

ISHAN JHA

PERSONAL DATA

PRESENT ADDRESS: Dhanbad, India	PHONE: +91-6204544695	Google Scholar: h-index: 6
	EMAIL: ishanjha93@gmail.com	Citations: 144

EDUCATION

JAN 2019 – OCT 2023	Ph.D. in STRUCTURAL ENGINEERING, Indian Institute of Technology (IIT) , Varanasi, India Thesis: “Multi-criteria driven integrated zero-order shape optimization of structural elements.” Coursework GPA: 8.80/10.00
JULY 2016 – JUNE 2018	M.Tech in STRUCTURAL ENGINEERING, National Institute of Technology (NIT) , Patna, India. Thesis: “Buckling analysis of laminate composite plate having cut-out with varying ply-orientation, aspect ratio and skewness.” Cumulative GPA: 8.85/10.00
JULY 2011 – JUNE 2015	B.E. in CIVIL ENGINEERING, Nagpur University , Nagpur, India. Thesis: “Optimal design of lined trapezoidal channel section.” Cumulative Percentage: 75.8% (DISTINCTION)

EMPLOYMENT DETAILS

DEC 2023 – MAR 2024	Project Associate , Indian Institute of Technology (IIT), Varanasi, India
MAR 2024 – TILL DATE	Post-doctoral Fellow , Indian Institute of Technology (IIT), Dhanbad, India

INDUSTRIAL TRAINING

30-day training on construction of high-rise buildings and villas at Apollo db City, under Divya Dev Developers Pvt. Ltd., Indore. Dec. 2013.

CAREER SUMMARY

During my **Postdoctoral** research at IIT Dhanbad, I developed a novel column design called the Concrete-Filled Quadruple Steel Tubular (CFQST) column and conducted extensive experimental and numerical investigations. I optimized critical parameters such as confinement thickness, hollow ratio, radial distance, and tube shapes, analysing the column's behaviour under both axial and lateral loads to gain valuable insights into its structural performance. *I was funded by IIT Dhanbad (€ 28,860)*

I have a **Ph.D.** from IIT, Varanasi, on development of a zero-order based heuristic method for shape optimization of beams, plates with cut-outs, and pre-stressed beams under multiple criteria. An in-house software was developed for the same using FORTRAN language. My education was funded by the *Government of India MHRD Scholarship (€ 21,050)*.

I have **Masters in technology** from NIT, Patna, on buckling behaviour of laminated composite plates with varying cut-out shape, ply orientation, aspect ratio and skewness. The study was conducted using the FEM software ABAQUS. My education was funded by the *Government of India MHRD Scholarship (€ 2,970)*.

During my pursuit of a doctoral degree, I actively contributed towards completion of 70+ high-profile engineering projects as a civil engineer. These projects encompassed the construction of Residential Schools, Government Medical Colleges, Forensic Labs, rehabilitation of old structures, health assessment of old bridges, culverts, and Road overbridges, and the construction of new elevated roads. The total cost of these projects is approximated to be *€ 1.044 billion*. My participation in these activities has provided me with extensive knowledge and expertise in various aspects of civil engineering, including design, construction, rehabilitation, and assessment of critical infrastructure.

Papers in Peer-Reviewed Journals (Published/Accepted)

