Krishnanunni C G

PhD student (Dept of Aerospace Engineering)
University of Texas at Austin, USA
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EDUCATION

University of Texas at Austin, USA 2021-Present
Ph.D. in Engineering Mechanics

- Cumulative **GPA: 4.0 / 4.0**

Indian Institute of Technology Madras, India 2017-2019
MS in Structural Engineering

- Cumulative **GPA: 9.41 / 10**

National Institute of Technology Calicut, India 2013-2017
B. Tech in Civil Engineering

- Cumulative **GPA: 9.15 / 10**

RESEARCH INTERESTS

My current research is at the intersection of scientific machine learning and mechanics. In particular, I work at the interface of *PDE constrained inverse problems and Machine Learning*. Previously, I had undertaken several research projects in the field of *structural health monitoring, computational dynamics and signal processing.*

AWARDS

- **INSPIRE scholarship**, Central government of India for pursuing higher education in pure sciences. 2013
- **Summer research fellowship**, Indian Academy of Science. 2015
- **Outstanding B. Tech project award**, association of Engineers, Kerala, India. 2017
- **Best MS Thesis award** in Structural Engineering, Indian Institute of Technology Madras. 2020

RECENT JOURNAL PUBLICATIONS

- Shereena O. A., **C. G. Krishnanunni.,** B. N. Rao., (2022). Simultaneous state-input-stiffness estimation for nonlinear duffing oscillators avoiding Jacobian linearization. *International Journal of Structural Stability and Dynamics*, IJSSD.
- **C. G. Krishnanunni.,** B. N. Rao., (2021). Indirect health monitoring of bridges using Tikhonov regularization scheme and signal averaging technique. *Structural Control and Health Monitoring*. 28(3).

RECENT INVITED TALKS

- **C. G. Krishnanunni**., Tan Bui-Thanh., (2022). Layerwise sparsifying training and sequential learning strategy for neural architecture adaptation. *SIAM Conference on Uncertainty Quantification*, 04/2022.

RECENT RESEARCH INVESTIGATIONS

- **Developing efficient algorithms for neural architecture adaptation** 2022-Present
  Advisor: Prof. Tan Bui-Thanh
  - Developing a method for automatically determining neural network architecture given a data-set.
  - Combines concepts from **Information theory and Optimization theory** to achieve the objective.
- **Indirect health monitoring of bridges** 2017-2019
  Advisor: Prof. B. N. Rao (MASTER'S THESIS)
  - Developing a method for **damage detection in bridges** based on dynamic response of a passing vehicle so that no sensors needs to be installed on the bridge.
  - **Filtering techniques, optimization schemes and structural dynamics** principles are integrated to achieve the objective.
- **Fast and accurate damage detection algorithm for structures using vibration data.** 2017
  Advisor: Dr. Sajith A. S and Dr. Mohammed Ameen (BACHELOR'S THESIS)
  - Developed a technique to detect and quantify structural damages based on the change in vibration responses and static displacement measurements.
  - A **sensitivity analysis coupled with an optimization scheme** is used to detect damage for a variety of structures.
- **Mathematics of Nonlinear Hyperbolic Waves and Compressible Fluids** 2015
  Guide: Prof. Phoolan Prasad, (IISc Bangalore) (RESEARCH FELLOWSHIP)
  - Mathematical Review of nonlinear partial differential equations, compressible fluid dynamics and developed a **finite difference scheme for the Newell whitehead Segel equation**.

PROFESSIONAL EXPERIENCE

- **Teaching Assistant**, *University of Texas at Austin*, USA 2021-2022
  - Teaching assistant for course Analytical Methods.
- **Graduate Research Assistant**, *University of Texas at Austin*, USA 2021-Present
  - Research Assistant to Prof. Tan Bui-Thanh, Institute of Computational Engineering and Sciences
- **Teaching Assistant**, *Indian Institute of Technology Madras*, Chennai 2017-2019
  - Teaching assistant for courses, Structural optimization and Finite Element Analysis.

JOURNAL ROLES

- **Peer Reviewer,** *Applied Ocean Research*, Elsevier.

SKILLS

Software: ANSYS ®, MATLAB®, STAAD ®, LaTeX®, AutoCAD®, ORIGIN®
Programming Languages: C++, Java, Python
Linguistics: English, Malayalam, Tamil, Hindi.