# BALAJI PULIPAKKAM SRIDHAR

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## EDUCATION

**Carnegie Mellon University (GPA: 3.90/4)** **Pittsburgh, PA**
*Doctoral Candidate, Computational Mechanics* **Expected August 2027**
*Master of Science, Computational Mechanics* **August 2024**
*Coursework*: Finite Element Methods; Numerical Methods; Probability and Estimation Methods for Engineering Systems; Continuum Mechanics & Multiscale Modelling; Robotic Materials: Designs, Principles & Mechanics; Inelasticity

**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
**Technical Tools:** FEniCS, Ansys, SolidWorks, AutoCAD, ArcGIS, Blender, Linux, Slurm, CLI, CMake, Git, LaTeX, MS Office, Adobe Suite

## PROJECTS AND PUBLCATIONS

**Carnegie Mellon University (CMU)**

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

- Developing coupled thermo-mechanical phase-field models for dynamic fracture with energy balance and elastodynamics; implemented staggered and implicit schemes to study stability, energy dissipation, and crack propagation.
- Recipient, Computing Allocation MCH240083 for large-scale thermomechanical fracture simulations.
- Presenter and Session Co-Chair, Modeling and Simulation session, Materials Science & Technology Conference (2024).
- Contributed presentation, SIAM Conference on Mathematical Aspects of Materials Science (2024)
- Finalist, ASTM M.R. Mitchell Student Presentation Forum on Fatigue and Fracture Mechanics (2023)

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

- Designed controlled simulation experiments to assess the sensitivity of aerodynamic performance to flow curvature, leveraging high-performance computing workflows to quantify efficiency tradeoffs under realistic operating conditions

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

- Implemented an embedded signal-processing pipeline for calibrated load-cell data, using averaging and threshold detection to 26 localize discrete object placement from distributed force measurements with ~90% accuracy

**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**

- Abstracted physics-based structural simulations into regression models to enable large-scale spatial screening of seismic response 30 across an urban building inventory.
- Best Paper presentation award at 5th International Conference on Architecture and Civil Engineering-Singapore, August 2021

## WORK EXPERIENCE

**DEVCOM Army Research Laboratory (ARL) with ORAU** **Aberdeen, MD**
*Journeyman Fellowship (ARL – Research Associateship Program)* **Feb 2025 – Mar 2026**

- Fellowship supported full-time PhD research in computational mechanics at CMU
- Performed large-scale numerical simulations using Department of Defense high-performance computing resources

**Carnegie Mellon University** **Pittsburgh, PA**
*Teaching Assistant, Probability and Estimation Methods for Infrastructure Systems* **Aug 2023 – Dec 2023; Aug 2024 – Dec 2024**

- Supported graduate level instruction through office hours, grading, and student mentoring in probability and estimation methods

**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.
- Performed electrochemical testing and material characterization to assess reinforcement corrosion and concrete durability.

**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.