



American Lightweight Materials
Manufacturing Innovation Institute

Position: High-Performance Computing (HPC) IT Specialist

Department: Engineering

Reporting To: Director of ICME

Job Location:

**LIFT ALMMII Headquarters
1400 Rosa Parks Blvd
Detroit, MI 48216**

Scope of Work & Purpose:

A computer science or information technology expert that will configure and maintain multiple computing architectures to support massively parallel processing (MPP) high-performance computing (HPC). This individual will support systems required for modeling and simulation and configure commercial and open-source software packages, with linking of compatible libraries and software for inter-software communication.

To support this SOW, a part-time employee or contract employee with billable service hours is recommended. A full-time employee may also be suitable depending upon individual skillset.

RESPONSIBILITIES

- Configure and maintain a computing cluster with a head node, multiple compute nodes, a job scheduler, multiple virtual machines (VMs), and storage systems (e.g., NAS-type storage). Occasional support may be required for computing systems that are separate from the cluster.
- Work closely with a modeling and simulation engineer to configure computing architecture(s) to support simulation work involving both commercial and open-source software codes. This will include installing scientific software and coordinating libraries and/or software versions when applicable.
- Meet regularly with a modeling and simulation engineer (e.g., weekly or bi-weekly) to discuss requirements and status-updates, and support “on-call” requests (within normal business hours) for time-sensitive issues.
- Occasionally work with vendors or contractors to set up specific computational architectures and/or software tools.
- Occasional on-site work in Detroit, MI may be required to maintain and/or configure existing or new hardware (e.g., new head/compute nodes).

PREFERRED QUALIFICATIONS

- B.S. in Computer Science, Information Technology, or related field with 5-10 years’ experience, or a Masters in Computer Science, Information Technology, or related field with 3-5 years’ experience.
- Experience configuring and maintaining software in Linux-, Unix-, and Windows-based environments.
- Experience managing computing clusters and/or massively parallel processing (MPP) high-performance computing (HPC) environments.

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- E.g., experience architecting and maintaining head nodes, compute nodes, job schedulers, etc.
- Experience installing and configuring scientific software (e.g., finite element solvers, computational fluid dynamics, etc.) and support configuration issues by assisting engineers or vendors.
 - E.g., NX, Thermo-Calc, JMatPro, Simufact suite of software, FLOW-3D, DEFORM, MAGMA, ProCast, FORGE, MSC Marc, LS-DYNA, ANSYS, MSC Nastran, and Abaqus.
 - Ability to perform simulations in commercial scientific software a plus.
- Experience with configuring open-source software with limited-to-no vendor support.
 - E.g., installation of open-source tools, such as LOCI, CHEM, or CHAR, which require configuration of common libraries, software packages, versions, etc.
 - Ability to perform simulations in open-source software a plus.
- Experience understanding and coordinating multiple software dependencies (e.g., working with Makefiles).
- Experience managing and configuring LUA- or LMOD-type modules with the ability to restrict user-groups to certain software (i.e., to maintain compliance with ITAR/export-controlled software).
- Experience maintaining compute and head node hardware.
- Experience configuring and maintaining virtual machines (VMs).
- Expertise or ability to understand and code software programming in variety of languages (e.g., JavaScript, C++, Fortran, Python, etc.).
- Expertise in manufacturing data storage configuration and maintenance
- Expertise in IT systems in support of manufacturing process monitoring & data collection.
- Ability to work with multi-disciplinary teams and multiple simultaneous projects.
- Ability to function effectively within a project team.
- Must be a US-person and/or have US citizenship.

BEHAVIORAL COMPETENCIES

Customer Focus, Learning on the Fly, Intellectual Horsepower, Action Oriented, Ethics and Values, Integrity and Trust, Functional/Technical Skills, Forward Thinking.

About LIFT:

LIFT, operated by the American Lightweight Materials Manufacturing Innovation Institute (ALMMII), is a public-private partnership to develop and deploy advanced lightweight materials manufacturing technologies, and implement education and training programs to prepare the workforce. ALMMII was selected through a competitive process led by the U.S. Department of Defense under the Lightweight and Modern Metals Manufacturing Innovation (LM3I) solicitation issued by the U.S. Navy's Office of Naval Research. ALMMII is one of the founding members of Manufacturing USA, a federal initiative to create regional hubs to accelerate the development and adoption of cutting-edge manufacturing technologies.