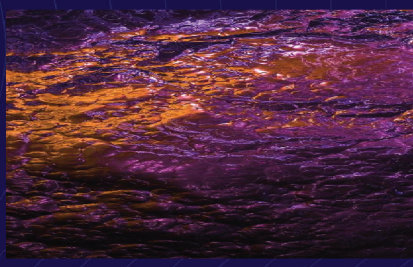
FOSTERING COMPUTATIONAL EXCELLENCE SUMMER PROGRAM



USC's Summer Program in Advanced Programming & Computational Fluid Dynamics

The University of Southern California (USC), with support from the National Science Foundation (NSF), is excited to announce a specialized two-week summer program in advanced programming and Computational Fluid Dynamics (CFD). The program is tailored specifically for graduate and undergraduate students who have a foundational knowledge of programming and CFD.

LEARNING OBJECTIVES

You will build skills crucial for research in modern scientific computing and enhance your analytical reasoning and problem-solving skills. Designed to bridge the gap between theoretical knowledge and practical application, you will gain advanced programming skills in Python, MPI, CUDA, and Kokkos, use neural networks for scientific computing and optimization, and learn common numerical techniques for simulating fluid flows. But this comprehensive journey extends beyond code development; by fostering a collaborative community within the cohort, the connections you make here will continue to support and enrich your professional path long after the program concludes.

CAREER AND RESEARCH ADVANCEMENT

Participating in this summer program is not just about learning advanced programming; it's about setting the foundation for a future in academia or industry. The skills acquired during this program are highly sought after in today's competitive job market. Participants will learn from experts in the field, gaining insights that are not typically accessible in a standard academic teaching environment. This program is a stepping stone to not only enriching students' understanding of CFD, but accelerating their career and research prospects, empowering them to contribute meaningfully to the scientific community.

FINANCIAL SUPPORT

Limited financial support is available. If you are in need of financial assistance, request a reference letter from your research advisor. This letter should detail how participation in the program can substantially benefit your research and academic career. We hope this support enables more students to access this valuable learning and networking opportunity, furthering their academic and professional growth.

PROGRAM SCHEDULE:

Monday	06/10	Python: Review of basics and intermediate concepts
Tuesday	06/11	CFD: Foundations (PDEs, Finite Volume Method, Grid Generation)
Wednesday	06/12	CFD: Solving Euler and Navier-Stokes Equations on a Structured grid
Thursday	06/13	CFD: Grid generation and solving PDEs using unstructured grid
Friday	06/14	Parallel Programming via MPI
Saturday	06/15	
Sunday	06/16	
Monday	06/17	Parallel Programming via CUDA
Tuesday	06/18	CUDA cont'd | Performance Portable & Hardware Agnostic Programming
Wednesday	06/19	Kokkos for Performance Portable Programming
Thursday	06/20	Physics-Aware Deep Learning
Friday	06/21	Optimization

PROGRAM DATES: 06/10/2024 — 06/21/2024

APPLICATION: FOR APPLICATIONS, PLEASE SCAN THIS QR CODE AND SUBMIT THE APPLICATION FORM BEFORE 04/12/2024

WEBSITE: https://usc-focex.gitlab.io

LOCATION: UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES, CA 90089

USC Advanced Research Computing
Enabling scientific breakthroughs at scale

NSF

USC Viterbi School of Engineering
Department of Aerospace and Mechanical Engineering