



Team Introductions:

Southwest Petroleum University's Dreambrook Team is a diverse and highly competitive group guided by Dr. Peng Bo and Dr. Zhang Quan. The team receives strong support from the university's Network Information Center, including access to cluster resources and opportunities for collaboration and exchange with engineers. This support enables the team to efficiently adapt to the cluster environment. All six members of the Dreambrook Team have received high-performance computing training and will contribute to various aspects of the competition. With this experience and enthusiasm, the team members are fully prepared to embrace the challenges ahead!

Team Members:



Name: Hongzhang Liao
Major: Computer Science and Technology
Skills: Compiler & CG



Name: Yunhe Zheng
Major: Computer Science and Technology
Skills: SciComp & CG



Name: Zhonglin Guan
Major: Computer Science and Technology
Skills: PL & SciComp



Name: Jialing Yang
Major: Computer Science and Technology
Skills: PL & DevOps



Name: Panyi Liu
Major: Data Science and Big Data Technology
Skills: NLP & Compiler



Name: Zhiyu Ding
Major: Data Science and Big Data Technology
Skills: NLP & AI

Team Advantages:

- Proficient Cluster Operation Skills: Our team has access to a supercomputing cluster at our university, and we have the support of experienced engineers who help us master the use of the cluster's operating system, scheduling system, and file system.
- Rich experience in competitions: We have participated in numerous high-performance computing competitions and have won many awards. We have a solid understanding of project optimization and the refinement of small-scale operators.
- Efficient Team Collaboration: We have completed internships in high-performance computing, during which we have accumulated a wealth of programming skills and, most importantly, developed strong communication and collaboration abilities within our team.

Team Preparation:

Hold bi-weekly online meetings with engineers from the Network and Information Center of Southwest Petroleum University to resolve issues encountered while running applications on their provided cluster.

- Independently attempt to configure the appropriate software environment on the cluster.
- Research competition applications in advance to understand relevant metrics.
- Understand the cluster's hardware components and explore its principles to better leverage hardware advantages.

Software:

Workload Manager:

|- Slurm

Compiler:

|- Intel(R) oneAPI DPC++/C++ Compiler

|- NVCC

Fast Math Library:

|- Intel(R) oneAPI Math Kernel Library

|- OpenBlas

|- Cuda Math Library

MPI:

|- Intel MPI Library

|- OpenMPI

Profiler:

|- Intel Vtune Profiler

|- Nsight Compute

|- Nsight Systems

Cognitive Diversity

Broad Range of Courses and Knowledge Areas: Team members have taken a wide variety of courses, covering areas from algorithms and machine learning to high-performance computing, providing the team with a solid technical foundation. **Variety of Interests and Skills:** Each member possesses unique interests and skills, ranging from programming abilities to research competencies, even including interdisciplinary capabilities. This diversity allows the team to achieve optimal collaboration and innovation in task allocation and problem-solving.

Cultural Diversity

Varied Experience in High-Performance Computing (HPC): The team includes members who are highly experienced in the field of high-performance computing (HPC) as well as newcomers to this area. This range of experience allows for mutual learning and progress, fostering innovation and improving efficiency. **Diversity in Academic Year and Majors:** Our team comprises students from sophomore to junior year, majoring in Computer Science, Data Science, and Big Data. This diversity in academic years and fields of study enables the team to tackle problems by integrating knowledge from multiple disciplines, leading to multi-dimensional solutions.

Diverse interests and research areas

Diversity in Region and Cultural Backgrounds: Our team members come from different provinces in China, spanning the southwest and eastern regions. This geographical diversity brings rich cultural perspectives and unique ways of thinking to the team, further enhancing our ability to collaborate on complex problems.

