

EXPLORATION IN ROBOTICS:

During this summer, under the guidance two Electrical Engineering professors from New Mexico Tech, your sons/daughters have been working with teachers and upper-division undergraduate EE Tech students and other mentors to help them design, build, and program mobile robots that can perform tasks such as navigating a maze and avoiding objects. These junior, middle, and high school students are being exposed to an environment wherein understanding of basic sciences and mathematics must be coupled with engineering theories to provide effective solutions to real-world problems.

WHY BUILD ROBOTS?

Building small robots affords an opportunity to link real-world applications to basic science and mathematics in the classroom through exposure to current technology. Such opportunities can transform the learning experience into an exciting adventure for potential future engineers and scientists.

IS THIS A PROVEN APPROACH TO TEACHING MATH & SCIENCE?

For the past four years, the EE Department has taught a course for third-year EE majors wherein the students, in teams of four or five, design and build a mobile fire-fighting robot. These robots are designed to compete in a national competition in which the robots navigate a maze (meant to represent a house), find a candle (representing a fire in the house), and extinguish the fire. New Mexico Tech has sent undergraduate teams from this course to the international competition at Trinity College in Hartford, CT for the past three years (see: http://www.ee.nmt.edu/~wedeward/EE382/SP99/ee382_sp99.html)

This course has been very effective in developing students' design skills, as well as introducing them to several necessary skills not normally part of the academic curriculum, such as teamwork, project management, and project scheduling.

THE LONG TERM GOAL OF THIS EFFORT:

This summer robotics course is exposing the students to a wide range of current technologies, and acquaints them with concepts from mechanical engineering, electrical engineering, computer programming, physics, and mathematics. Having students build robots in teams exposes them to teamwork on academic projects. It allows students with differing backgrounds and skill levels to participate in meaningful ways on the project. With a well-defined project of appropriate scope, students can get a great deal of satisfaction from completing such a complex project. This is a project that students seem to enjoy and from which they can grasp the value of learning about a wide range of technical areas, rather than being confined to a single narrow discipline. This kind of experience can provide the motivation for students to continue on into a technical career.

WOULD YOU LIKE TO FOLLOW THE PROGRESS OF THE COURSE?

We are maintaining a web-page for this course which provides details of our daily activities (see -> <http://www.ee.nmt.edu/~jano/robotics/main.html>).