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GAINESVILLE EDITION

JULY/AUGUST 2015
VOL. 06 ISSUE 03

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Robotic Submarine

UF's SubjuGator Team Prepares for Competition

WRITTEN BY KATHY PIERRE

THE UNIVERSITY OF FLORIDA'S SUBJUGATOR PROJECT TEAM IS APPROACHING CRUNCH TIME. The team has to prepare their robosub for the 18th Annual International RoboSub Competition, co-sponsored by the U.S. Office of Naval Research.

UF has participated in the RoboSub underwater vehicle competitions since 1998, and placed in the top 3 seven times, including first place in 2005, 2006 and in 2007. This year competition begins on July 20th in San Diego, California, where they will have to prepare their autonomous vehicles to complete several tasks.

The difficulty has evolved over the competition's last 17 years from diving underneath hurdles to picking up and moving objects, shooting torpedoes and locating sounds underwater. This year there will be about 40 teams representing more than 10 countries.

UF's team's leader, Jason Nezvadovitz, a fourth-year mechanical engineering major, is preparing for his second competition with the team. He joined after seeing some of the work.

"I wanted to learn more about it because it wasn't your typical mechanical design like making a beam that doesn't break or something under these loadings," Nezvadovitz said. "There's magic going on here

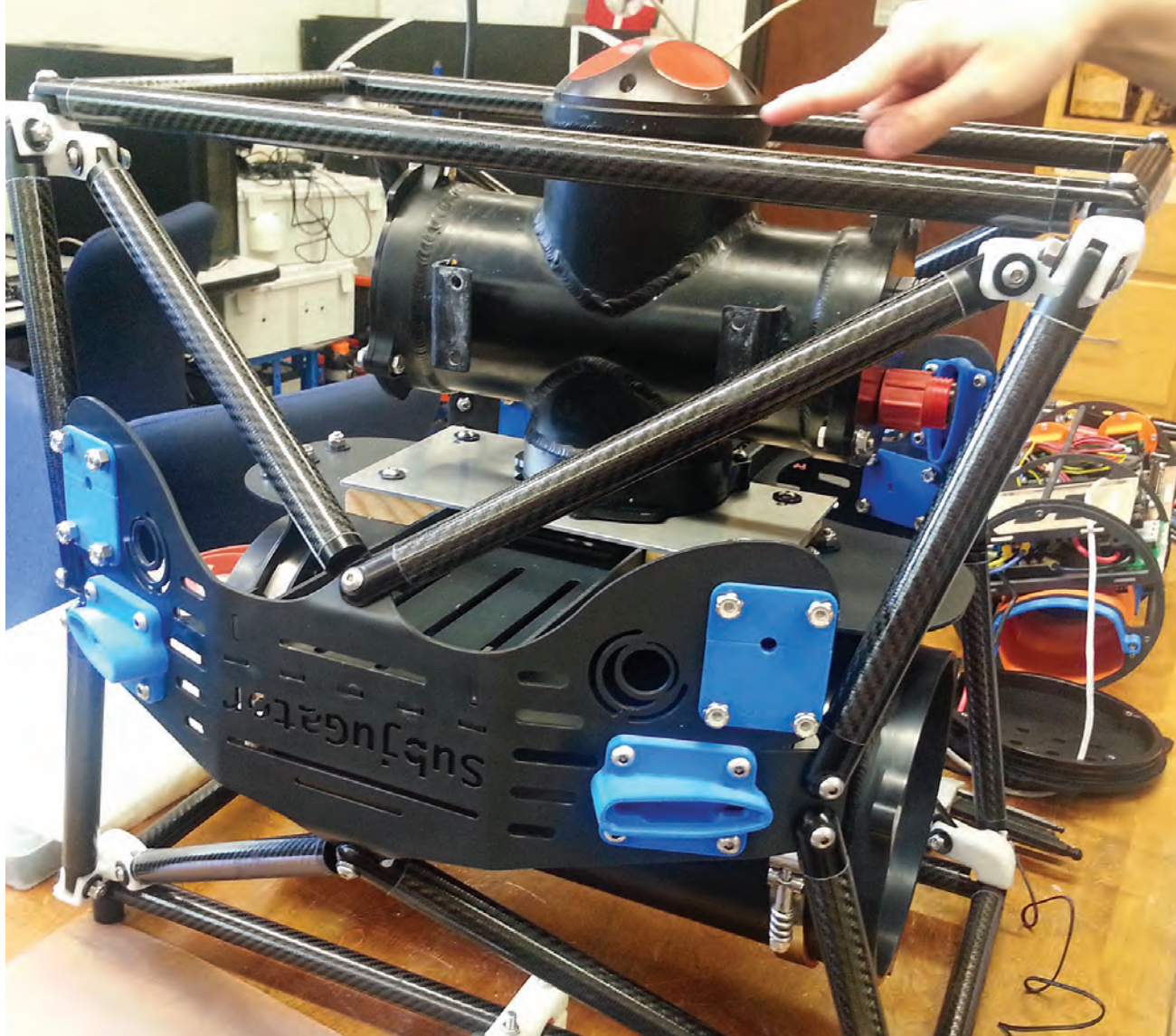




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“These students get whatever job they want when they graduate. They really are doing things you don’t normally see done at universities.”

and the magic is that it’s interdisciplinary.”

Nezvadovitz stressed that robots — such as the SubjuGator — are not remote-controlled vehicles. Robots, especially the ones in this competition, must be able to operate in complete autonomy.

Eric Schwartz is the associate director of the Machine Intelligence Lab at the University of Florida, where the SubjuGator is housed, and also serves as the faculty advisor for the team. He said the experience students get while working on the SubjuGator is worth more than two years out in the industry because they have to understand their

specific area of work at a very high level.

“These students get whatever job they want when they graduate,” Schwartz said. “They really are doing things you don’t normally see done at universities.”

This year’s sub is the eighth one the team has built. During the years they do not build a brand new vehicle they make improvements on the previous model. The team is relatively small, consisting of about 20 students, working as passionate volunteers, who are exposed to more complex engineering and tasks that they often haven’t come across in the classroom.

This is the robosub that the SubjuGator team competed with last year. The team uses many of the same materials and the same knowledge to compete in upcoming competitions.

The SubjuGator team does the majority of their own work on their vehicle. Schwartz said that teams that aren't doing their own work could be at a disadvantage. If something goes wrong with their sub during competition, they aren't as prepared to remedy the situation on the spot. It also takes away the opportunity for the students to do the work themselves and ultimately learn things they can apply to future endeavors in the classroom and in their careers after graduation.

The team is constantly seeking money through sponsorships and other donations to try to create their robosub, valued at \$150,000, in addition to the costs of taking six to seven students to the competition every year, but Schwartz and Nezvadovitz acknowledge that it takes more than money to win the competition.

"It's not just what you have, but it's how you use it," Nezvadovitz said.

He said that a team's ideal is to have 200 hours of pool testing before they arrive at a competition, which they expected to begin in June.

"I have a feeling that as soon as we get in the water ... it will go quickly from this thing sitting on our desk to the fully operational sub," Nezvadovitz said.

The team members are optimistic about their chances of winning first place because each robot is built based on what worked or did not work in previous years of competition, as well as having some of the same pieces of hardware from previous subs.

Nezvadovitz said regardless of whether or not the sub performs as expected, they still have the knowledge of the software, the sensors and cameras, to make it work at a high level, which will help them place in at least the top five of the competition — as well as a little bit of luck to get them in first place.

"Luck won't get you from 10th to first, but luck can have a play from second to first," Schwartz said. **OT**



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