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BYU project: Y-Clops the robot is a fast learner

The student-built device will compete next week in international trials

By [Todd Hollingshead](#)
[The Salt Lake Tribune](#)

PROVO - A one-eyed monster crept along the grounds of Brigham Young University on Friday - until someone turned it off.

Y-Clops, as the robotic creature has come to be known, was displaying its fancy footwork, er, tread work, in preparation for an international robotics competition next week.

Part snowmobile, part wheelchair and part computer, Y-Clops thinks and moves on its own, using its camera eye to navigate through a barrel-filled obstacle course with nary a guiding hand.

"It would be cooler if it was faster," said 12-year-old Kamiko Adcock, on hand for Friday's show. "And if it had rockets on the bottom, and maybe if it had a metal-cutting laser."

Sorry, Kamiko. But Y-Clops is pretty wicked as is.

Built by a team of 12 electrical- and computer-engineering students from BYU, the mobile robot makes decisions with its own brain, a custom-built circuit board that runs artificial intelligence algorithms.

The camera detects colors it is programmed to avoid, such as the orange of the barrels and the white path marks, then the computer decides the machine's path.

Once the computer registers a direction, Y-Clops veers on a half-set of snowmobile tracks, a more stable improvement over last year's model, students say.

Shifting and veering just short of barrels, and within the taped lines, the machine manages the course independently.

However, Y-Clops is still learning a few things.

"Shadows throw it off just a bit," acknowledges team member and recent BYU graduate Kirt Lillywhite. "And once it ran into



Student Evan Anderson gets the Y-Clops robot ready for the obstacle course at BYU in Provo on Friday. The device will participate in an international robotics competition. (Rick Egan/The Salt Lake Tribune)

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a tree and climbed it."

All the fine-tuning will have to be finished soon.

Y-Clops will eye down its robotic rivals June 10-12 in

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Michigan at the 14th Annual Intelligent Ground Vehicle Competition, sponsored by the Defense Department.

The team hopes to improve on last year's fifth-place finish.

"This year we are better prepared," faculty adviser D.J. Lee said. "But you can never tell."

Senior Spencer

Fowers already is thinking blue ribbon because Y-Clops is running a lot faster than last year's first-place team.

"Thanks to the intelligent-machine-learning algorithm we developed, we're also pretty accurate," Fowers said. "Of course, I'm optimistic, but we're hoping to blow the other teams out of the water."

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Y-Clops' vitals

15 feet tall

1250 pounds

1Two 12-volt car batteries

12.8 Ghz Dual Core Pentium D computer

1GPS receiver

1Digital 3-axis compass

1Wireless emergency stop

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