Nature and Scope of Job:
The CFD and Propulsion Group at Colorado State University has an opening for a Ph.D. candidate interested in applying advanced CFD algorithms to complex geometries. The scope of the research includes developing technologies for moving and overlapping grids for fourth-order algorithms with adaptive mesh refinement. This position is best suited for a student who is adept at math and has a strong interest in highly logistical programming. Applications should include a demonstration of this interest; examples might include software development through work or studies, or hobbies such as programming games. The selected candidate will be funded through a teaching assistantship in their first year followed by at least two years of research assistantship.

Applications should include CV, research statement with a discussion of future career goals and how involvement in the research described above will help further those goals, and contact information to three references. Applications should be emailed to Dr. Xinfeng Gao at gao@engr.colostate.edu

The CFD and Propulsion Group is focused on developing advanced CFD algorithms and deploying them on the latest architectures. The selected candidate will work in a team environment to develop solutions to complex engineering challenges.

Essential Skills, Knowledge, and Abilities:
- B.S./M.S. in Mechanical Engineering, Aerospace Sciences & Engineering, Computer sciences, or Applied mathematics
- Background in CFD, computational methods, or scientific computing
- Strong and demonstrated interest in programming
- Experience in the development of numerical algorithms for partial differential equations is highly desired
- Interpersonal communication skills necessary to work effectively in a team environment
- Good technical writing and oral presentation skills in English

Desired Skills, Knowledge, and Abilities:
- Knowledge of computational fluid dynamics and programming experience in C++ and Fortran
- Experience with parallel technologies including MPI, shared-memory programming models (OpenMP, POSIX threads), vector processors (SSE, AVX), and accelerators (Cuda, OpenCL)
- Experience with the design, implementation, deployment, and maintenance of software
- Experience with HPC systems and Linux
- Experience with scientific computing applications
Nature and Scope of Job:
The CFD and Propulsion Group at Colorado State University has an opening for a Ph.D. candidate interested in applying advanced programming model technology to in-house engineering software. The scope of the research includes the development of a fourth-order compressible Navier-Stokes solver and application of new parallel programming models to the solver. The candidate will gain experience with representing the algorithm as a task graph and executing the graph using various runtime schedulers. The candidate will liaise with computer scientists on the team to ensure that opportunities for compiler optimization are appropriately identified in the solver. Finally, the performance of the solver will be evaluated on various architectures, with an analysis of how well the compiler can tune the algorithm to maximize concurrency (when compute bound) or maximize locality (when bandwidth-bound). The selected candidate will gain expertise in adapting engineering software to complex computer architectures and find themselves well-suited for a career in computational science. The candidate will be funded through a teaching assistantship in their first year followed by at least three years of research assistantship.

Applications should include CV, research statement with a discussion of future career goals and how involvement in the research described above will help further those goals, and contact information to three references. Applications should be emailed to Dr. Xinfeng Gao at gao@engr.colostate.edu

The CFD and Propulsion Group is focused on developing advanced CFD algorithms and deploying them on the latest architectures. The selected candidate will work with a dynamic team of researcher from both the Computer Science and Mechanical Engineering departments.

Essential Skills, Knowledge, and Abilities:
- B.S./M.S. in Mechanical Engineering, Aerospace Sciences & Engineering, Computer sciences, or Applied mathematics
- Background in CFD, computational methods, or scientific computing
- Strong and demonstrated interest in programming
- Experience in the development of numerical algorithms for partial differential equations is highly desired
- Interpersonal communication skills necessary to work effectively in a team environment
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- Experience with compiler development and/or programming model development
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