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UC San Diego Student Team Shines at Supercomputing 2020 Conference

Six UCSD undergraduates compete and complete computer cluster contest

A team fielded for the first time by the San Diego Supercomputer Center (SDSC) at UC San Diego competed in this year's Student Cluster Competition at the annual International Conference for High-Performance Computing, Networking, Storage, and Analysis (SC20) achieved fourth place overall among 19 teams during the 72-hour challenge, held in a virtual format for the first time due to the coronavirus pandemic.

The six-student team, called the SDSC/UCSD Superscalars, ran all applications during the competition, which included three benchmarking apps (HPL, HPCG and IO-500), three science apps (CESM, GROMACS, and the MEMXCT reproducibility application), and a "mystery application". The leaderboard that ran during the competition earlier this month [can be found here](#).

In addition to placing in the top quartile overall, the Superscalars achieved the highest score on the mystery application, ranked third in HPCG with 4.056 teraflops (a processor's capability to calculate one trillion floating-point operations per second), fifth for the reproducibility application, and sixth for the IO-500 with 16 gigabytes per second (GB/s). They also submitted full or partial results for every one of the applications in the competition.



The team members included Co-Captains Jacob (Xiaochen) Li (Computer Science and Engineering) and Max Apodaca (Electrical and Computer Engineering Department). Both departments are in UC San Diego's Jacobs School of Engineering. Other team members were Zihao Kong (Electrical and Computer Engineering Department), Arunav Gupta (Data Science, Mathematics), Hongyu Zhou (Mathematics), and Hongyi Pan (Computer Science and Engineering). Image: Mary Thomas, SDSC/UCSD

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“Our team did extremely well, considering that they were the first team sponsored by SDSC,” said Mary Thomas, a computational data scientist with SDSC and lead for the Center's High-Performance Computing (HPC) training program. “Not ones to rest on their laurels, they're already organizing to submit to the SCC21 competition!”

In addition to Thomas, SDSC team mentors included Mahidhar Tatineni, Marty Kandes, Nicole Wolter, Jeff Sale, and Robert Sinkovits, as well as mentors from SDSC industry partners including Lewis Carroll (AMD), Paul Yu (Microsoft/Azure), and Abe Stern (NVIDIA).

The Student Cluster Competition was developed in 2007 to provide an immersive high-performance computing experience to undergraduate and high school students. For SC20, the competition was moved to the cloud to accommodate remote participation, becoming the Virtual Student Cluster Competition (VSCC). With sponsorship from vendor partners, student teams design and build virtual clusters in the Microsoft Azure cloud, learn scientific applications, apply optimization techniques for their chosen cloud configurations, and compete with teams around the world to complete a set of benchmarks and real-world scientific workloads.

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