# Dr. Yenike Sharath Chandra Mouli

+91 - 9550410625 ysharathchandramouli@gmail.com yenike-sharath-chandra-mouli

## Professional Summary

**Key Achievements:**

- **Spearheaded** the development of a Fortran-based, GPU-accelerated, parallelized open-source code for spontaneous rupture simulation. Achieved 20X speed-up in the code running time.
- **Developed** a new multi-scale constitutive model for unidirectional (UD) composites that requires just 3 virtual experiments for material failure analysis.
- **Formulated** the assumed modes approach with 95% precision to compute the tip position of a single-link robotic arm with link flexibility.
- **Authored** 2 articles in reputed journals, and 3 book chapters and **presented** research at 9 national and international conferences.

## Experience

**DSRI Labs Pvt Ltd.** **03 Nov 2025 – Till Date**
*Sr. Simulation and Analysis Engineer* *Hyderabad, Telangana, India*

- Deputed to Defence Machinary Design Establishment, Secunderabad as CAD Design Engineer.
- Involved in the Design and Analysis of Oil Emulsion Pump for the Indian navy applications.

**Mahindra University** **11 Jan 2024 – 31 Oct 2025**
*Post-Doctoral Researcher* *Hyderabad, Telangana, India*

- **Programmed** a highly optimized **20X speeder**, CPU- and GPU-accelerated code on A100 NVIDIA HPC.
- **Uncovered** key aspects of crack front waves using the spectral boundary integral equations (BIE) method.

**Indian Institute of Technology Kanpur (IITK)** **Aug 2020 – Dec 2023**
*Senior Student Research Associate* *Kanpur, U. P, India*

*Mechanical characterization and structural integrity of radar absorbing paints (RAP).* *Jan 2021 – July 2023*

- **Developed** a micromechanical-based failure assessment strategy that estimates the failure in RAP.
- The numerical results **demonstrated** exceptional accuracy of more than 95%, exhibiting excellent agreement with experimental data.

*Fabrication and characterization of low-cost hybrid composites for ballistic applications.* *Aug 2020 – Dec 2020*

- **Elucidated** preliminary studies on the blast resistance of hybrid composites.
- Contribution led to the **successful determination of optimal layup** sequences and thicknesses.

**Institute of Aeronautical Engineering (IARE)** **June 2014 – June 2015**
*Assistant Professor* *Hyderabad, Telangana, India*

- **Courses offered:** Engineering drawing, Mechanics of solids, Aerospace structures, Finite element methods, and Engineering optimization.
- **Coordinated** a Quad-copter workshop for undergraduate students.

## Education

**Indian Institute of Technology Kanpur** **July 2015 – Dec 2023**
*Ph.D in Aerospace Engineering* *Kanpur, U.P, India.*

**Thesis title:** A Comprehensive Micromechanics Based Damage-inelasticity Model for UD Composites

- **Manufactured and characterized** the epoxy resin behavior under tension, compression, and shear. Further, **developed** a coupled damage-inelasticity model for such thermoset polymers.
- **Implemented** a micromechanics-based coupled damage-inelasticity model that requires just 3 micromechanics-based virtual experiments of unidirectional composites.
- **Fabricated** an in-house pre-preg based laminated composites for the analysis of impact damage tolerance behavior. Numerical **validation** was carried out through FE simulations using Abaqus software.

**Univeristy College of Engineering (UCE),OU** **Dec. 2012 – June 2014**
*M.E (Automation and Robotics) in Mechanical Engineering* *Hyderabad, Telangana, India.*

- The effect of link flexibility on the tip position of a **single-link robotic arm** was analyzed at various rotational speeds and tip masses. Numerical results are in agreement with experimental data with 95% accuracy.

**MLR Institute of Technology, JNTUH** **Sep. 2008 – April 2012**
*B.Tech (Aeronautical Engineering)* *Hyderabad, Telangana, India.*

# Award and Honors

- **Membership:** Member of the European Geosciences Union (EGU) for the year 2025 (ID 800379).
- **Bagged** Prof. Abid Ali Memorial Scholarship Awarded by the UCE(A), Osmania University, for being topper in the academic calender 2012-2013.
- **Secured** all India rank of 209 in GATE-2012 in Aerospace Engineering.

