

# Dr. Deepak Yadav

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## ▼ Profile and Research Interests

After graduating from IIT Roorkee, I worked as a structural design engineer in the industry. I worked on building projects in India, Africa, and the Middle East. I joined as a PhD student at IIT Delhi to pursue my interests in research. Presently, I am working as an Assistant Professor (Structural and Earthquake Engineering) at IIT Jammu. I am experienced in large-scale experimental testing of frame structures, SRC columns, high-strength reinforced concrete beams, and metallic-yielding dampers. My research interests are *steel structures, aluminum structures, seismic response control, metallic yielding dampers, retrofitting of structures, tall buildings, earthquake-resistant design of buildings, and performance-based design of structures.*

## ▼ Academic Background

**Indian Institute of Technology Delhi (IIT Delhi)** **May 2023**  
*Post-Doctoral Research (Structural and Earthquake Engineering)*

- Experimental research work on cold-form steel stub columns
- Experimental research work on buckling restrained Fe-SMA braces
- Experimental research work on RC frame retrofitted with shear walls
- **Advisor:** Dr. Dipti Ranjan Sahoo, Professor, Department of Civil Engineering, IIT Delhi, India

**Indian Institute of Technology Delhi (IIT Delhi)** **Mar 2022**  
*PhD (Structural and Earthquake Engineering)*

- **Thesis Title:** Development and seismic performance evaluation of buckling-inhibited aluminum and steel shear yielding dampers; **CGPA: 9.75** in coursework; **Courses:** Structural Dynamics, Advanced Structural Analysis, Design of Concrete Structure, Design of Industrial Structures
- **Advisor:** Dr. Dipti Ranjan Sahoo, Professor, Department of Civil Engineering, IIT Delhi, India

**Indian Institute of Technology Roorkee (IIT Roorkee)** **Jun 2009**  
*BTech (Civil Engineering)*

- **CGPA: 8.178; GPA of 8.875** in subjects related to Structural Engineering

**Jawahar Navodaya Vidyalaya, Paota, Jaipur** **May 2003**  
*6<sup>th</sup> – 12<sup>th</sup> Standard*

- **12<sup>th</sup> standard: 79.6%**; first rank in science stream; **85.67%** in Physics, Chemistry, and Maths
- **10<sup>th</sup> standard: 82.6%**; fifth rank; **96%** in Science and Maths
- Selected in the top 80 students at the district level for admission in 6<sup>th</sup> standard at JNV, Paota, Jaipur

## ▼ Patents and Publications

### Patents

- **Yadav, D., and Sahoo, D. R.** Indian Institute of Technology Delhi. "Buckling inhibited aluminium shear yielding damper." India Patent. (**Status: Filed, Application number – 201111048596**)

### Journal Publications (Peer Reviewed)

- **Yadav, D., and Sahoo, D. R.** (2022). "Experimental and analytical investigations of steel shear buckling-inhibited energy dissipation devices." *Journal of Constructional Steel Research*, Elsevier Ltd, 196 (September 2022), 107436. <https://doi.org/10.1016/j.jcsr.2022.107436> (JCR IF - 4.349)

- **Yadav, D.**, and Sahoo, D. R. (2021). "Validation of hysteretic behavior and prediction of energy dissipation potential of aluminium shear yielding devices." *International Journal of Mechanical Sciences*, Elsevier Ltd, 194 (15 March 2021), 106204. <https://doi.org/10.1016/j.ijmecsci.2020.106204> (JCR IF - 6.772)
- **Yadav, D.**, and Sahoo, D. R. (2023). "Experimental and analytical investigations of buckling-inhibited aluminum shear yielding devices under cyclic loading." *Soil Dynamics and Earthquake Engineering*, Elsevier Ltd, 172 (September 2023), 108007. <https://doi.org/10.1016/j.soildyn.2023.108007> (JCR IF - 4.25)
- **Yadav, D.**, and Sahoo, D. R. (2023). "Experimental investigation of low cycle fatigue performance of aluminum buckling-inhibited shear yielding devices." (Under preparation)
- Dar, M. A., **Yadav, D.**, and Sahoo, D. R. (2023). "Tests on cold-formed steel laced stub columns: Axial strength and stability characteristics." *Journal of Structural Engineering*, ASCE. (Submitted)

#### Book Chapters

- **Yadav, D.**, and Sahoo, D. R. (2023). "Numerical Assessment of Ultra-Low Cycle Fatigue Performance of Buckling-restrained Aluminum Shear Yielding Dampers." *Seismic Isolation, Energy Dissipation and Active Vibration Control of Structures. Lecture Notes in Civil Engineering (LNCE, volume 309)* pp 296–303. Springer, Cham. ISBN: 978-3-031-21187-4 (Eds: Cimellaro, G.P.) [https://doi.org/10.1007/978-3-031-21187-4\\_24](https://doi.org/10.1007/978-3-031-21187-4_24)

