

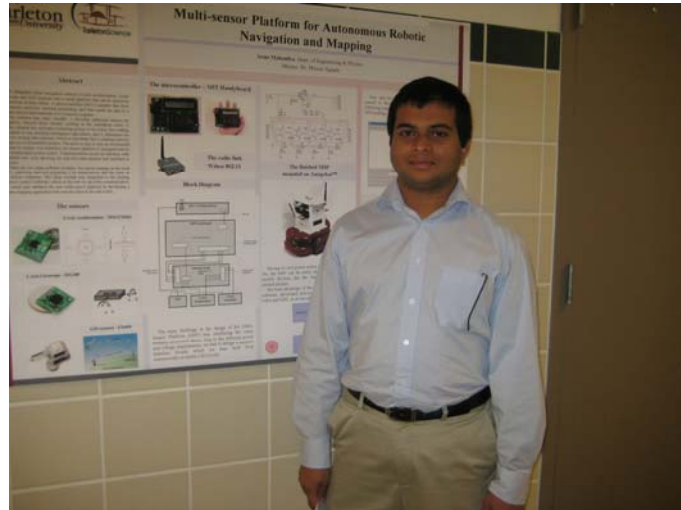
Arun Mahendra

Undergraduate student graduating
in May

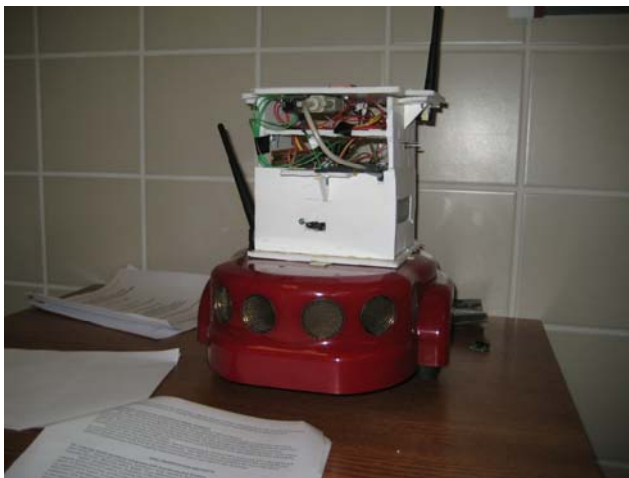
College: Science and Technology;
Department of Physics and
Engineering

Hometown: India

Advisor: Dr. Mircea Agapie,
Computer Science

**MULTI-SENSOR PLATFORM FOR
AUTONOMOUS ROBOTIC NAVIGATION**

We integrated three navigation sensors (3-axis accelerometer, 2-axis gyroscope and GPS receiver) into a small platform that can be carried by our autonomous mobile robots. A microcontroller (MCU) downloads data from all the sensors, performs minimal processing, and



then sends the data through a wireless device to a remote computer. This eliminates the need for storing data on board, and greatly extends the computing power of the robot with only incremental increase in weight. Communication occurs in real-time, with adjustable rate, thus allowing for real-time data analysis feedback to the robot.

There are two main software modules: the server running on the local MCU, gathering data and preparing it for

transmission, and the client on the remote computer. The client module was integrated to the existing Mission Control software which is the hub for all robot communication.

We tested and validated the new multi-sensor platform by developing a terrain-mapping application that uses a real robot in the real world.

Arun's research has been supported, in part, by a grant from Sigma Xi The National Scientific Honors Society. In 2007, his work received their first-place award in a nationwide competition.

Presented at:

Tarleton State University 7th Annual Student Research Symposium, 2008

**6th Annual Texas A&M University System Pathways to the Doctorate Student Research Symposium:
Computer Science undergraduate student - First Place Award**