# Technical Skills

**Languages**: FORTRAN 77, C, Python, Matlab, and LaTeX.
**Software Tools**: Abaqus, Ansys, Hypermesh, and Catia.
**Operating system platforms**: Windows, Linux (Ubuntu & Cent OS), Oracle VM VirtualBox.

# Certifications

- **Linear Regression with NumPy and Python:** Online in Coursera, May 2023.
- **Programming for everybody (Getting started with Python):** Online in Coursera, Nov 2021.
- **Fracture Mechanics:** NPTEL online certification course, July - Oct 2019, IIT Madras.

# Position of responsibilities

- **Student tutor for ESO202A: Mechanics of solids**, during 2018-2019-I and 2019-2020-I, IIT Kanpur.
- **Maintenance committee member**, Hall-7, IIT Kanpur, during 2016-2018.
- **Coordinator for RoboFeast-2015**, National quadcopter championship workshop, 24-25 Sep 2014, Aeronautical Department, IARE, Hyderabad.

# Workshops and short-term courses

- **QT-06 Quantum Communication**, Aug 18 - Sep 11, 2025, by Electronics & ICTA.
- **QT-05 Quantuum Computation**, July 11 - Aug 02, 2025, by Electronics & ICTA.
- **QT-03 Basics of Quantum Programming**, May 03 - Jun 07 , 2025, by Electronics & ICTA.
- **QT-02 Foundations of Quantum Technologies**, April 11 - May 03, 2025, by Electronics & ICTA.
- **QT-01 Quantum Technology Applications**, February 28 - March 22, 2025, by Electronics & ICTA.
- **Multiscale Modeling and AI/ML for Advanced Materials and Manufacturing Applications**, 24 July 2024, by the Department of Materials Science and Metallurgical Engineering, IITH.
- **Contact Mechanics and Elements of Tribology**, 22 Jan - 26 Jan 2024, a short-term course by the Centre des Matériaux de Mines Paris.
- **Machine learning and applications**, 29 May – 2 June 2023, Computer Science Department, NIT Warangal.
- **International workshop on computational techniques for smart materials modeling and bio-medical applications**, Mechanical Department, 24 – 30 Jan 2022, IIT Mandi.
- **HPC workshop on materials and mechanics:** Workshop of National Supercomputing Mission's online, 28- 30 July 2021, IIT Madras.
- **DEAL.II - An open source finite element library**, 29 Feb - 2 Mar 2020, Mathematics and Statistics Department, IIT Kanpur.
- **FDP on Compressible aerodynamics**, during 23 - 27 June 2014, Aeronautical Department, IARE, Hyderabad.
- **Latest developments in avionics with reference to Boeing 787 Dreamliner and Airbus-A380**, on 13$^{th}$ July 2013, Aeronautical Department, Gitam University, Hyderabad.
- **CIM workshop/training program**, on 23$^{rd}$ Dec 2010, Aero-Mechanical Division, IARE, Hyderabad.

# Publications

**Research articles**

- **Sharath Chandra Mouli, Y.**, and Kunnath, R (2025). Spectral Boundary Integral Equation Method with Traction Based Formulation: A Code for Dynamic Rupture Simulations. Submitted to Bulletin of the Seismological Society of America, Preprint DOI: http://dx.doi.org/10.13140/RG.2.2.18610.93125.
- **Sharath Chandra Mouli, Y.**, and Upadhyay, C. S (2024). A multiscale damage-inelasticity model for unidirectional composites using micromechanics-based virtual testing. Mechanics of Advanced Materials and Structures (MAMS). DOI: https://doi.org/10.1080/15376494.2025.2466847.
- **Sharath Chandra Mouli, Y.**, Upadhyay, C. S., and Mohite, P. M. (2023). A coupled damage - inelasticity model for epoxy with an application to unidirectional composites. Journal of reinforced plastics and composites. DOI: https://journals.sagepub.com/doi/full/10.1177/07316844231222653.
- Raju, E. Madhusudan, L. Siva Rama Krishna, **Sharath Chandra Mouli,Y.**, and V. Nageswara Rao. Effect of Link Flexibility on tip position of a single link robotic arm. In Journal of Physics: Conference Series, vol. 662, no. 1, p. 012020. IOP Publishing, 2015. DOI: 10.1088/1742-6596/662/1/012020.
- **Sharath Chandra Mouli, Y.**, and Upadhyay, C. S (2023). A micromechanics-based generalized damage initiation model for unidirectional composites. (Ready for submission)

**Conference proceedings**

- **Sharath Chandra Mouli, Y.**, and Kunnath, R. (2025). Crack front waves under Mode II rupture dynamics. In Abstract book, EGU General Assembly 2025, Vienna, Austria, 27 April–2 May 2025.