#### Conference Proceedings

- **Yadav, D.**, and Sahoo, D. R. (2022). "Numerical Assessment of Ultra-Low Cycle Fatigue Performance of Buckling-restrained Aluminum Shear Yielding Dampers." 17<sup>th</sup> World Conference on Seismic Isolation, Torino, Italy.
- **Yadav, D.**, and Sahoo, D. R. (2022). "Experimental and analytical investigations on buckling restrained aluminum shear yielding devices under cyclic loading." *Proceedings of the 12<sup>th</sup> National Conference in Earthquake Engineering*, Earthquake Engineering Research Institute, Salt Lake City, UT.
- **Yadav, D.**, Sahoo, D. R., and Verma, A. (2020). "Behavior of Metallic Shear Yielding Devices under Cyclic Loads." 17<sup>th</sup> World Conference on Earthquake Engineering, 17WCEE, 1–9.
- Jena, S., **Yadav, D.**, Sahoo, D. R., and Kim, K. E. (2023). "Seismic behavior assessment of Fe-SMA-based buckling-restrained braced frames." *Canadian Conference - Pacific Conference on Earthquake Engineering*. (Submitted)
- Sivraj, S., **Yadav, D.**, Sahoo, D. R., and Gupta, A. (2023). "Numerical Investigation of Joint Shear Strength of Circular CFST Column Connected to Steel I-Beam with External Diaphragm." *Canadian Conference - Pacific Conference on Earthquake Engineering*. (Submitted)
- Jena, S., **Yadav, D.**, and Sahoo, D. R. (2023). "Fragility assessment of Fe-SMA-based buckling-restrained braced frames subjected to far-field and near-fault ground motions." 18<sup>th</sup> World Conference on Seismic Isolation, Energy Dissipation, and Active Vibration Control of Structures. (Abstract Submitted)
- **Yadav, D.**, Jena, S., and Sahoo, D. R. (2023). "Seismic upgradation of Moment Resisting Frame structures using buckling-inhibited shear yielding dampers." STESSA 2024. (Abstract Submitted)

#### ▼ Teaching Experience

##### Assistant Professor — Indian Institute of Technology Jammu, India

Jun 2023 – Till Date

- Courses: *Structural Dynamics, Advanced Design of Concrete Structures, Advanced Design of Steel Structures, Analytical Geomechanics*
- Developed the syllabus, surprise quizzes, semester exams, home assignments, evaluation, and finalization of grades of the batch
- Developed a new course titled *Design of Tall Buildings*

##### Visiting Faculty — The North Cap University, Gurgaon, India

Jan 2017 – May 2017

- Taught *Structural Dynamics* course to Masters students
- Planned the syllabus and developed surprise quizzes, semester exams, and home assignments

- Evaluated the exam answer sheets and finalized grades of the batch
- **Masters thesis co-supervisor:** Ninni Vaishnav, "Comparative study of response spectrum analysis and pushover analysis of moment resisting frame.", 2018

## ▼ Industrial Experience

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- Sr. Manager (Structures) — Indiabulls Real Estate Ltd (Athena Infrastructure) May 2015 – Jul 2018**
- Managed and streamlined the design process to meet the project deliverables and schedules
  - Adopted the best possible structural systems in the concept stage itself to meet the needs of the projects
  - Adopted methodologies resulted in fewer revisions in design and substantial savings in the projects
- Deputy Manager (Structures) — Emaar MGF Land Ltd Mar 2014 – Apr 2015**
- Conceptualization of two commercial towers keeping future extension of the project in planning
  - Reviewed the structural design of the projects and suggested solutions for practical issues of the ongoing projects
- Assistant Manager (Structural Design) — Ireo Grace Realtech Pvt Ltd Aug 2013 – Mar 2014**
- Concept stage design of the high-end luxury hotel buildings and review of the design stage
- Sr. Project Engineer — AECOM India Pvt Ltd Dec 2011 – Aug 2013**
- Led the structures team, standardized the design process, detailing standards and deliverables to ensure uniformity in the department
  - Led various stages of design, coordination, and construction activities of large-scale mixed-use projects
- Engineer (Structures) — WSP Engineering Services Ltd Mar 2011 – Dec 2011**
- Led the team and designed three building projects to bring the deliveries on track and minimize the costs to the client due to delays in deliverables
- Structural Engineer — Dar Al-Handasah (Shair & Partners) India Pvt Ltd Jun 2009 – Mar 2011**
- Structural design and value engineering as part of the structures team for multiple large-scale projects in the middle-east region

## ▼ Scholastic Achievements

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- Jai Prakash Sewa Sansthan Scholarship for the period of August 2005 to May 2009
- German Academic Exchange Service (DAAD) Scholarship in 2008; Awarded to the top 60 students from all IITs
- Won first prize in the UG category at national-level paper presentation contest organized by the Indian Geotechnical Society
- All India Rank (AIR) of 2362 in the general category in IIT-JEE 2005
- Awarded for the highest subject score in Maths in CBSE 2001 in NVS Jaipur region