1. Patel, S.B., Pathak, K.K., and **Jha, I.* (2025)**. Statistical fatigue life forecasting of steel rail-cum-road bridge with impact of stress band selection on damage accumulation and residual life. *Journal of Vibration Engineering & Technologies, Springer* (Accepted). (Corresponding author) **SCI [Q2]**
 2. **Jha, I.**, Dutta, S.C.*, and Kumar, V. (2025). Structural behaviour and performance assessment of proposed concrete-filled quadruple steel tubular (CFQST) cross-sections under compressive loading: Experimental and numerical study. *Journal of Building Engineering*, 113828. <https://doi.org/10.1016/j.jobbe.2025.113828> **SCI [Q1]**
 3. Patel, S.B.*, Srivastava, A., Pathak, K.K., and **Jha, I. (2025)**. Fuzzy based Bridge Rating System (FBRs) for condition assessment of existing railway bridges. *International Journal of Steel Structures*. <https://doi.org/10.1007/s13296-025-00989-x> **SCI [Q3]**
 4. Shen, F., **Jha, I.**, Isleem, H.F.*, Almoghayer, W.J., Khishe, M., and Elshaarawy, M.K. (2025). Advanced predictive machine and deep learning models for round-ended CFST column. *Scientific Reports*, 15(1), 6194. <https://doi.org/10.1038/s41598-025-90648-2> **SCI [Q1]**
 5. Ansari, M.G., Dutta, S.C.*, Dwivedi, A.S., and **Jha, I. (2024)**. Impact of incidence angle of seismic excitation on vertically irregular structures. *Earthquakes and Structures*, 27(3), 227. <https://doi.org/10.12989/eas.2024.27.3.227> **SCI [Q3]**
 6. Qiong, T., **Jha, I.**, Bahrami, A.*, Isleem, H.F., Kumar, R., and Samui, P. (2024). Proposed numerical and machine learning models for fiber-reinforced polymer concrete-steel hollow and solid elliptical columns. *Frontiers of Structural and Civil Engineering*, 18(8), 1169–1194. <https://doi.org/10.1007/s11709-024-1083-1> **SCI [Q1]**
 7. Ali, L., Isleem, H.F., Bahrami, A.*, **Jha, I.**, Zou, G., Kumar, R., Sadeq, A.M., and Jahami, A. (2024). Integrated behavioural analysis of FRP-confined circular columns using FEM and machine learning. *Composites Part C*, 13, 100444. <https://doi.org/10.1016/j.jcomc.2024.100444> **SCI [Q1]**
 8. **Jha, I.***, and Pathak, K.K. (2023). Synergetic concrete shape and cable layout optimization of pre-stressed concrete beams. *Structural and Multidisciplinary Optimization*, 66, 87. <https://doi.org/10.1007/s00158-023-03545-5> (Corresponding author) **SCI [Q1]**
 9. Agrahari, R.*, **Jha, I.**, and Pathak, K.K. (2022). Seismic acceleration amplification factor for pin supported moment resisting RC framed structures: A case study for Chi-Chi earthquake. *Indian Journal of Engineering & Materials Sciences*, 29(2), 189–200. <http://nopr.niscpr.res.in/handle/123456789/59747> **SCI [Q3]**
 10. **Jha, I.***, Pathak, K.K., Jha, M., and Ranjan, A. (2022). A comparative study of gradient descent method and a novel non-gradient method for structural shape optimization. *International Journal of Mathematical, Engineering and Management Sciences*, 7(2), 258–271. <https://doi.org/10.33889/IJMEMS.2022.7.2.017> (Corresponding author) **SCI [Q2]**
 11. **Jha, I.***, and Pathak, K.K. (2021). Fuzzy-based integrated zero-order shape optimization of steel–concrete–steel sandwich beams. *Current Science*, 121(7), 941–949. <https://doi.org/10.18520/cs/v121/i7/941-949> (Corresponding author) **SCI [Q2]**
 12. Chaubey, A.K., **Jha, I.**, Kumar, A.*, Demirbas, M.D., and Dey, S. (2018). Dual-axis buckling of laminated composite skew hyperbolic paraboloids with openings. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 40, 490. <https://doi.org/10.1007/s40430-018-1406-z> **SCI [Q2]**
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Papers Communicated in Peer-Reviewed Journals

- a) Kumar, V., Dutta, S.C., and **Jha, I.* (2025)**. Assessment of the cyclic behaviour of CFQST columns as compared to conventional column systems. *Structures, Elsevier* (Submitted) (Corresponding author) **SCI [Q1]**
 - b) Kumar, V., Dutta, S.C., and **Jha, I.* (2025)**. Investigation of structural behaviour of proposed quadruple steel-tube composite columns under varying load eccentricity. *Steel and Composite Structures, Techno Press* (Corresponding author) (Under review) **SCI [Q1]**
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Papers in Conference Proceedings