- **Sharath Chandra Mouli, Y.**, and Kunnath, R. (2024). Spectral boundary integral equation method: Analysis of crack front waves. In Proceedings of 69$^{th}$ international congress of ISTAM, CHRIST (Deemed to be University), Bangalore, December 19-21, 2024.
- **Sharath Chandra Mouli, Y.**, and Upadhyay, C. S (2024). Meso-level coupled damage-inelasticity model for unidirectional composites using micromechanics for virtual testing. In Abstract book, 43$^{rd}$ Solid Mechanics Conference – SolMech 2024, Wrocław, Poland, 16–18 September 2024.
- **Sharath Chandra Mouli, Y.**, Upadhyay, C. S., and Mohite, P. M. (2023). The computational implementation of two-stage radial return method for hydrostatic stress-dependent coupled elasto-plastic damage model on epoxy. Proceedings of 7$^{th}$ National Finite Element Developers' / FEASTSMT Users' Meet, IIT Delhi, 30$^{th}$ April 2023.
- Upadhyay, C. S., and **Sharath Chandra Mouli, Y.** (2022). A micromechanics based generalized damage initiation model for unidirectional composites. In Abstract book, ICoNSoM 2022, Alghero, Italy, 13 - 16 June 2022.
- **Sharath Chandra Mouli, Y.**, Upadhyay, C. S., and Mohite, P. M. (2022). A new hydrostatic stress-dependent yield criteria and on growth of coupled inelasticity and damage in polymer matrix materials, Proceedings of 8$^{th}$ International Congress on Computational Mechanics and Simulation, IIT Indore, 09 - 11 December 2022.
- **Sharath Chandra Mouli, Y.**, Piyush, Mohan, P. R. K., Upadhyay, C., and Mohite, P. M. (2019). Low-velocity impact behavior on in-house prepreg made composite laminates. In Proceedings of 64th international congress of ISTAM, IIT Bhubaneswar, 09 - 12 Dec 2019.

**Book chapters**

- Fanta, S., **Sharath Chandra Mouli, Y.**, Upadhyay, C., & Mohite, P. (2022). Micromechanics-based technique of material homogenization and determination of fracture plane in advance composites. In Recent advances in computational and experimental mechanics, vol ii (pp. 47–58). Springer.
- Raju, E. M., Krishna, L. S. R., **Sharath Chandra Mouli, Y.**, and Rao, V. N. (2021). Study on the effect of link flexibility on tip position of a single link robotic arm. New Approaches in Engineering Research Vol. 3, 142–151.
- **Sharath Chandra Mouli, Y.**, Upadhyay, C. S., and Mohite, P. M. (2020). Intra-ply damage modeling of low-velocity impact on composite laminates. In S. C. Satapathy, K. S. Raju, K. Molugaram, A. Krishnaiah, and G. A. Tsihrintzis (Eds.), International conference on emerging trends in engineering (ICETE) (pp. 731–738). Springer.

# Relevant coursework

- Mechanics of materials
- Aerospace structures
- Solid mechanics
- Continuum mechanics
- Composite materials
- Finite element methods
- Plasticity
- Damage mechanics
- Mechanical vibrations

# References

**Dr. C. S. Upadhyay**
Professor
Aerospace Engineering
IIT Kanpur,
Kanpur, India.
shekhar@iitk.ac.in

**Dr. P. M. Mohite**
Professor
Aerospace Engineering
IIT Kanpur,
Kanpur, India.
mohite@iitk.ac.in

**Dr. Ranjith Kunnath**
Professor, Mech and Aero Dept.
École Centrale School of Engineering,
Mahindra University , Hyderabad,
Telangana, India -500043.
ranjith.kunnath@mahindrauniversity.edu.in