

RACE Phase III - The Global Communications Station Network: RACE is a distributed network of radio communication stations to be used for remotely controlling robotic vehicles. Phase I was accomplished in the 2000-01 year by a team of 3 EE students (who won the Best EE Project for that year) and resulted in being able to remotely log into a simple HAM radio communication station via the internet (using remote control software), configure the station for single frequency communication with a remote robot, and then exchanging commands and telemetry with that robot. Phase II was accomplished in the 2001-02 year by a team of 4 COEN and 2 ME students. This team a) developed a web-based interface for the station, b) upgraded station equipment to support satellite communications (which included the use of a very large antenna array and dual frequency transceivers), c) installed complete stations at SCU and in Hawaii, and d) implemented a simple Web-based and database-driven station scheduling system. We are hoping to recruit a small RACE Phase III team consisting of a COEN, an EE student, and possibly 2 ME students (especially if an articulating dish antenna is developed. Phase III work will focus on a) adding additional unlicensed and licensed communication frequency capabilities, b) improving the scheduling system with capability for optimization and automated pass time processing, c) upgrading current and installing additional stations in the U.S., etc. The project would most likely be jointly advised by Prof. Kitts and Prof. Quinn.