Job Description

Job Title  R&D Computer Science (Experienced)
Job ID  664745
Location  Albuquerque, NM
Full/Part Time  Full-Time
Regular/Temporary  Regular

What Your Job Will Be Like

Are you passionate about computer simulations? Do you dream of utilizing state-of-the-art high-performance computers to solve engineering challenges? Do you want to join a dynamic team that solves significant issues for our nation’s security?

We are seeking a Computer Scientist to join the Computational Simulation group as a member of the Sierra Thermal Fluids team. The Sierra Thermal Fluids team creates, improves, and produces computational simulation tools used by Sandia’s thermal and fluids analyst community to answer questions and solve problems of tremendous importance to our national security.

Our broader Computational Simulation Group at Sandia, is a team of researchers developing state of the art computational mechanics capabilities and deploying them for broad impact throughout DOE and DoD. This includes developing a variety of simulation codes (solid mechanics, fluid flow, structural dynamics, topology optimization, thermal, mesh generation, coupled codes) as well as developing the expertise to use these codes in ways that provide confidence in the generated results (validation and verification techniques). Our codes must run on the largest and most complex computers in the world, requiring expertise in computer science and its application. We operate in an integrated teaming environment as we produce the software, validate its correctness, and certify confidence of results. We are looking for strong candidates who can contribute, including researchers trained in computational thermal and fluid mechanics. We are also seeking researchers skilled in computer science, including advanced data structures for parallel machines, memory layout for hybrid next generation computer architectures, use of accelerators (e.g. GPUs), multi-threading or associated technologies.

Qualifications We Require

- PhD degree in Computer Science/Engineering/Math discipline
- Experience with modern C++ programming within a UNIX/Linux environment
- Experience with computer software engineering concepts
- Experience with software quality and testing practices
- Experience with high performance and parallel computation concepts (e.g. distributed and shared memory, multithreading, OpenMP, MPI+X+Y, CUDA)
- Excellent communication skills as evidenced by a history of publication of results in peer-reviewed journals and external presentations at appropriate scientific conferences
- Ability to obtain and maintain a DoE Q clearance

Qualifications We Desire

- Experience teaming with other software developers and users of software
- Experience with thermal analysis and fluid mechanics software development
- Experience with high-performance parallel computing, MPI, threads, GPUs, CUDA, Kokkos, and agile software development experience
- Experience developing within large scale software applications
- Depth and breadth in several aspects of computational mechanics (e.g., equations solvers, element formulations, multi-scale approaches, data structures, coupled physics)
- Strong background in applied mathematics, physics, computer science and software development
- Ability to excel within an agile software development team environment

About Our Team

The Computational Thermal and Fluid Mechanics Department develops aerodynamics, aero thermodynamics, compressible fluid mechanics, and flight dynamics simulation software to execute on a variety of high performance computing platforms. These codes will be used to perform highly detailed simulations for use in the design, development and qualification of nuclear weapons. The code development efforts are focused on providing tools for analysis at Sandia and partner institutions. The code areas are primarily in thermal analysis and compressible flow (subsonic, transonic and hypersonic), and shock physics. Our broader code development team also develops simulation capabilities for modeling shock physics, solid mechanics, structural dynamics, participating media radiation, fire environments, and incompressible fluid flow (with capillary hydrodynamics, drying, porous flow – multi-physics). Code teams are typically five to ten people, and strong interaction with the analysis teams is an important part of the code development process.

About Sandia

Sandia National Laboratories is the nation’s premier science and engineering lab for national security and technology innovation, with teams of specialists focused on cutting-edge work in a broad array of areas. Some of the main reasons we love our jobs:

- Challenging work with amazing impact that contributes to security, peace, and freedom worldwide
- Extraordinary co-workers
- Some of the best tools, equipment, and research facilities in the world
- Career advancement and enrichment opportunities
- Flexible schedules, generous vacations, strong medical and other benefits, competitive 401K, learning opportunities, relocation assistance and amenities aimed at creating a solid work/life balance


*These benefits vary by job classification

Security Clearance

Position requires a Department of Energy (DOE) Q-level security clearance.

Sandia is required by DOE to conduct a pre-employment drug test and background review that includes checks of personal references, credit, law enforcement records, and employment/education verifications. Applicants for employment must be able to obtain and maintain a DOE Q-level security clearance, which

requires U.S. citizenship. If you hold more than one citizenship (i.e., of the U.S. and another country), your ability to obtain a security clearance may be impacted.

Applicants offered employment with Sandia are subject to a federal background investigation to meet the requirements for access to classified information or matter if the duties of the position require a DOE security clearance. Substance abuse or illegal drug use, falsification of information, criminal activity, serious misconduct or other indicators of untrustworthiness can cause a clearance to be denied or terminated by DOE, resulting in the inability to perform the duties assigned and subsequent termination of employment.

EEO

All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, or veteran status.