## ▼ Internships and Projects

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- Structural Design Review, IIT Delhi, India Dec 2018 – May 2023**
- Reviewed multiple institute research and development projects as part of the design review team
- B.Tech Project, IIT Roorkee, India Aug 2008 – May 2009**
- Analysis of the 572 m cable-stayed bridge across the Ravi River near Basohli in Jammu district
- University of Applied Sciences, Muenster, Germany May 2008 – Jul 2008**
- Design of reinforced concrete corbels using refined Strut-and-Tie models and preparation of drawings with software MB and VICADO
  - Visited construction sites to see construction techniques for multistoried buildings, tunnels, and bridges

### **Rajasthan Urban Infrastructure Development Project, Jaipur, India**

**Jun 2007 – Jul 2007**

- Supervised the construction of 10 story OPD building constructed at SMS, Jaipur in accordance with the design
- Quality control and laboratory tests of construction materials at the site and supervised the health and safety measures taken at the workplace

### **IIT Roorkee / SASE, Chandigarh, India**

**Dec 2006 – Dec 2007**

- Design of ground anchors for snow nets having shallow foundations to withstand the lateral forces due to snow on high altitudes and seasonal frost areas
- Studied soil freezing, thawing, slope stability, and various foundation designs for the Banihaal area

### **▼ Invited Talks**

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- **Webinar series for Tata Steel on Emerging Technologies in Construction, 2023:** Delivered webinar on “Prefabricated metallic yielding devices for enhancing the seismic resistance of buildings” to the employees of Tata Steel and industry
- **Workshop, 2018:** Delivered talk on “Seismic design of buildings in hilly areas” to the faculties and students at GL Bajaj Institute of Technology and Management, Greater Noida, India for the FDP program
- **Workshop, 2017:** Delivered sessions on “Revised Indian Standards for Structural Design” to the practicing structural engineers of Omaxe Group, New Delhi, India
- **Workshop, 2016:** Delivered talk on “What do we build? – Building structures from earthquake engineering perspective” to the practicing engineers, construction managers, and architects in Indiabulls Real Estate Ltd, Gurugram, India

### **▼ Professional Training**

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- **Global Initiative of Academic Networks (GIAN), 2019:** Attended a short-term course on “Seismic Design of Steel Structures” under continuing education programme (CEP) at IIT Delhi
- **National Workshop, 2017:** Attended workshop on “NBC 2016 & Recently Revised Seismic Codes-Impact on Structural Design, Construction & Safety of Buildings” organized by IAStructE and BIS in New Delhi
- **Indo-Norwegian Training Programme, 2016:** Attended workshop on “Seismic Design of Multi-Storey Buildings: IS 1893 vs Eurocode 8” organized by BMTPC, IIT Roorkee, and NORSAR at New Delhi
- **Indo-Norwegian Training Programme, 2015:** Attended workshop on “Nonlinear Analysis and Performance Based Design of Multistorey Buildings” organized by BMTPC, IIT Roorkee, NORSAR, and NGI at New Delhi

### **▼ Professional Affiliations**

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- Member of the Indian Society of Earthquake Technology (ISET)
- Member of the Indian Concrete Institute (ICI)
- Member of The Institution of Engineers (India)
- Chartered Engineer (India), Civil Engineering Division of The Institution of Engineers (India)

### **▼ Others**

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#### **17SEE by IIT Roorkee**

- Reviewed papers for the 17<sup>th</sup> Symposium on Earthquake Engineering organized by IIT Roorkee

#### **Languages**

- **English:** Read, Write, and Speak; **Hindi:** Read, Write, and Speak; **Gujarati:** Read, and Write

#### **Capabilities**

- Experimental testing of supplemental energy dissipation devices at the component level, Full-scale testing of structures, Numerical study of the components

- Planning, designing, and reviewing the structures from the conception stage to the final design stage
- **Design Codes:** IS 456, IS 800, IS 16700, IS 1893, IS 13920, IS 875, IS 3370, ACI 318, ASCE 7, NBC & relevant codes

#### **Software**

- ABAQUS, OpenSees, MATLAB, Origin Pro, MS Office, ETABS, SAP2000, SAFE, PCA Column, Prokon, RCDC, AutoCAD, Revit Structures, and STAAD Pro

#### **Community Service**

- Organized CSR events in AECOM India Pvt Ltd
- Supported meritorious girls with cash awards to promote girl-child education in the rural area
- Conducted and moderated career guidance sessions for school students

#### **Sports**

- Won silver medal in hockey at 43<sup>rd</sup> Inter IIT Sports Meet held at IIT Bombay in 2007 and represented IIT Roorkee hockey team at 44<sup>th</sup> Inter IIT Sports Meet held at IIT Madras in 2008
- Won silver medal in hockey at Udghosh 2008 at IIT Kanpur and silver medal in hockey at Sangram 2009 at IIT Roorkee
- Won gold medal in 2009 and silver medals in 2006 & 2007 Inter Year Hockey tournaments; Won silver medal in 2007 Inter Bhawan Hockey tournament

**NCC Camp:** Attended annual National Cadet Corps (Indian Army Wing) training camp in 2005