Shanghai Jiao Tong University
COMPUTATIONAL MARINE HYDRODYNAMICS
Postdoc Position Open

Computational Marine Hydrodynamics Lab (CMHL) at Shanghai Jiao Tong University has long been devoted to the development of advanced numerical methods and corresponding CAE software for marine hydrodynamics. Professor Decheng Wan, Chair Professor of Chang Jiang Scholar and Chief Scientist of National Key Research Program, serves as the director of CMHL. CMHL has grown to more than 40 researchers and postgraduates since its establishment in 2006. We are now seeking 2~3 postdoc candidates having a solid background of marine hydrodynamics, computational mathematics, mechanics, computer science, CFD or CAE, covering the following research fields.

Research Fields

1. Generic CFD software frameworks for marine hydrodynamics, including low-level data-structure, mesh and parallel computing infrastructure, etc.;
2. Advances numerical schemes based on structured / unstructured / Cartesian grid; Dynamic mesh techniques including overset / adaptive mesh refinement grid;
3. High-resolution, low dissipative schemes, moving boundaries and multibody motion treatment;
4. Meshless methods including MPS and SPH, coupling MPS-FEM, MPS-DEM;
5. LBM methods for hydrodynamics, GPU acceleration, high performance heterogeneous computing;
6. Coupled mesh-meshless method, coupled potential–viscous flow approach;
7. Post-processing and flow visualization, uncertainty analysis, V&V, machine-learning, big data analysis and deep-learning for flows;
8. Numerical methods for wave-current-structure interaction, coupled internal-external flow, floating platform and mooring system coupling, fluid-structure interaction, fluid-structure-acoustic interaction, multi-system/multi-physics modeling;
9. Numerical methods for the hydrodynamic performance of offshore renewable energy devices, ships and offshore structures, underwater vehicles and pipeline systems;
10. Numerical methods for nonlinear waves, sloshing tanks, mixed bubble flows, cavitation, multi-phase flows;

11. Numerical methods for violent flows, high-Reynolds flows and full-scale flows;
12. CFD-based optimization for ship and offshore structures.

Qualification Requirements

1. The candidate should hold a PhD degree, or equivalent experience/ background in: computational mathematics, mechanics, computer science, preferably ship and marine engineering;
2. Excellent skills in with CAE software development or CFD programming and analysis;
3. Good written and oral English;
4. Excellent track record in research publication;
5. Ability to work within a team and collaborate with the CMHL team;
6. Generally, aged below 35.

Main Duties and Responsibilities

1. The candidate is expected to participate in various scientific research projects or independently undertake research projects;
2. Publish high-level academic papers;
3. Supervise undergraduate and graduate students;
4. Participate in the research work at CMHL.

Salary, Compensation and Benefits

1. Annual salary: RMB 240, 000 (which in accordance with the relevant regulations of Shanghai Jiao Tong University. http://postd.sjtu.edu.cn/index.htm) and up to RMB 400, 000 (for those successfully apply for the postdoc funding);
2. Housing subsidized by the university and other fringe benefits;
3. After three years of research, qualified candidate can potentially be promoted to a tenure-track assistant professor position.

Application Materials

1. A detailed CV including education background, research experience, publications, contact information, etc.;
2. 3-5 representative journal papers;
3. A copy of Ph.D. degree certification (if completed);
4. Application materials should be sent to Ms. Zhu, Email: zhengzhu@sjtu.edu.cn