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UCSC class builds bullfighting robots: Annual competition between student-built droids

By TOVIN LAPAN

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SANTA CRUZ -- Bulls and matadors will clash at UC Santa Cruz today, and not all of them are expected to make it through the competition.

There is no need to notify animal rights activists, however. These competitors are droids built by UCSC engineering students.

If anyone is suffering, it is the students and instructors who have been operating on little, if any, sleep as they race to finish their mechanized matadors in time.

Since 2005, UCSC associate professor of computer engineering Gabriel Elkaim has held the competition as part of his introduction to mechatronics class. Each year the theme and competition parameters change somewhat, but the essential task remains the same: Build a robot that can detect objects on a field using sensors, and then shoot a pingpong ball at some type of target.

"Most of the students are spending 18 to 20 hours a day working on their robots leading up to the competition," Elkaim said. "Some don't sleep at all. It stretches them out of their comfort zone, and they learn a lot in the process."

This year, for the first time, the students' droids must complete two tasks. First, the small machine must act as the bull and "gore" another robot -- essentially ram into it a couple times. Second, the robot must act as the matador and shoot a pingpong ball into a target on the bull robot.

One year the robots had to shoot pingpong balls through basketball hoops that could only be fired upon when lit up, and

another year the robots had a "duel" where they would roll away from each other, turn and fire pingpong balls at targets.

"You can learn all of the theoretical stuff, but there are a million details you don't think about until you actually try and make a physical object that moves," said Steven Burt, a first-year graduate student. "You're not going to learn it unless you do it yourself."

The competition is for fun, and does not affect the students' grades. They are graded on their robot's ability to do the assigned tasks on a stationary robot in the lab.

In the class lab Wednesday the teams of two to three students were caught up in a frenzy of debugging, trying out their robots and then troubleshooting any glitches.

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The competition may be just for fun, but the students are intent not to see their robots fail on the public stage.

"It doesn't affect our grade, but there are bragging rights involved," said UCSC senior Kyle von Schmacht.

IF YOU GO
'SLUG-O-LETE: THIS AIN'T NO BULL!'
WHAT: A public demonstration of the droids built by the UCSC students taking the introduction to mechatronics class. This year, the theme of the competition is a bullfight.
WHEN: 6:30-8:30 p.m. today
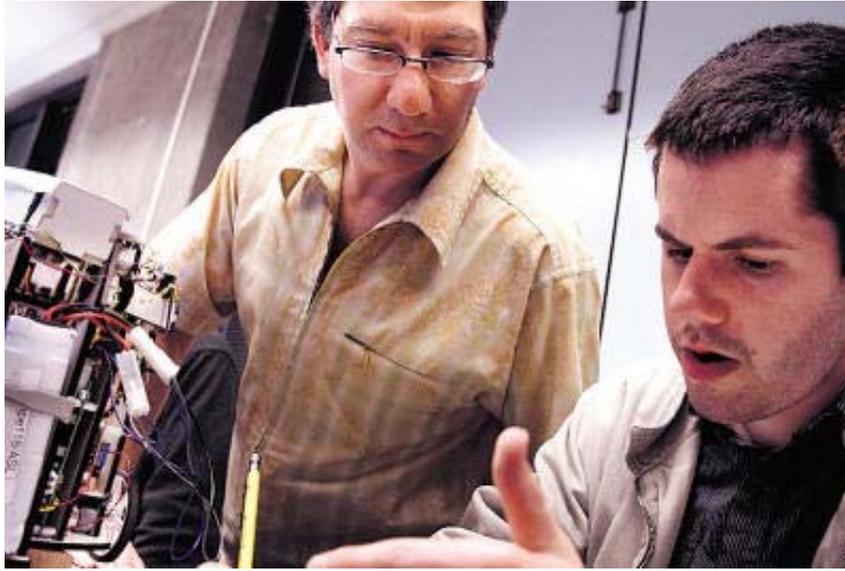WHERE: Media Theater, Theater Arts Center, UCSC
COST: Free
INFORMATION:
www.soe.ucsc.edu/classes/cmpe118/Winter11/

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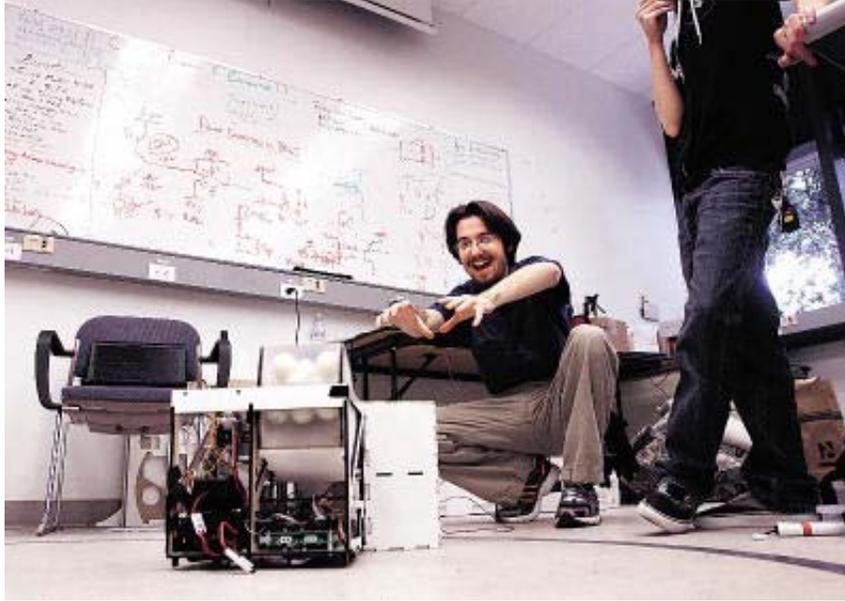
David Oda makes some final adjustments to the robot he built with Steven Burt and Kyle von Schracht. (Shmuel Thaler/Sentinel)

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Associate Computer Engineering Professor Gabriel Elkaim checks with Andrew Patterson as he struggles with some final computations on Wednesday. (Shmuel Thaler/Sentinel)

Kyle von Schracht tries to will the robot his team constructed to dump its load of ping pong balls in the correct place during a trial run on Wednesday. (Shmuel Thaler/Sentinel)

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