To learn programming, students teach robots to do something cool

BY BILL STEELE

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Send out these little saucerlike robots wandering around the floor. These iRobots—a modified version of the famous Roomba robot vacuum cleaner—are controlled by radio signals from desktop computers programmed by first-year students who learn computer programming by dabbling in robotics and computer vision. Robot programming and computer vision are not usually first-year material. “We’ve scaled down the problems from Ph.D. level to freshman level for this course,” Zabih explains. “Programs that interact with the world are much more appealing. Computer science is about much more than programming, and so is CS100R.”

Every freshman in engineering and computer science is required to take a basic course in computer programming. The choices have been CS100M, which teaches the Java programming language, or CS100H, which teaches the MATLAB language, widely used in engineering. Unfortunately, Zabih says, too many students think programming is boring, and therefore so is computer science.

CS100R, an honors version of CS100M open to all Cornell students, also uses the Java language. “It satisfies the College of Engineering requirement that students learn MATLAB,” Zabih says, “and beyond that we use it for rather compelling applications.”

Through most of the course, students work with the iRobots, which have been upgraded with cameras and additional processing power. Students must complete four exercises:

- Teach the robot to figure out the position of a bright red lightstick (a flashlight with a bright red light) and use the lightstick to guide the robot around the floor.
- Build a robot speedometer/accelerometer.
- Teach the robot to distinguish a red object from a blue one, by identifying Coke and Pepsi cans.
- Track a robot from an overhead camera and guide it through a maze.

The semester ends with an independent project. Zabih assigns simply as “do something cool” usually using either the iRobots or Sony AIBO robot dogs. (The dogs are expensive and no longer manufactured, so they’re on the shelf until needed.)

One group programmed three dogs to dance in unison. Another taught an iRobot to follow a “road” defined by white tape on the floor and respond to a traffic light: If the light was red, stop; green, go ahead; yellow, speed up. Others have taught robots to spell words on the floor, chase each other around and play baseball. Some students have delved into computer vision without robots, programming desktop computers to change the screen display in response to a wave of the hand or to read Braille. Zabih’s primary goal is “to increase their skill in computer science by exposing students to a wide variety of problems where you have to interact with the physical world.”

Creation of the course was supported by a grant from the Faculty Innovation in Teaching Program funded by the Office of the Provost, and by grants from Intel and Microsoft.

Rusty Red is a robust wine with a nose for charity, education and lacrosse

BY NINA ZHANG

Rusty Red, a new wine developed by a lacrosse-loving Cornell alum who is donating all profits to charity, will have a robust educational nose.

The wine, developed by Joe Lizzio ’08, will be marketed with input from Cornell students who developed marketing plans for a contest, April 13, in Warren Hall.

Their creative concepts included a refer-a-friend plan (which won first prize), contacting local restaurants owned by Cornell alumni, introducing the wine at an annual golf outing for alumni lacrosse players and serving the wine at a formal dinner party during Cornell’s Homecoming.

The contest was part of Cornell lecturer Debra Perosi’s Marketing Plan Development course in the Department of Applied Economics and Management (AEM), home to Cornell’s Undergraduate Business Program.

A former managing director at Citigroup, Lizzio retired a year ago from Wall Street and went to Italy to work at the Stefano Berti Vineyards and Winery. The winery, which Lizzio now owns, will make Rusty Red. Rather than compete with other wineries, Lizzio decided to create the Rusty Red Foundation. Donations and profits from the wine will endow foundation scholarships for underprivileged children and fund community athletic projects in needy neighborhoods. Lizzio will cover all costs of wine production, importing, delivery and administrative costs and also will match the first donated $300,000. His long-term goal is to raise a million endowment and then allocate 10 percent of the funds each year to the community projects.

The foundation’s advisory board includes Wall Street financiers as well as educators and lacrosse players. While at Cornell in the 1980s, Lizzio went to two NCAA championships, leading the Cornell team as third-string captain in his senior year. The veteran players later joked that they were no longer the “Big Red” but the “Rusty Red,” the origin of the name of Lizzio’s new wine.

“It’s been a lot of fun,” says Tiffany Chou ’09 about developing Rusty Red’s marketing plan. “I think it’s really great because as AEMers, because this is the one class where you work in a group environment, so it’s different. You get to really use your creative juices.” Chou, with Marlies Wabeko ’09, Nicole Monsein ’11 and Kimberly Liang ’09, developed the idea of referring a friend and if the wine is purchased by someone referred by a friend, Rusty Red would donate 25 percent of the purchase plus profits to the foundation.

The winning student team for the best display and pitch included Brian Creefer ’09, Jason Davis ’09 and Laura Chen ’10. For more information, see http://www.cs100.cornell.edu.