

Vaishali Dagade, Ph.D.

Structural Engineering Researcher | FEA | Shell Structures | FE Civil

me@vaishalidagade.com
linkedin.com/in/vaishalidagade
vaishalidagade.com

RESEARCH/FEA SUMMARY

Ph.D. structural engineer focused on finite element analysis of composite, sandwich, and functionally graded shell panels. Research experience spans quadrilateral flat shell finite element formulation, static analysis, free vibration analysis, layered material behavior, cylindrical/spherical/conical shell panels, benchmark validation, and interpretation of structural response. Also brings 10+ years of practical structural design, formwork, steel, RCC, and construction-documentation experience.

SELECTED PUBLICATIONS AND AWARDS

- A quadrilateral flat-shell element for the static and dynamic analysis of composite and sandwich cylindrical, spherical, and conical shell panels, Curved and Layered Structures, De Gruyter, 2022.
- Static and free vibration analysis of sandwich shell panels using quadrilateral flat shell finite element, Materials Today: Proceedings, Elsevier, 2022.
- Free vibration response of cylindrical and spherical functionally graded material shell panels using a quadrilateral finite element, Materials Today: Proceedings, Elsevier, 2022.
- Four-node flat shell quadrilateral finite element for analysis of composite cylindrical shells, Lecture Notes in Civil Engineering, Springer.
- Static analysis of composite and sandwich spherical shells using a four-node flat shell quadrilateral finite element, CDPMMH 2024, IIT Mandi.
- Best Paper Award, ICAMEN 2022; Best Paper Award, NIT Kurukshetra 2021.

RESEARCH EXPERIENCE

Ph.D. Researcher | Structural Engineering

COEP Technological University / Savitribai Phule Pune University | 2014 - 2025

- Developed and validated four-node flat shell finite element approaches for composite, sandwich, and FGM shell panels.
- Analyzed cylindrical, spherical, and conical shell panels under static and free-vibration conditions with attention to layered behavior and boundary constraints.
- Worked through formulation, transformation matrices, stiffness and mass matrices, meshing strategy, benchmark comparison, and response interpretation.
- Connected research mechanics with structural design judgment for shell structures, advanced materials, and practical simulation communication.

FIRST Robotics Mentor | FRC Team 2502 Talon Robotics

Eden Prairie, Minnesota | Apr 2022 - Jul 2024

- Mentored students in SolidWorks modeling, prototype fabrication, and structural response thinking for SkyWindFarm high-altitude wind-energy research.

ENGINEERING EXPERIENCE

Chartered Engineer and Proprietor | Vardhaman Engineers and Consultants

Pune, India | Jan 2015 - Dec 2022

- Led structural consulting work across aluminum/wood formwork, RCC, steel structures, municipal infrastructure, audits, and construction support.
- Delivered design reports, load calculations, shop drawings, RFIs, connection details, and field coordination for commercial and residential projects.

Structural Design Engineer / Design Engineer / Structural Designer

Sharp Formwork, Clancy Global Consultancy, Bharti Engineering | 2007 - 2011

- Designed formwork, RCC systems, PT slabs, flat slabs, foundations, industrial steel supports, bracing, and steel connections.
- Used STAAD Pro, ETABS, SAP2000, SAFE, ANSYS, ABAQUS, AutoCAD, Revit, SolidWorks, Tekla, Descon, NISA, and Excel tools across design and analysis workflows.

Assistant Professor | Civil and Structural Engineering

RMD Sinhgad School of Engineering and Dr. D.Y. Patil Institute | 2011 - 2015

- Taught structural analysis, strength of materials, concrete and steel design, applied mechanics, and theory of structures; served as examiner and mentor.

EDUCATION

Ph.D., Structural Engineering

COEP Technological University / Savitribai Phule Pune University

M.E., Structural Engineering

Government College of Engineering Aurangabad

B.E., Civil Engineering

Dr. B.A. Marathwada University

LICENSES AND CREDENTIALS

- FE Civil certified, NCEES
- PE Civil Structural candidate
- Chartered Engineer, India
- Licensed Structural Engineer, Pune Municipal Corporation
- Certified Structural Auditor, PCMC
- Lifetime member, Indian Society of Structural Engineers and Institution of Engineers (India)