Sagar Patil

Solution Developer

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SUMMARY

Solution Developer with 1.7 years of experience in software customization and automation, working with tools like HyperMesh and Primer. Skilled in HPC configuration and support, focused on optimizing workflows and improving software functionality. A proactive problem-solver dedicated to delivering effective solutions.

EDUCATION

Sinhgad institute of technology & Science Pune (SITS)

B.E IN MECHANICAL ENGINEERING   *2017 – 2020*

Sunbeam Institute of technology, Pune

CDAC (PG-DAC)   *Jul 2023 – Dec 2023*

EXPERIENCE

Solution Developer   Jan 2024 – Present
Tata Technologies

SKILLED - GET   Jan 2023 – Jan 2024
Tata Technologies

Work Experience:

Software development

- Developed and implemented custom automation solutions for software applications, including HyperMesh and Primer, enhancing efficiency and user experience.
- Collaborated with cross-functional teams to gather requirements and deliver tailored software solutions that meet project goals.
- Conducted troubleshooting and resolved software-related issues, ensuring minimal downtime and smooth operation.
- Created detailed documentation for automation processes and configurations to facilitate knowledge sharing and training.
- Assisted in the integration of new tools and technologies to streamline workflows and improve overall productivity.
- Engaged in continuous learning to stay updated on industry trends and emerging technologies relevant to software development.

HPC

- Configured and supported High-Performance Computing (HPC) environments, optimizing resource allocation and performance.
- Conducted comprehensive benchmarking on High-Performance Computing (HPC) environments for various solvers, including ANSYS Fluent, Abaqus, LS-DYNA, and FEMFAT.
- Developed and executed benchmarking protocols to evaluate the performance and efficiency of different solvers under varying workloads.
- Analyzed performance metrics such as computation time, resource utilization, and scalability to identify optimization opportunities.
- Collaborated with cross-functional teams to implement recommendations based on benchmarking results, enhancing solver performance in production environments.
- Assisted in configuring and optimizing HPC resources to maximize performance for specific solver applications.

- **Automated quality check & report generation:**
  - Developed a custom tool within HyperMesh to assess the quality of models and elements based on specified quality criteria.
  - Implemented automated quality checks to streamline the review process, significantly reducing manual effort and errors.
  - Designed the tool to generate comprehensive Excel reports detailing quality metrics and compliance status, facilitating easier analysis and reporting
  - Conducted thorough testing and validation of the tool to ensure accuracy and reliability in quality assessments.

- **Bolt & Contact force extraction & deck creation tool:**

  - Developed a Tcl script to automate the extraction of bolt and contact forces from CAE simulations, addressing the manual and error-prone processes currently in use.
  - Created functionalities to extract forces for specific load cases or all steps with a single click, enhancing efficiency in simulation requests.
  - Implemented features to extract forces for all bolts or selected bolts, providing flexibility in data retrieval.
  - Generated comprehensive Excel reports with predefined nomenclature, improving clarity and organization of output data.
  - Incorporated functionality to identify and highlight bolts with maximum forces, facilitating quick assessment of critical components.
  - Automated the creation of Abaqus decks for bolt analysis, including essential contact and section outputs for each step, streamlining workflow.
  - Developed an automated process for preload loss analysis deck creation, further reducing manual effort.
  - Designed the tool for integration into any version of HyperMesh, ensuring broad usability across projects.

- **Mfluid generation for Virtual Mass Method**

  - Developed an automated tool to create coarse meshes from fine mesh models, improving efficiency and reducing manual effort.
  - Implemented feature extraction from the geometry of the model to facilitate accurate coarse mesh generation.
  - Achieved automated equivalence of nodes between fine mesh and coarse mesh models, ensuring consistency in simulation results.
  - Streamlined the workflow for mesh generation, significantly decreasing processing time and enhancing productivity.
  - Validated the coarse mesh against the fine mesh to ensure fidelity and performance in subsequent simulations.
  - Collaborated with team members to refine the automation process based on user feedback and best practices.

- **HPC Benchmarking for LS-DYNA and ANSYS Fluent**

  - Conducted benchmarking of LS-DYNA and ANSYS Fluent to assess performance and efficiency within a High-Performance Computing (HPC) environment.
  - Configured HPC environment for efficient job submission and resource allocation.
  - Developed protocols for evaluating solver performance under varying loads.
  - Analyzed results to identify bottlenecks and provided recommendations for configuration adjustments to enhance solver performance.
  - Collaborated with cross-functional teams to implement best practices for job submission and resource management in the HPC environment.

- Documented benchmarking methodologies and findings, creating comprehensive reports to guide future projects and optimization efforts.

TECHNICAL SKILLS

- **Technologies & Applications:** Hypermesh, HPC (High Performance Computing)
- **Programming Languages:** JavaScript, React Js, SQL,HTML, CSS, JAVA, TCL/TK, Linux(Shell scripting)

CERTIFICATION & RECOGNITION

- **Rewarded for COM (Champion Of Month) award in Tata technologies for project "Mfluid generation for Virtual Mass Method".**
- **Basics of Hypermesh (Altair Portal).**
- **Finite Element Modeling Customization in Hypermesh (Altair Portal).**
- **High Performance Computing & AI (Altair)**