenges and Solutions
Date : 14th August 2023, Monday
Time : 01:00 pm, online
Speaker : Dr.B.S Sindu, Principal Scientist, CSI-SERC

Email *

2022ce0041@svce.ac.in

Name of the Participant *

S.Muthu mathi

Name of the Institution/Industry *

Sri Venkateshwara College of engineering

Category *

Student

Faculty

Alumni

Year (for student category)

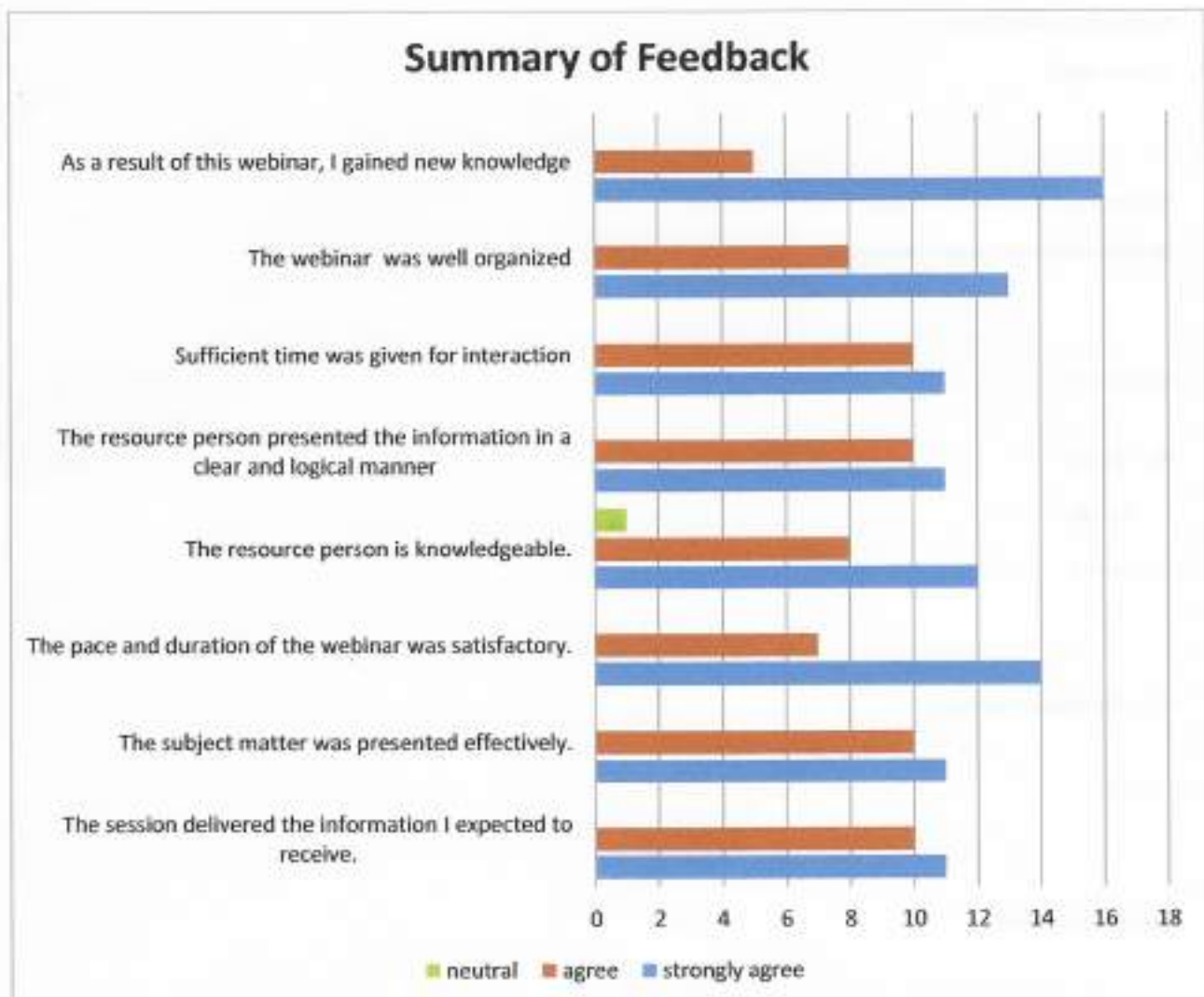
II Year

Designation (Faculty)