1. **Jha, I.***, Dutta, S.C., Prakhya, G.K.V., and Kumar, V. (2025). Comparative assessment of CFQST vs traditional columns under lateral loads. In *Proceedings of the 10th International Conference on Civil Structural and Transportation Engineering (ICCSTE 2025)*, Imperial College London Conference Center, London, UK, July 2025.
 2. Singh, J.*, Pathak, K.K., Prakhya, G.K.V., and **Jha, I.** (2025). Numerical investigation of optimized chamfered concrete-filled steel tubular columns under axial and lateral loads. In *Proceedings of the 10th International Conference on Civil Structural and Transportation Engineering (ICCSTE 2025)*, Imperial College London Conference Center, London, UK, July 2025. [Best Paper Award]
 3. **Jha, I.***, Singh, J., and Pathak, K.K. (2025). Effect of neglecting and considering frictional loss during optimization of pre-stressed beams and its aftermath post-optimization: A comparative study. In *Proceedings of the International Conference on Advances in Structural and Geotechnical Engineering*, IIT Patna, India, February 6–8, 2025.
 4. **Jha, I.***, Pathak, I., Dutta, S.C., Sadana, A., and Bhowmik, B. (2025). CNN-based approach for structural damage detection using time-series sensor data. In *Proceedings of the International Conference on Smart Resilient and Sustainable Infrastructure (SRISTI)*, IIT (ISM) Dhanbad, India, January 24–25, 2025.
 5. Singh, J.*, **Jha, I.**, Varaprasad, K.V.G.S., and Pathak, K.K. (2025). Efficiency of ensembled ML algorithms in predicting the axial load-carrying capacity of circular CFST columns. In *Proceedings of the International Conference on Smart Resilient and Sustainable Infrastructure (SRISTI)*, IIT (ISM) Dhanbad, India, January 24–25, 2025.
 6. **Jha, I.***, and Pathak, K.K. (2022). Effect of span length on the doubly optimized prestressed concrete beams. In *International Conference on Recent Advances in Civil Engineering, RACE 2022*, pp. 697–709. Singapore: Springer Nature Singapore.
 7. **Jha, I.***, and Pathak, K.K. (2023). Shape optimization of structures considering varying geometrical and material parameters. In *Advanced Engineering Optimization Through Intelligent Techniques: Select Proceedings of AEOTIT 2022*, pp. 147–164. Singapore: Springer Nature Singapore.
 8. **Jha, I.***, Patel, S.B., Pathak, K.K., and Jain, A. (2021). Finite element analysis of ferrocement pumphouse. In *Proceedings of the 6th National Convention on Ferrocement*, Pune, India, 2021.
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Patents and Books

1. Dutta, S.C., **Jha, I.**, Kumar, V., and Sahu, S.K. (2024). A concrete-filled quadruple steel tubular (CFQST) column for enhanced strength and ductility in seismic condition and the process of construction. Indian Patent Application No. 202431097321, Indian Patent Office. Published December 20, 2024.
 2. Narsing, R., Prabath, N.V.N., Bobade, S.S., Reddy, G.S., Krishna, N.S., **Jha, I.**, Soujanya, M.M., Sekhar, R.C., and Sreekanth, D.V. (2024). Lightweight glass fiber reinforced gypsum (GFRG) hollow bricks. Indian Design Patent Application No. 202441064451, Indian Patent Office. Published August 30, 2024.
 3. Prajapati, M.K., **Jha, I.**, Sahu, S.K., Ansari, M.G., Kumar, V., and Singh, J. (2024). Geotechnical pressure monitoring device. Indian Design Patent No. 435997-001, Indian Patent Office. Registered October 29, 2024.
- BOOK 1 Debnath, P., **Jha, I.**, Deep, K., and Sahu, S.K. (2025). *Cement and concrete: Design, performance, and structure* (1st ed.). Scientific International Publishing House. ISBN: 978-93-6674-005-8.
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WORKSHOPS – ATTENDED

- 9-Day workshop on **Laboratory Testing and Characterization of Construction Materials (Karyashala)**, sponsored by **SERB**. Indian Institute of Technology (BHU), Varanasi, India, 22-30 May, 2023.
- 1-Day seminar- on **Offshore Structures and Offshore Wind Energy**, Indian Institute of Technology (BHU), Varanasi, India, 25th Feb, 2023.
- 5-days workshop on **Smart Manufacturing & Heavy Industries 4.0** sponsored by **Ministry of Heavy Industries (MHI), Government of India**. Indian Institute of Technology (BHU), Varanasi, India, 11th -15th Oct. 2022.
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1-week Short term training program on **Research Methodology: Tools and Techniques**, SVNIT, Surat, India, 05-09 September, 2022.

