PRAIRIE VIEW A&M UNIVERSITY

Channel Islands
CALIFORNIA STATE UNIVERSITY

TEXACAL

Mentors

Dan Olds
Intersect360 Research, Team Co-sponsor

Dan has been in the HPC industry for over 20 years and has been the enthusiastic supporter for many teams in student cluster competitions for over a decade. If you are a regular to HPC events, you probably already know who this warrior-poet is! He is currently the Chief Research Officer at Intersect360 Research and is a co-host on the mildly popular RadioFreeHPC podcast. Although he is known for being bombastic and sometimes cruel, Dan's infectious charisma has helped bring positive and motivational energy to Team TexaCal. Dan's knowledge in the HPC industry has been a valuable asset for the team as none of this would have been possible without him.

Scott Feister
Mentor, Coach

Team TexaCal coach Dr. Scott Feister is a Computer Science and Mechatronics professor at California State University Channel Islands and is a favorite amongst the students. He's the driving force behind the formation of the Channel Islands student cluster competition teams. He brings a lot of game to the team with his research experience, educational background, and his extraordinary ability to teach. His credentials? Try Notre Dame for Physics, The Ohio State University for MS and PhD degrees in Plasma and High-Temperature Physics, plus research stints at the US Air Force Research Laboratory and the University of Chicago. You wanna talk lasers? If so, Dr. Scott is your man – plus he can do it in French too!

Students

Kenna Chase
Student at Channel Islands

A double major, studying Mechatronics Engineering and Computer Science, Kenna also actively seeks out opportunities to develop and practice her skills. Her recent activities include: competing in the 2022 Winter Classic Invitational Student Cluster Competition, developing prototype robots for Navy vessels, implementing machine learning research in physics data, and completing a summer internship for Amazon at their Seattle Headquarters. She believes that everyone deserves the opportunity to pursue their passions and earned her Girl Scout Gold Award for a project based on equity and inclusion in the tech fields. Here at SC22, Kenna looks forward to putting all her HPC skills to the test.

Isaac Cisneros
Student At Channel Islands

Meet Isaac. Or as we like to call him, Mr. 44%. Why? No reason, other than he scored in the top 44% for the 2021 Putnam Competition. And that was just his first try. A second-year student at California State University Channel Islands (CSUCI), Isaac has recently declared a double major in Computer Science and Mathematics. Many who meet him comment on his boundless energy and his rapid fire stream of thoughts and ideas. During the competition, we've found that he's the first to volunteer for anything and everything, which is great for the rest of us. Isaac's ready to put his math and computer skills on the line for the team this year.

Lumir D'Ambrosio
Student at Channel Islands

Lumir is studying Computer Science and has a passion for Linux. Infact, he has exclusively used Linux machines for the past 6 years throughout his educational studies. With the massive amount of Linux presence throughout the HPC space, Lumir feels right at home. He also worked with a team of students to develop a small autonomous drone boat capable of detecting and collecting floating trash through the use of computer vision. Ever since participating in the 2022 Winter Classic Invitational Student Cluster Competition, Lumir has been hooked onto HPC and can't wait to learn more and do more at SC22.

Tyler Mannings
Student at Prairie View

Many want to know how to program computers. Few dare to learn how to engineer computers. It's a challenging field where metal meets electricity and brings forth the magical machines of today. Currently in his 3rd year of University, Tyler hasn't backed down at all from the demanding degree of Computer Engineering. He's developed a weather balloon sensor array funded by a grant from NASA that was used to study the atmosphere. More recently, he and his team beat 12 other schools and earned first place in the 2022 Winter Classic Invitational HPC Cluster Competition. With a cluster competition victory under his belt, he is eager for another and is ready to help lead Team TexaCal to victory.

Tyler Sellers
Student at Channel Islands

Tyler is majoring in Information Technology with a minor in Security Systems Engineering but has already been involved in the IT industry for many years. Currently working at Parker Hannifin Corporation as an IT Analyst, his technical aptitude is unmatched with Security+ and AWS Cloud Practitioner certifications. But we're not done yet. Tyler has received the Edison STEM Scholarship Award not just once, but twice. Furthermore, he was the NETSEC Club CTF Captain & Vice President in 2021 at Channel Islands. Still with us? Good. Because Tyler is ready to put the HPC skills he learned during the 2022 Winter Classic Invitation Student Cluster Competition to good use here at SC22.

Adrian Small
Student at Prairie View

Some say wizards don't exist, but in fact, they do. They just go under a different name. Electrical Engineers. Adrian is studying to become one, an electrical engineer that is. With a summer internship at EDP Renewables under his belt, rest assured he knows his stuff. But in the meantime, he has set his sights on optimizing programs and running simulations on supercomputers. He's pretty good at it too, considering he and his team earned first place at the 2022 Winter Classic Invitational Student Cluster Competition. Anything that electricity touches, Adrian is good at. There's no doubt that his HPC wizardry will come in handy at this competition.

Sponsors

PENGUIN COMPUTING™

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Hardware

For our hardware, we decided to utilize the sleek Atlus 2214 and 12 Nvidia A100s, which was provided to us from our primary sponsor Penguin Computing. We believe this three node configuration will give us the flexibility we need to cope with both high (4,000 watts) and extremely low (~1,500 watts) competition power caps. The Atlus 2214 is a relatively beefy processor but the biggest stars are the Nvidia GPUs. They are extremely efficient and simple to control when it comes to low power. They even contain a pre-programmed "Low Power Mode" that lets us achieve a nearly idle status on the CPU without rebooting it.

This is a very powerful cluster and at full speed can consume over 5,000 watts. The biggest challenge will be to bring down the power draw whilst bringing out high performance. We profiled the applications in order to understand how they used hardware components and figure out inefficient bottlenecks. We believe our thorough understanding for benchmark applications is what will allow us to excel in this competition.

Hardware Specifications

Processors	AMD EPYC 7413, 24-core, 2.65GHz
Memory	64GB DIMM, DDR4-3200, LR, ECC
Storage	Micron 5300 480GB
NVMe storage	Kioxia CM6, 7.68TB, 2.5" NVME
Network	Rockport NC 1225 (300 Gbs)
GPU	Nvidia A100-PCIe, 40GB, Passive
Chassis fan	8cm Chassis fan
Power Supply	Titanium Efficiency - 96%

NVIDIA

AMD

rockport.