

# Shubham Sharma

📍 Bengaluru, India    ✉ sharma.shubham.mailbox@gmail.com    in shubham-sharma-iisc

## Education

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| <b>Indian Institute of Science</b> , Structural Engineering   | Bengaluru, India        |
| <ul style="list-style-type: none"><li>• Thesis: Virtual Element Methods for Phase Field Fracture: Mesh Transitions, Composite Damage, and Stabilization-Free Formulations</li><li>• ISRO Fellowship awardee (2019 - 2023)</li><li>• Skills: Finite Element Method, Solid Mechanics, Fracture Mechanics, Structural Dynamics, Numerical Analysis</li></ul> | Aug 2019 – July 2025    |
| <b>National Institute of Technology, Rourkela</b> , Civil Engineering   | Rourkela, Odisha, India |
| <ul style="list-style-type: none"><li>• Thesis: Neural network based approach for linear elastic analysis of asphalt pavements subjected to moving loads</li></ul>  | Aug 2018 – July 2019    |
| <b>National Institute of Technology, Rourkela</b> , Civil Engineering   | Rourkela, Odisha, India |
| <ul style="list-style-type: none"><li>• Graduated with Honors</li></ul>   | Aug 2014 – July 2018    |

## Experience

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| <b>SST India Pvt. Ltd.</b> , Senior Research Engineer (Engineering Software)   | Bengaluru, India          |
| <ul style="list-style-type: none"><li>• Research and development of the pipe stress analysis software CAEPIPE</li><li>• Development of a cloud-based flow analysis software</li></ul>        | July 2025 – present       |
| <b>Indian Institute of Science</b> , Teaching Assistant – Solid Mechanics  | Bengaluru, India          |
| <ul style="list-style-type: none"><li>• Conducted doubt-clearing sessions twice a week for a class of 100 students</li></ul>   | Aug 2021 – Dec 2021       |
| <b>ModRoof</b> , Summer Intern   | Ahmedabad, India          |
| <ul style="list-style-type: none"><li>• Improved flexural properties of bare cardboard panels</li><li>• Collaborated in designing steel trusses of span ranging from 6 ft to 20 ft</li></ul> | May 2017 – July 2017      |
| <b>South Eastern Railways</b> , Winter Intern  | Sundergarh, Odisha, India |
| <ul style="list-style-type: none"><li>• Gained exposure to construction division activities including fabrication of steel girders of span 45.7 m</li></ul>                                  | Dec 2016 – Dec 2016       |

## Publications

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- A robust virtual element method framework coupling phase-field and cohesive zone models for crack propagation in composite structures**  
Shubham Sharma, Ananth Ramaswamy  
[doi.org/10.1016/j.compstruct.2026.120081](https://doi.org/10.1016/j.compstruct.2026.120081) 
- Fine to coarse mesh transition in phase-field fracture simulations using the virtual element method**  
Shubham Sharma, Himanshu, Ananth Ramaswamy  
[doi.org/10.1016/j.finel.2025.104371](https://doi.org/10.1016/j.finel.2025.104371) 
- A Geometrically Inspired Model for Brittle Damage in Compressible Elastomers**  
Sanhita Das, Shubham Sharma, Ananth Ramaswamy, Debasish Roy, J. N. Reddy  
[doi.org/10.1115/1.4050620](https://doi.org/10.1115/1.4050620) 
- A comparison of lowest order standard and stabilization-free virtual element method for phase-field fracture**  
Shubham Sharma, Ananth Ramaswamy

## Projects

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### **Virtual Element Methods for Phase Field Fracture**

Aug 2019 – July 2025

- 60% reduction in computational time via novel mesh transition strategy
- ABAQUS UEL implementation of VEM
- Voronoi and non-convex mesh generation in MATLAB

### **Modeling of Brittle Damage in Rubbery Polymers**

Aug 2019 – July 2022

- 7x computational speedup via MATLAB parallel programming
- Validated against experimental data

### **Crack Propagation in 3D Adhesive Layers (ISRO Funded)**

Aug 2019 – July 2023

- 3D phase field fracture implementation in ABAQUS
- Quarterly reporting and presentations to ISRO review team

### **Neural Network Based Analysis of Asphalt Pavements**

Aug 2018 – July 2019

- ANN-based surrogate model replacing 3D FEM simulations
- Automated dataset generation pipeline using Python and ABAQUS

## Skills

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### **Numerical Methods & Simulation**

**Programming**

**FEM Software**

## Languages

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**English**

**Hindi**

**Odia**

## References

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**Prof. Ananth Ramaswamy**

**Prof. Debasish Roy**

**Prof. Narayan Sundaram**