



Making a Splash

If you were to visit the swimming pools on campus any weekend last spring, you would have found a team of Caltech students diligently preparing for competition—but they weren't tweaking their flip turns and backstrokes. Instead, the members of the Caltech Robotics Team were meeting to fine-tune their

latest project—a robotic submarine named Bruce—for the 17th Annual International RoboSub Competition.

At the competition, which took place in San Diego in late July, the team was scored based on how many tasks Bruce could complete in 25 minutes. The complex challenges—such as traveling through

an underwater gate, finding and hitting different colors of buoys, firing a tiny torpedo at a target, and tracking down the location of a sonar pinger—required collaboration between Bruce's programming, electrical, and mechanical subteams.

As an added challenge, instead of acting as a remote-controlled vehicle, Bruce had to perform all of these tasks completely autonomously—meaning that the students couldn't have any communication with their robot during the competition. Before the competition, Bruce was handed over to a professional diver, who switched the robot on and placed it in the water. Then the team had to sit back and wait to see how many tasks Bruce would complete—and if those hours of practice in the Caltech pool were going to pay off.

Although Bruce wasn't a finalist this year, the rookie Caltech team did well, earning the title of "Best New Team" at the competition. And because Bruce is a reusable robot, team members hope that with another year of programming and pool practice they can achieve an even better result next year. —JSC