

Team Profile



(Top row, left to right: Paul, Dr. Cho (primary advisor), Sean (secondary advisor), Cody (secondary advisor); Middle row, left to right: Robert, Adam (secondary advisor), Jeff (industry secondary advisor), Hao; Bottom row, left to right: Eva, Sophia, Yixin)

What is the name of your team and why did you choose it?

Our team name is the “Daemon Deacons”, a play on our university’s mascot, the “Demon Deacons”. Our university mascot’s origin dates back to a football game vs. Trinity (later named Duke University) when we defeated them. The newspaper editor recognized the team’s “devilish” play and fighting spirit, and the name stuck. In computing, a daemon is a process that works in the background and carries out critical processes. The origin of that name came from a Maxwell’s Demon in a physical chemistry thought experiment where an imaginary supernatural being works in the background sorting molecules to defy entropy.

Even though this is our third time at the Student Cluster Competition, and we still feel like underdogs against more well-established teams. While we may not get the same level of attention as the other teams, we have a strong “devilish” fighting spirit, which we believe will end up defying expectations and surprise everyone by defeating them.

Why do you think your team will have an edge in the event (what's your secret sauce)?

One of our secret sauces is long-term preparation. We have invested a lot of time and resources to make sure that we have the strongest possible team. Even before our first

competition at SC18, we attended SC17 to observe the Student Cluster Competition and interview the participants as they were competing. We met with vendors (Cisco, Mellanox, and NVIDIA) who are now donating or lending us equipment for the competition. We worked with our primary advisor, Prof. Samuel Cho (Associate Prof., Depts. Computer Science & Physics), and recruited three secondary advisors, Sean Anderson, Adam Carlson, and Cody Stevens who comprise the High Performance Computing Team at our university's DEAC Supercomputing Facilities. We compiled, ran, and benchmarked several applications even before we applied for the competition. In addition, Jeff Squyres, the Technical Lead with our vendor partner, Cisco, has also been an invaluable secondary advisor. Jeff has been a part of weekly Zoom video conferences with our team. He has been an invaluable source of information and direction, and the students feel comfortable asking him questions. For CESM2, Lauren Lowman (WFU, Department of Engineering) and Kaitlin Hill (WFU, Department Mathematics & Statistics) met weekly with those working on it. Dr. Cho is helping them run COVID-19 proteins downloaded from a leading online repository (<https://covid.molssi.org/structures/>).

Most importantly, our greatest secret sauce is us. Our current undergraduate student team consists of Junior (2) and Senior (4) students with majors in Computer Science, Mathematics, Mathematical Statistics, Applied Mathematics, and Engineering (half are double-majors), along with minors in Biology, Computer Science, Economics, Japanese, and Neuroscience. Two of the students are returning veterans who participated in the previous SC19 SCC, and four are new students. Our students have taken a wide range of relevant prerequisite classes, including Data Structures I and II, Databases, Parallel Computing, GPU Programming, and Machine Learning, to name a few. Moreover, students have exposure to coding languages such as C/C++, Java, Python, MATLAB, R, CUDA, Swift, HTML, and Javascript. Our students have taken a wide array of upper-level mathematics and statistics courses, allowing them to leverage new and modern techniques for solving many of the logistical challenges of high performance computing, as well as giving them the ability to adapt to applications from a wide range of fields. Our diverse background and wide range of skills will enable us to perform even better in the SC20 SCC.

What have you done to prepare that makes your team unique?

To prepare for the competition, the Computer Science Dept. created a brand new High Performance Computing class, which is taught by Prof. Samuel Cho (Associate Prof., Depts. Computer Science & Physics), who is the primary advisor for this team. Prof. Cho has extensive experience performing research and teaching classes in GPU Programming, Parallel Algorithms, and Computational Biophysics. In addition, Sean Anderson, Adam Carlson, and Cody Stevens who comprise the High Performance Computing Team at our university's DEAC Supercomputing Facilities (3.5k+ x86_64 compute and 12k+ GPU cores) serve as secondary advisors for this team. They provided practical experience of compiling, running, and benchmarking applications in a high performance computing facility, as well as maintaining it.

What makes us unique is preparation. The inaugural class in the Fall 2017 semester consisted of 6 undergraduate students who learned about High Performance Computing, as well as compile, run, and benchmark applications on the DEAC Supercomputer. In November, Prof.

Cho, Mr. Carlson, and all 6 undergraduate students attended SC17 to directly see the competition in person and gather information about the competition. We were fortunate that the Dept. Computer Science funded their travel through a generous donation from a former alumni. Our first competition was the SCC18, and based on the success of our team (the first team from North Carolina to ever compete in the SCC, 2nd out of 6 first-time competitors, and the only first-time competing team invited back). Last year, we finished #11 out of the 16 competitors (improving from #13 the previous year), and we were 1st in the Reproducibility Section. In total, we have participated in the past three years straight.

We hope that it is clear that we have a strong institutional investment and a strong set of instructors and a growing number of undergraduate students who are dedicated to the success of our team.

What are you most looking forward to in the competition?

While we are definitely looking forward to applying our skills and knowledge to practical problems and seeing our potential as we compete at the international stage, we are most looking forward to interacting with the other teams in the competition. Given the nature of living through the pandemic this year, interactions with others around the world and being an inspiration for our fellow students are what drives us the most.

What time zone is your team competing from?

We are competing from the Eastern Standard Time zone.

What do your team members do for fun?

Considering our broad experiences and backgrounds, you might think that there's very little that we have in common. As it turns out, the thing that unites our team is our love of eating great tasting food. Some of our favorites include shrimp tempura, katsudon, spicy stir-fry, xiaolongbao, boba tea.

We also like to take trips, whether they require flying to road trips. Some of the places that we have recently visited outside of North Carolina include Los Angeles, Charleston, and the Great Smoky Mountain. Some of the countries that we have recently visited outside of the US are Istanbul and the UK. We look forward to traveling again to those places and well beyond after the pandemic.

If your team had a theme song, what would it be?

We like the viral song, "Baby Shark" by Pinkfong [[Link](#)]. Why? Honestly, we're not sure. Do we even need a reason? Maybe it is because it started abroad in South Korean and became widely popular all over the world, even becoming the cheering song for the American baseball team,

Washington Nationals as they went on to win the World Series in 2019. Or maybe it's just because it's just so fun to say, "doo doo doo doo doo doo..."

Whatever the reason, just play the song and sing with us.. "Baby shark, doo doo doo doo doo doo."

Can you share an interesting fact about your team?

Our "American" team has representatives from three different nations and can fluently speak German, Japanese, Mandarin Chinese, and Spanish. Don't get us started on computer programming languages..