Rajesh Nakka

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Employment History

Aug'2023 – Dec'2023 — **Post-doctoral research (consultant)** in designing twin screw compressor rotor profile using generative learning. My role involves building and training the generative adversarial neural networks that can produce new rotor profiles.

Aug'2015 – Nov'2016 — **Assistant Professor** at Mechanical Engineering Department, Bapatla Engineering College, India. I enjoyed teaching the mechanics of materials course for undergraduate students, in two semesters.

Aug'2014 – July'2015 — **PGET** Post Graduate Engineer Trainee at Mahindra Research Valley, Mahindra & Mahindra, Chennai, India.

Education

Aug'2018 — July'2023 — **Ph.D., Indian Institute of Science** in Aerosapce Structures.
Thesis title: *Prediction of multi-physical properties of fibre-reinforced composites using deep learning*. In brief, it involved generating a large number of microstructure images, finite element homogenisation and building CNN models, with extensive use of Python and Julia languages.

Aug'2012 — July'2014 — **M.Tech. Mechanical Engineering, IIT Bombay** in Machine Design.
Thesis title: *Finite Element Simulation of Bulk Wave Propagation in Non Linear Solids*.

Aug'2008 — July'2012 — **B.Tech. Mehcanial Engineering, JNUH College of Engineering, Hyderabad.**

Skills

Coding	Python (4/5), Julia (4/5), LaTeX (4/5), Git (3/5), …
Deep learning Frameworks	PyTorch, Tensorflow
Misc.	gmsh, FreeCAD, Asymptote: The Vector Graphics Language,
Languages	English, Telugu and Hindi.

Research Publications

Journal Articles

1. P. K. Attada, **Rajesh Nakka**, D. harursampath, and S. A. Ponnusami, "Computational evaluation of absorption characteristics ofceramic-based auxetic materials in x-band frequencyrange," *Smart Materials and Structures*, Aug. 2023. DOI: 10.1088/1361-665x/acf53d.

2. **Rajesh Nakka**, D. Harursampath, and S. A. Ponnusami, "A generalised deep learning-based surrogate model for homogenisation utilising material property encoding and physics-based bounds," *Scientific Reports*, vol. 13, no. 1, Jun. 2023. DOI: 10.1038/s41598-023-34823-3.

3 **Rajesh Nakka**, A. P. Kumar, D. Harursampath, and S. A. Ponnusami, "Influence of fibre cross-section profile on the multi-physical properties of uni-directional composites," *Composite Structures*, vol. 321, p. 117 321, Oct. 2023. DOI: 10.1016/j.compstruct.2023.117321.

4 **Rajesh Nakka**, D. Harursampath, M. Pathan, and S. A. Ponnusami, "A computationally efficient approach for generating RVEs of various inclusion/fibre shapes," *Composite Structures*, vol. 291, p. 115 560, Jul. 2022. DOI: 10.1016/j.compstruct.2022.115560.

References

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