1-week **DST-STUTI** training program on **Uses of Advanced Instruments in Civil Engineering Projects**, Indian Institute of Technology (BHU), Varanasi, India, 11th -17th July, 2022.

3-day **Indo-UK Workshop on Valorisation of agri-waste for energy and Nutrient Recovery**, Indian Institute of Technology (BHU), Varanasi, India, 15th -17th Jan. 2020.

EDITORIAL SERVICE

AUG 2025- PRESENT	Journal reviewer, <i>International Journal of Concrete Structures and Materials</i> , Springer
AUG 2025- PRESENT	Journal reviewer, <i>Journal of Building Engineering</i> , Elsevier
JUNE 2025 - PRESENT	Journal reviewer, <i>Construction and Building Materials</i> , Elsevier
NOV 2024 - PRESENT	Journal reviewer, <i>Journal of The Institution of Engineers (India): Series A</i> , Springer
JUNE 2024 - PRESENT	Journal reviewer, <i>Scientific Reports</i> , Nature
SEPT 2023 - PRESENT	Journal reviewer, <i>Mechanics of Time-Dependent Materials</i> , Springer
JULY 2022 - PRESENT	Journal reviewer, <i>Structures</i> , Elsevier
NOV 2021 - PRESENT	Journal reviewer, <i>International Journal of Mathematical, Engineering and Management Sciences</i>

AWARDS AND ACHIEVEMENTS

2019	MHRD Merit Scholarship € 21,050 for 5 years	Indian Institute of Technology (IIT), Varanasi
2016	MHRD Merit Scholarship € 2,970 for 2 years	National Institute of Technology (NIT), Patna
2016	Qualified Graduate Aptitude Test in Engineering (GATE) Exam	A national level post-graduation exam conducted by IITs and IISc.
2013	1st College rank and 8th University rank	Kavikulguru Institute of Technology and Science, Ramtek and Nagpur University, Nagpur
2013	1st College rank	Kavikulguru Institute of Technology and Science, Ramtek

ADMINISTRATIVE RESPONSIBILITIES

2014-15	Student Coordinator for Training and Placement Cell	Kavikulguru Institute of Technology and Science, Ramtek
2014	Organized INVENIO'2k14 a National Level Event under Indian Society of Technical Education (ISTE)	Kavikulguru Institute of Technology and Science, Ramtek
2011-15	Organized various events for college under Indian Society of Technical Education (ISTE)	Kavikulguru Institute of Technology and Science, Ramtek
2013-15	Served as Technical head for Indian Society of Technical Education (ISTE) Students' chapter	Kavikulguru Institute of Technology and Science, Ramtek

OTHER FELLOWSHIPS AND OFFERS

2023	Institute Postdoctoral Fellowship (IPDF), Department of Civil Engineering.	Indian Institute of Technology, Madras (IIT-M)	Awarded for postdoctoral research, offer accepted but not joined
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PROFESSIONAL MEMBERSHIP

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| 1. | American Society of Civil Engineers (ASCE) (<i>Member</i>) |
| 2. | Indian Structural Health Monitoring Society (ISHMS) (<i>Member</i>) |
| 3. | Institution of Engineers (India) (IEI) (In process) |
| 4. | Indian Society of Earthquake Technology (ISET) (In process) |
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REFERENCES

Prof. Krishna Kant Pathak, Civil Engineering Department, Indian Institute of Technology, BHU, Varanasi, India, 221005. E-mail: kkpathak.civ@iitbhu.ac.in

Prof. Basuraj Bhowmik, Civil and Environmental Engineering Department, University of Strathclyde, Glasgow, Scotland. E-mail: basuraj.bhowmik@strath.ac.uk

Dr. Kasi Viswanadh Ganga Prakhya, Director of Design Group, Sir Robert McAlpine, Hemel Hempstead, United Kingdom. E-mail: kvgprakhya@gmail.com