-

SUMMARY OF FEEDBACK

Total Number of respondents: 21				
Feedback	Strongly Agree	Agree	Neutral	Disagree
The session delivered the information I expected to receive.	11	10	-	-
The subject matter was presented effectively.	11	10	-	-
The pace and duration of the webinar was satisfactory.	14	7	-	-
The resource person is knowledgeable.	12	8	1	-
The resource person presented the information in a clear and logical manner	11	10	-	-
Sufficient time was given for interaction	11	10	-	-
The webinar was well organized	13	8	-	-
As a result of this webinar, I gained new knowledge	16	5	-	-



FEEDBACK FROM SPEAKER – QUESTIONNAIRE

<https://forms.gle/uPMEjvkGKvdakxGk8>

Sri Venkateswara College of Engineering Department of Civil Engineering

1 response

[Publish analytics](#)

Feedback Form – Webinar on “Advanced Computational Tools in Civil Engineering”

Date : 14th August 2023,

Time: 1.00 pm

Name

1 response

B.S. Sindu

Email

1 response

sindu@serc.res.in

Designation

1 response

Principal Scientist

Official Address

1 response

CSIR- Structural Engineering Research Centre, Taramani, Chennai - 600113

Mobile Number (whatsapp)

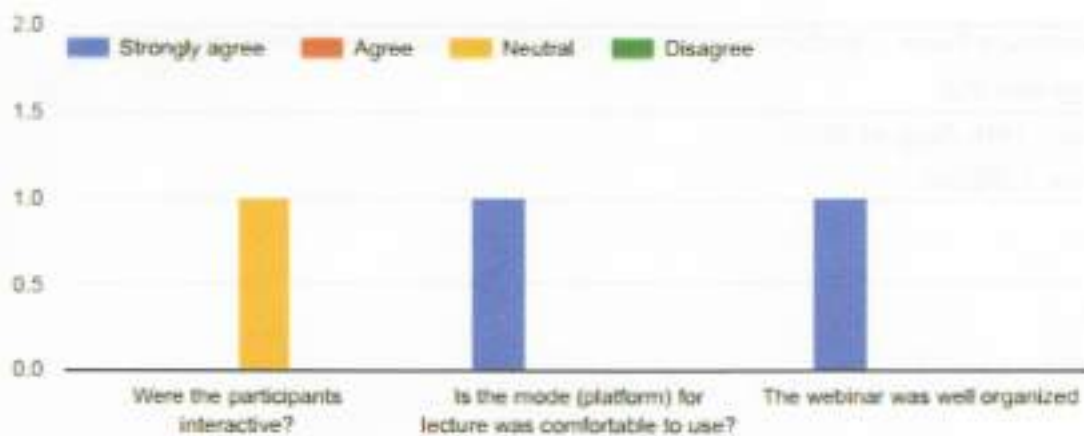
1 response

9944992690

Please rate your satisfaction with the organisation of the guest lecture by indicating your level of agreement or disagreement with each of the following statements.

How satisfied were you with the event?

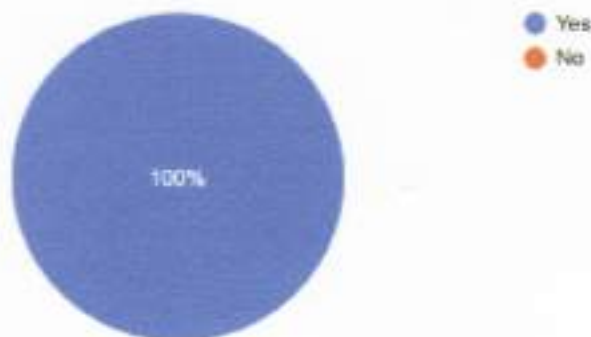
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Are you interested in interacting with our institution in future ?

 Copy

1 response



Additional comments / feedback

1 response

Thank you for the opportunity.

Mobile number (Whatsapp) *

9360827050

Please rate your satisfaction with the organisation/content of the webinar by indicating your level of agreement or disagreement with each of the following statements. *

	Strongly agree	Agree	Neutral	Disagree
The session delivered the information I expected to receive.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
The subject matter was presented effectively.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The pace and duration of the webinar was satisfactory.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The resource person is knowledgeable.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The resource person presented the information in a clear and logical manner	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sufficient time was given for interaction	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
The webinar was well organized	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a result of this webinar, I gained new knowledge	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are you interested in attending such programs organised in future by the Department of Civil Engineering of SVCE? *

Yes

No

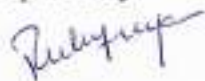
Additional Comments/Feedback *

Nil

Additional comments from participants:

- Informative session.
- Such a good session... But, need more direct offline sessions
- This session was so great and gave some ideas for our future researches

Prepared By



Ms. Ruby Freya (AP/Civil Engg.)

Coordinator

Approved By



Dr.R.Kumutha (HoD/Civil Engg.)

Convenor