ALMMII | American Lightweight Materials Manufacturing Innovation Institute

Position: Senior Engineer, Modeling and Simulation
Department: Engineering
Reporting To: Principal Engineer, Modeling and Simulation
Job Location:

LIFT ALMMII Headquarters
1400 Rosa Parks Blvd
Detroit, MI 48216

Scope of Work & Purpose:

LIFT is seeking a subject matter expert that will lead state-of-the art materials development and evaluation through modeling and simulation along with software development, delivering innovative materials and manufacturing solutions for our customers and collaboratively within our ecosystem. This individual will drive innovations in material simulation through collaborative software development to automate and accelerate modeling across multiple domains, including manufacturing processes, microstructure evolution, and crystal plasticity.

RESPONSIBILITIES

- Develop application-focused performance simulations to support programmatic work within time and budget constraints, internal to LIFT and collaboratively with Ecosystem member organizations.
- Conceive, develop ideas, and project plans for new, innovative modeling and simulation development programs.
- Document and communicate development initiatives, including progress and final reports, presentations, conferences, and stakeholder communication.
- Support program development efforts, including preparation of white papers and proposals.

PREFERRED QUALIFICATIONS

- A degree in Computer Science, Engineering, Materials, Chemistry, Physics, or related field with 3-5 years' experience.
- Experience with microstructure evolution modeling, such as solidification, for metals/ceramics (e.g., phase field, cellular automata, and/or crystal plasticity) OR FEA- or CFD-based manufacturing process models for metals/ceramics (e.g., laser beam powder bed fusion, welding, casting, forging, direct current sintering, heat treatments, etc.).
- Experience with scientific computing and object-oriented programming in C++ and Python (Fortran is a plus) to solve materials science problems.
- Experience developing routines around software application programming interfaces (APIs).
- Experience working in collaborative coding environment (e.g., GitHub) and using tools for version control, continuous integration, and code commits/reviews.
- Experience developing code that can be run in multiple operating systems (e.g., Linux, Windows, and Mac) is a plus.
- Experience with compilers and compilation tools (e.g., makefiles) is a plus.

- Experience in software chaining, CAE tool interface(s), GUI construction, I/O and hardware control is a plus.
- Solid understanding of software programming and general material science knowledge, such as the effect of processing on microstructure, properties, and subsequent performance
- Experience with development of large codebases and design of multipurpose/modular functions, leveraging paradigms such as templates, inheritance, and polymorphism
- Successful track record to ideating, planning, and executing technical work in an R&D or manufacturing environment preferred.
- Ability to operate within a project-based technology development environment.
- Ability to work with multi-disciplinary teams and multiple simultaneous projects.
- Ability to operate within and successfully interface with many stakeholders including LIFT member Ecosystem and end customers.
- Good oral and written communication skills.
- Ability to function effectively within a project team.

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 nonprofit, public-private partnership, national advanced manufacturing innovation institute. As the national advanced materials manufacturing innovation institute, LIFT is an accelerator convening and connecting government, industry and academia in the fields of advanced materials, manufacturing processes, systems engineering and talent development to enhance America's manufacturing competitiveness, national economy and national security.