Sateesh Pechetti
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SUMMARY

Mechanical Engineer with 5+ years of experience in FEA, structural mechanics, and testing, with deep proficiency in ANSYS MAPDL and LS-DYNA. Strong background in scripting, simulation validation, and cross-platform testing (Windows/Linux/HPC). Skilled in software debugging, numerical methods, and technical reporting.

WORK EXPERIENCE

Arizona State University, Tempe: Application & Simulation Engineer **October 2022 - Present**

- Enhanced a finite element (**FE**) model replicating the setup for testing a soft body armor shoot pack by the National Institute of Justice (**NIJ**).
- Used **LS-DYNA** to generate a predictive model using material data obtained from reliable open-source data and ASU laboratory experiments
- Executed simulations on ASU's Agave supercomputer (Linux HPC) to reduce computational time.
- Automated simulation workflows using LS-DYNA and Linux shell scripts on Agave HPC to reduce simulation setup time by 20%.
- The simulations replicated the behavior of the shoot pack under impact. The accuracy of the FE model is checked using output metrics, such as the number of penetrated and back face signatures (BFS). These output metrics are validated against ballistics test data from **Honeywell** company, which funded the research work
- Validated simulation accuracy by comparing numerical outputs to experimental results using regression models and neural networks. Programmed custom analysis tools in C++ for post-processing FEA results.
- Achieved 95% scorrelation with ballistic test results by analyzing data using linear, quadratic regression, **ANOVA**, and neural networks from a custom-built **C++** program and **JMP** software
- Presented the technical results to internal and external stakeholders and supported post-analysis reporting. Authored detailed technical documentation and project proposals summarizing simulation results, methodology, and validation techniques.

Arizona State University, Tempe: Teaching Assistant & Grader **August 2023 - May 2024**

- Assisted Dr. Subramaniam Rajan as a teaching assistant for an undergraduate course, CEE321 *Structural Analysis and Design*. Prepared and proofread solutions for quizzes and projects
- Graded weekly quizzes and projects. Additionally, held office hours 6 hours a week. Acted as a product expert during academic demos and tutoring sessions, explaining software tools and simulation methodologies to students and stakeholders.

Arizona State University, Tempe: Structural/Composite Testing (NASA Project) **February 2023 - May 2024**

- Operated a Digital Image Correlation (**DIC)** setup for obtaining strain data and an MTS machine for load and displacement data during testing.
- Prepared composite specimens for material characterization tests (tension, compression, shear, DCB, and ENF). Tested these specimens on the **MTS** 810 and Exceed machines. Achieved a standard deviation of less than 5%
- Work was sponsored by **NASA-GRC**, Cleveland

Gayatri Vidya Parishad, Vishakhapatnam: Application Engineer **March 2019 - July 2021**

- Participated in the installation and validation of mechanical systems, ensuring proper hardware setup for structural analysis and testing.
- Designed and analyzed a robotic exoskeleton arm using CATIA and SolidWorks for structural performance under dynamic loading.
- Developed ANSYS APDL scripts to analyze dynamic loading on exoskeleton arm components.
- Verified simulation results by comparing them with physical test data and refined mesh and boundary conditions accordingly.
- Conducted detailed thermal and mechanical simulations in ANSYS, validating structural integrity through Von Mises stress and safety factor
- Provided post-sale technical support by troubleshooting inconsistencies in FEA models and validating outputs against experimental and industrial test data. Drafted technical documentation and reported analysis to stakeholders, aligning with engineering best practices. Led installation and physical testing efforts in a team environment, enhancing design iteration speed.
- Applied logic and material engineering principles to evaluate real-world usage environments

ACADEMIC PROJECTS

Space Truss and Planar Frame Analysis: Course Project (CEE532) **August 2023 - December 2023**

- Developed **C++** projects for solving space truss and planar frame structural problems. The program takes an input text file describing the model and creates an output file containing details of the input model, as well as computed nodal displacements, element stresses, support reactions, and error norms. Achieved the error norms approaching zero

Plane Elasticity Program: Course Project (MAE527) **January 2023 - May 2023**

- Developed MATLAB program for solving plane stress and strain problems for 4-noded quadrilateral elements using iso-parametric formulation and numerical integration.
- The program requires an input text file describing the model and creates the output file containing details of the input model, computed nodal displacements, support reactions, element strains, element stresses, element stress invariants, and error norms.

EDUCATION

Master of Science: Mechanical Engineering **May 2024**
Arizona State University, Tempe, AZ GPA 3.71
Bachelor of Technology: Mechanical Engineering **July 2021**
Jawaharlal Nehru Technological University, Kakinada GPA 4

TECHNICAL SKILLS

Design & Modeling: SOLIDWORKS, CATIA, AutoCAD, MATLAB
Simulation & Analysis: ANSYS MAPDL, LS-DYNA, JMP, FEA, Thermal Simulations
Programming & Scripting: Python, C++, MATLAB, Bash, Java, G-code
Systems & Tools: Linux (HPC), Windows, Azure/AWS (basic), GIT, Azure DevOps
Certifications: Dassault Systems (APSSDC, Dec 2019), MATLAB Certification