BALAJI PULIPAKKAM SRIDHAR

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EDUCATION

Carnegie Mellon University (GPA: 3.90/4) — **Pittsburgh, PA**
Doctor of Philosophy, Computational Mechanics — **August 2027**
Coursework: Continuum Mechanics & Multiscale Modelling; Robotic Materials: Designs, Principles & Mechanics; Inelasticity

Carnegie Mellon University (GPA: 3.90/4) — **Pittsburgh, PA**
Master of Science, Computational Mechanics — **August 2024**
Coursework: Finite Element Methods; Numerical Methods; Probability and Estimation Methods for Engineering Systems

College of Engineering Guindy (CEG), Anna University (CGPA: 8.4/10) — **Chennai, India**
Bachelor of Engineering, Civil Engineering — **April 2021**
Coursework: Transform Techniques and Partial Differential Equations, Construction Materials and Techniques, Structural Analysis 2

SKILLS

Programming Languages: Python, C++, C, MATLAB, MicroPython
Technical Tools : FEniCS, Ansys, SolidWorks, AutoCAD, Blender, ArcGIS, Linux, Slurm, Command Line, CMake
Documentation and Version Control: LaTeX, MS Office, Adobe Suite, Git

PROJECTS AND PUBLCATIONS

Carnegie Mellon University (CMU)

Phase-field Thermomechanics of Dynamic Fracture — **Jan 2023 – Present**

- Investigating the coupling of heat transfer with fracture and elastodynamics for crack propagation using phase field models.
- Applied Python for solving PDEs using computational techniques: staggered scheme, Newmark method, and FEM.
- Finalist at ASTM M.R. Mitchell Student Presentation Forum on Fatigue and Fracture Mechanics, Nov 8, 2023
- Presented a Contributed presentation at SIAM Conference on Materials Science, May 2024

Aerodynamic Analysis of a Cornering FSAE Race Car for Carnegie Mellon Racing Team — **Feb 2023 – May 2023**

- Conducted steady-state simulations with a 30 million-cell mesh on Ansys Fluent, utilizing the Bridges-2 supercomputer
- Generated an aero map and various flow behavior reports, including pressure contours, velocity contours, velocity vectors, and streamlines, to provide actionable optimization recommendations.

Smart Chess Board (https://v-srirama.github.io/12778-Project/) — **Aug 2022 – Dec 2022**

- Integrated Raspberry Pico, load cells and signal amplifiers in a circuit for sensing load distribution among the corners of a chess board and converting analog signals from the load cell into digital signals.
- Developed code to carry out digital signal processing and the algorithm to determine the position of pieces on a chess board.

College of Engineering Guindy (CEG), Anna University

Seismic Hazard Analysis: A Case Study on Chennai (DOI: 10.1007/978-981-16-8667-2_35) — **Oct 2020 – Mar 2021**

- Evaluated the vulnerability of buildings and identified areas in Chennai which are prone to structural damage by implementing Support Vector Regression on the compiled building and soil parametric data which achieved an accuracy of 71 percent.
- Best Paper presentation award at 5th International Conference on Architecture and Civil Engineering-Singapore, August 2021

WORK EXPERIENCE

Carnegie Mellon University — **Pittsburgh, PA**
Teaching Assistant, Probability and Estimation Methods for Infrastructure Systems — **Aug 2023 – Dec 2023**

- Provided academic assistance to professor and students by facilitating office hours & promoting a positive environment.

Carnegie Mellon University — **Pittsburgh, PA**
Grader, Solid Mechanics — **Jan 2023 – May 2023**

- Graded assignments for over 30 students in Solid Mechanics, providing constructive feedback to enhance learning outcomes.

Indian Institute of Technology, Madras — **Chennai, India**
Project Associate — **Oct 2021 – Mar 2022**

- Collaborated on corrosion study of anchorage systems in post-tensioned concrete girders in pre-stressed structures.
- Conducted electrochemical tests (half-cell potential, impedance spectroscopy, linear polarization) for rebar corrosion assessment; performed material characterization (porosimetry, SEM, force tensiometer) for concrete composition assessment.

VOLUNTEERING ACTIVITIES

Propulsion Team Member, CMSR, CMU — **Oct 2022 – Present**
Volunteer, CEG Alumni Association of North America — **Aug 2022 – Present**
Head of Design, Society of Civil Engineers, CEG — **Aug 2019 – May 2020**