

UNIVERSITY OF
WATERLOO



Prof. Steve Waslander (forefront) and grad students (from left to right) Adeel Akhtar, Arun Da, James Servos, and Neil Mathew in the WAVELab

SUCCESS STORY

Clearpath Robotics Helps University of Waterloo Students Keep Pace with the Robotics Industry.

The University of Waterloo (UW) has been ranked Canada’s top comprehensive research university for three years in a row. Their world-class research facilities and unique intellectual property policy helps them attract the best and brightest research minds the world has to offer. With a Ph.D. in Aeronautics and Astronautics from Stanford University, Professor Steven Waslander is one such example. Shortly after joining UW in 2009, he founded the Waterloo Autonomous Vehicles Lab and began building his inventory of mobile robots and autonomous vehicles.

Before Clearpath Robotics

Prof. Waslander encountered many challenges when he began teaching his highly anticipated *Introduction to Autonomous Mobile Robotics* course. Wanting his students to gain valuable hands-on experience in autonomous systems, he had his students build their own autonomous ground vehicles as a core part of the curriculum. To help motivate his students, Waslander even had them enter their robots in a national competition for some added fun and friendly competition. Unfortunately, the twelve week semester was simply not long enough for his

students to successfully design, build and program an autonomous mobile robot; everything from debugging electrical connections to fabricating mechanical components seemed to cause long delays. “On competition day, not one robot was able to perform basic autonomous operations like collision avoidance!” he explains.

It became clear to Waslander that allowing his students to build their own mobile robot was too stressful, time-consuming and ambitious. With so much time spent on building the robots, his students did not have time to apply course theory to their robots and the full potential of the course was not realized.

“On competition day, not one robot was able to perform even basic autonomous operations!”

Ultimately, Professor Waslander decided that an off-the-shelf robotics platform was a better starting point for his students to work on and learn from throughout the semester. Clearpath Robotics stepped in at this crucial time to help Waslander deliver an improved hands-on robotics curriculum.

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The Clearpath Advantage

Prof. Waslander came to Clearpath Robotics in search of an educational robotics platform that would serve as a core learning tool for his students. He purchased three Chameleon-series

“Now my students have the tools they need to apply course material to a real autonomous vehicle.”

educational mobile robots because of Clearpath’s approach to open-source, hardware customization and technical support. “The robot customization was wonderful,” says Waslander, who asked for a custom steering system to better reflect what his students were learning in class. “Now my students have the tools they need to apply course material to a real autonomous vehicle - without the headache of building the entire vehicle system themselves.”

As an added benefit for Waslander, all Clearpath robots are compatible with the increasingly popular open-source Robot Operating System (ROS), which makes the Chameleon a great learning tool for quickly grasping the fundamentals of autonomous vehicles. He adds, “The Chameleons have allowed my students to join a vibrant and growing robotics community, which is really exciting.”

Results

In the three years since UW purchased their robots, over 75 students have completed the course and lab. Students are also able to take the robots home to continue work due to their portability and durability. Prof. Waslander’s students are even using the robots to win robotics competitions (left).

Waslander could not be happier with his decision to work with Clearpath, “Their robots are extremely reliable. I have not once had to get them repaired”. This means no lost productivity, no wasted lab time, and no surprise repair costs. Waslander’s experience with Clearpath has produced fantastic results for his course, “My class has been rated 95 out of 100 for the last three years. It is one of the top-ranked classes at Waterloo right now.” Prof. Waslander is planning to grow his lab with Clearpath’s help.



Waslander's award winning robotics students (left to right): Prasenjit Mukherjee, Carlos Wang, Arun Das and Gerardo Salas

About Clearpath Robotics

Clearpath Robotics builds reliable and easy-to-use unmanned vehicles to help universities solve complex robotics research challenges. Our products are simple yet well-engineered systems that integrate powerful open-source technology and industry-leading customer support. Visit us at www.clearpathrobotics.com to learn more or call us at **1-800-301-3863** to speak with an Applications Engineer.