Krishnanunni C G

Curriculum Vitae

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

Master of Science (MS) [Structural Engineering] 2017-2019
Indian Institute of Technology Madras, Chennai, India

- Secured a **CGPA of 9.41 / 10**

Bachelor of Technology (B. Tech) [Civil Engineering] 2013-2017
National Institute of Technology Calicut, India

- Secured a **CGPA of 9.15 / 10**

RESEARCH INTERESTS

My current research is broadly focused on developing new Machine Learning Algorithms for applications involving PDE's. 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, structural dynamics and signal processing*.

SCHOLASTIC ACHIEVEMENTS

- Recipient of **INSPIRE scholarship** for pursuing higher education in pure sciences by the central government of India. 2013
- Recipient of **the summer research fellowship** by the Indian Academy of Science. 2015
- Secured **rank 3 in B. Tech** in Civil Engineering, National Institute of Technology Calicut. 2017
- **Outstanding B. Tech project award** by the association of Engineers, Kerala, India. 2017
- **Best MS Thesis award** in Structural Engineering, Indian Institute of Technology Madras. 2020

RECENT JOURNAL PUBLICATIONS

- **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).
- **C. G. Krishnanunni.,** B. N. Rao., (2019). Decoupled technique for dynamic response of vehicle-pavement systems. *Engineering Structures*. 191, 264-279.
- G. Snehasagar., **C. G. Krishnanunni**., B. N. Rao., (2019). Dynamics of vehicle–pavement system based on a viscoelastic Euler–Bernoulli beam model. *International Journal of Pavement Engineering* DOI: 10.1080/10298436.2018.1562189.

RECENT CONFERENCE PROCEEDINGS

- **Suraj Singh., Anilkumar P M., C. G. Krishnanunni**., B. N. Rao., (2019). Parametric perturbation studies on the behaviour of bistable unsymmetrical laminates. *International Conference on Theoretical Applied Computational and Experimental Mechanics*, 12/2021.

- **C. G. Krishnanunni**., B. N. Rao., (2019). Timoshenko beam-vehicle coupled dynamic model for pavement roughness identification. *US National Congress on Computational Mechanics*, 07/2019.

RESEARCH INVESTIGATIONS

- **Vehicle-structure interaction dynamics for health monitoring applications** 2017-2019
  Guide: 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.
- **Total and Updated Lagrangian formulation for a general plane truss element** 2018
  Guide: Dr. U. Saravanan; Course: Advanced FEM (COURSE PROJECT)
  - Deriving the **tangent stiffness matrix for plane truss element** based on Blatz-Ko material model for foam rubber.
  - Solve the resulting nonlinear algebraic equations using **Cuckoo Search algorithm or Arc length method** for statically indeterminate truss problems.
- **A damage detection algorithm for structures using vibration data.** 2017
  Guides: 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 cantilever beam, fixed-fixed beam and a laboratory tested space frame model.
- **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.

PROFESSIONAL SERVICES

- **Volunteer, National Service scheme** 2016-2017
  - Collaborated with PRISM (Promoting Regional Schools to International Standards through Multiple Intervention) for assessing the educational standards in regional schools.
- **Representative of B. Tech Civil Engineering** 2016
  - Member of the department consultative committee and class committee responsible for evaluating the performance of the students, course plan modifications etc.

SKILLS

Software: ANSYS ®, MATLAB®, STAAD ®, LaTeX®, AutoCAD®, ORIGIN®

Programming Languages: C++, Java, Python

Linguistics: English, Malayalam, Tamil, Hindi.