

# Cornell University Robotic Submarine to Get an Upgrade

*Award Winning team will be using second generation Intel® Core™ i7 processor for their 2011 vehicle*

Ithaca, NY, January 5, 2011--This month, the Cornell University Autonomous Underwater Vehicle (CUAUV) Team's latest vehicle, codenamed Zephyr, will upgrade to a new generation of Intel® Core™ processors. The second generation Intel® Core™ i7 processor-based hardware will provide increased processing power for the team's computationally intensive machine vision algorithms, while lowering the overall power consumption, compared to the current Intel® Core™ 2 Extreme processor.

The team from Cornell University blew the competition out of the water at the 12th and 13th annual Autonomous Underwater Vehicle Competitions, sponsored by the Association of Unmanned Vehicle Systems International and the Office of Naval Research. The competitions takes place in a large acoustic testing pool operated by the US Navy SPAWAR Systems Center. The competition calls for competing vehicles to complete an underwater obstacle course with no human intervention. Tasks include ramming colored buoys, dropping markers on shapes in bins, firing torpedoes through colored windows, and picking up PVC elements marked by acoustic pingers. The CUAUV team took first place by completing almost the entire course at the past two competitions, a feat not seen since MIT's victory in 2002. This is due in large part to the high performance Intel® processor-based embedded computers in the vehicles. "Based on the measured image processing speed of our vision algorithms, the additional processing power of the Intel® Core™ 2 Extreme computer allowed us to complete all of the visual elements of the competition course approximately 25 percent faster than with the previous Intel® Core™ 2 Duo processor-based computer, and we expect to see similar improvements with the second generation Intel® Core™ i7 processor-based hardware," said JB Rajskey, a senior member of CUAUV.

The new Intel® Core™ i7 processor will allow CUAUV to continue developing increasingly higher performance machine vision algorithms and explore new techniques with higher computational overhead, such as stereo vision, pose estimation, and structure for motion. The team's integrated vision system, written in C++ and developed with the open source OpenCV and libdc1394 software libraries, is heavily multithreaded and parallelized which enables it to utilize Intel® hyper-threading technology and the quad-core architecture of the new processor, and will allow for a seamless transition to the new architecture.

## About CUAUV

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The Cornell University Autonomous Underwater Vehicle team is a group of about 41 undergraduate students at Cornell University who design and build autonomous underwater vehicles for research purposes and to compete in the annual AUVSI Autonomous Underwater Vehicle competition.

## Contact Information

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For additional information about CUAUV, please visit the CUAUV web page at <http://www.cuauv.org> or send mail to [jb@cuauv.org](mailto:jb@cuauv.org).

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