A yacht that pilots itself

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Buffalo Automation Group, a robotics startup founded by three University at Buffalo undergraduate engineering students, is developing technology to create autonomous boats similar to Google's driverless cars. Credit: University at Buffalo.

Driverless technology is making inroads in maritime shipping, search-and-rescue operations and security work. But it has been conspicuously

absent from recreational boating.

That is changing.

Buffalo Automation Group, a robotics startup founded by three University at Buffalo undergraduate engineering students, is developing technology to create autonomous boats similar to Google's driverless cars. Since forming last year, the company has successfully tested its technology on a 16-foot catamaran, filed two provisional patent applications and secured thousands of dollars in funding.

"The success we've had illustrates there is a market for safe, highly-effective and easy-to-use marine autopilot systems that provide recreational boat owners with well-deserved peace of mind," says Thiru Vikram, the company's CEO, who expects to earn a computer science degree from UB this spring.

Co-founders include Shane Nolan, chief operating officer (electrical engineering, class of 2017) and Alex Zhitelzeyf, vice president of product development (mechanical engineering, class of 2016).

Helping pleasure boaters

Each year, recreational boating accidents cause hundreds of fatalities and thousands of injuries nationwide, according to U.S. Coast Guard data. Buffalo Automation Group wants to reduce those numbers through use of its technology. The company is targeting small yachts and inboard boats up to 40 feet long.

"These are vessels that are big enough for a family to spend anywhere from a few days to a few weeks on the water. But they're often too small to hire a crew, or even a junior captain, so the captain must keep constant vigil over the boat," Nolan says.

Like airplanes, many of these boats have an autopilot option. The problem, Zhitelzeyf says, is that these systems are reactive, meaning that they respond only after the boat senses a change in tide, wind or other conditions.

The technology that Buffalo Automation Group is developing - a combination of sensors, cameras and wireless communication systems - is predictive, meaning it fuses real-time data, such as weather conditions and obstacles in the water (boats, swimmers, logs, etc.), with nautical charts and other static information to preempt any threats to the boat and its course of direction.

Designed for new and used vessels, the system would dock the boat and allow the captain, at any time, to easily regain control over the boat. It also has the potential to reduce insurance costs.

"Essentially, you will connect your smartphone or laptop to the system. From there, you use your device to tell the system where you'd like to go. It then guides the boat, from port to port, using the safest, most efficient route possible," Zhitelzeyf says.

How they got started

Each co-founder grew up interested in robotics. Vikram began shaping the business idea in early 2014. That spring, he and a separate team of students won third prize at UB's elevator pitch competition.

Around that time, he approached Nolan, a friend he met through the Academies, living and learning communities at UB that bring together like-minded students. They soon paired up, added Zhitelzeyf and received a research grant from UB's Center for Undergraduate Research and Creative Activities.

From there, Buffalo Automation Group was born.

The company is based out of tenX, a co-working space operated by UB's Office of Science, Technology Transfer and Economic Outreach (STOR) at Baird Research Park in Amherst, New York. The students work under the guidance of Bina Ramanurthy, teaching associate professor in the Department of Computer Science and Engineering in the School of Engineering and Applied Sciences.

They received a boost this summer by winning the inaugural Buffalo Student Sandbox, an innovative economic development contest created by WNY Innovation Hot Spot that pays college students to further their respective businesses during the summer.

The co-founders plan to continue to refine the technology - as well as complete their course work - this school year while meeting with potential investors, boat manufacturers and retailers that sell marine electronics.

Provided by University at Buffalo

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