JAMUN KUMAR N

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DOB : 30th April 1991
POB : Hiriyur, Karnataka, India.

EDUCATION

Educational Qualifications	Discipline	Year	Board/Institution	%
SSC	-	2007	CBSE	85.4
10 + 2	PCMB	2009	CBSE	89.4
BE	Civil Engineering	2013	VTU Belgaum	88.6
MTech	Structural Engineering	2016	IIT Roorkee	92.3
PhD	Computational Mechanics	2024	IISc Bangalore	-

Visiting research scholar, Texas A&M University, USA (March 2023- June 2023)

- Host: **Prof. J. N. Reddy**, O'Donnell Foundation Chair IV Professor,
  Director, Centre of Innovation in Mechanics for Design and Manufacturing (CiMDM)

RESEARCH EXPERIENCE

Senior research fellow, IISc Bangalore (July 2022- Mar 2024)

- Understanding the theory and implementation of geometrically exact Shell model.
- Proposed a geometry based mixed FE method for Kirchhoff type plates and shells with C^0 discretization.
- Implement proposed methodology to solve nonlinear benchmark problems in mechanics using MATLAB.

Junior Research Fellow, IISc Bangalore (Aug 2019- Aug2022)

- Understanding the theory and implementation of geometrically exact beam theory.
- Implementation of displacement based finite element methods for 2D and 3D hyperelasticity to study locking effects and use geometric definition of kinematic quantities to formulate a mixed FE method.
- Proposing new discretization scheme for 2D and 3D hyperelasticity based on Finite Element Exterior Calculus (FEEC).
- Constructing and proposing efficient mixed method for Kirchhoff type beams with C^0 elements.
- Collaboration with other researchers and writing research papers.
- MATLAB is used to simulate the proposed models.

PROFESSIONAL EXPERIENCE

1. **Associate Professor and Head of Department (HOD) (November 2024- present)**
   - Department of Civil engineering, SJCIT Chikaballapur, India.
   - Teaching *Innovation and Design Thinking* Course.
   - Managing departmental activities including NAAC and NBA.
   - Initiated the establishment of new Lab '*Civil World* '.

2. **Associate Professor, SJMIT Chitradurga, India (September 2024- November 2024)**
    - Taught *Finite Element Methods* and *Green Buildings* courses.
    - Coordinator for *Institution Entrepreneurship Cell* and *Institution Innovation Council*.
    - Coordinator for *Post Graduate(PG) programs* and *Projects*.

3. **Structural Engineer, Siemens Ltd, Gurugram, India (July 2016 – July 2019)**
    - Planning of structures for power plant considering feasibility, structural and aesthetic requirements.
    - Design of structures like Buildings, Outlet duct structure, Duct supporting structures, Platforms, Pipe racks, Cable trays, Platforms according to American (AISC 360, ASCE 07) and Euro Codes (EN 1993, EN 1990).
    - Prepared fatigue life cycle evaluation excel tool based on EN 13445 Part 3.
    - Worked on R&D project involving iterative FE Analysis and design of a dynamic component **Diverter Damper** in HRSG, subjected to coupled static and thermal loads.
    - Worked on preparation of optimization tool for projects: evaluating the past projects to optimize the design of future projects.

4. **Guest Lecturer, Government polytechnic, Hyriyur (Feb 2014 – June 2014)**
    - Taught *Surveying* and *Waste Water* subjects.

RESEARCH PUBLICATIONS

1. Bensingh Dhas, **Jamun Kumar N.**, Debasish Roy, J.N. Reddy, *A mixed variational principle in nonlinear elasticity using Cartan's moving frames and implementation with finite element exterior calculus*, Computer Methods in Applied Mechanics and Engineering, Volume 393, 2022,114756, ISSN 0045-7825.
2. **Jamun Kumar N.**, Bensingh Dhas, Arun R. Srinivasa, J.N. Reddy, Debasish Roy, *A novel four-field mixed FE approximation for Kirchhoff rods using Cartan's moving frames*, Computer Methods in Applied Mechanics and Engineering, 2022, 115094, ISSN 0045-7825.
3. Bensingh Dhas, **Jamun Kumar N.**, Debasish Roy, J.N. Reddy, *A mixed method for 3D nonlinear elasticity using finite element exterior calculus*, International Journal for Numerical Methods in Engineering, 2022, 1-25.
4. **Jamun Kumar N.**, J.N. Reddy, Arun R Srinivasa, Debasish Roy, *A new mixed variational approach for Kirchhoff shells and* C^0 *discretization with finite element exterior calculus*, Computer Methods in Applied Mechanics and Engineering, 2024.

CONFERENCE AND WORKSHOP

- **Conferences:**
    - **Jamun Kumar N.**, Debasish Roy, *A Mixed Approximation for Nonlinear Elasticity Using Finite Element Exterior Calculus*.
      XVII International Conference on Computational Plasticity: Fundamentals and Applications. 5-7 September 2023, Barcelona, Spain.
    - *Machine, Mind and Consciousness*, Centre for advanced studies in science and spirituality. 9th December 2024, IISc Bangalore, India.
- **Workshops:**
    - *Current advancements in computational solid and fluid mechanics*, 23rd February 2024, Department of Civil & Infrastructure Engineering. IIT Jodhpur, India.
    - *Hands on training on STAAD.Pro and RCDC*, 4-6 October, 2024, Department of Civil & Infrastructure Engineering. IIT Dharwad, India.

ACADEMIC PROJECTS

1. **Geometric and data driven models for space applications – ISRO-IISc Bangalore.**
   - Development of geometrically motivated finite element model for nonlinear analysis of 2D structures, 3D structures, beams, and shells.
2. **Long term behaviour of steel concrete composite bridges - IIT Roorkee.**
   - Predicting the long-term behavior of the steel-concrete composite bridges, which involves slip occurring at the interface of steel and concrete because of creep and shrinkage effects.
   - Composite beam design according to IS11384 and IRC 22, numerical simulations. Design of composite bridge and Quantification of interface slip using construction stage analysis.
3. **Condition assessment of building (Cautley Bhavan) - IIT Roorkee.**
4. **Pushover analysis of reinforced concrete frame- IIT Roorkee.**
5. **Planning and design of airport for Hassan- MCE Hassan**

SKILLS

- Programming languages and mathematical packages: C++, MATLAB.
- Computed aided design/engineering: STAAD.Pro, ANSYS workbench, SAP 2000, Tekla Structures, AutoCAD, Navisworks.

AWARDS AND ACHIEVEMENTS

- **Visiting research scholar**, Texas A&M University, USA (March 2023- June 2023)
- Winner of **3i program** for preparation of fatigue life cycle evaluation excel tool based on *EN 13445 Part 3* -Siemens Ltd (2019).
- Received Letter of Appreciation -Siemens Ltd.
- **First rank** in M.Tech Structural Engineering, IIT Roorkee (Class 2016).
- Secured All India Rank (AIR) 325 in GATE 2014, with percentile **99.64 %**.
- Received fellowship from **ISRO** research projects during PhD (2019-2024).

REFERENCES

Dr. Debasish Roy
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Dr. J.N. Reddy
Professor, Texas A&M University, USA
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Dr. Akhil Upadhyay
Professor, IIT Roorkee, India
akhilfce@iitr.ac.in ,+91-1332-285716, +91-9411372189