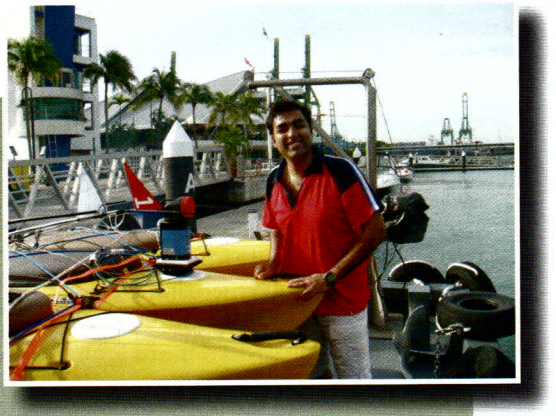
Ones to Watch

Every other month, Unmanned Systems *takes a look at especially promising students or student teams entering the world of unmanned systems. Many will have taken part in one of AUVSI's student competitions, where they proved their aptitude with cutting-edge technology. All of them are worth getting to know.*

The Singapore Robotic Games have been occurring annually for nearly a decade. Organized in cooperation with the IEEE Robotics and Automation Society in Singapore, students from the National Singapore University, like Tirthankar Bandyopadhyay, have been participating since the beginning under the supervision of SRG coordinator and National University of Singapore associate professor Marcelo Ang Jr.



Tirthankar Bandyopadhyay

Born: New Delhi, India, 1978

Academic status: Graduating this year with his Ph.D. thesis on "Target Tracking" and will continue in a post-doctoral program at CENSAM (the Centre for Environmental Sensing and Monitoring) in SMART (the Singapore MIT Alliance for Research and Technology).

How He Got Interested in Robotics: I started working with robots as my second year undergraduate summer project, and that was with the IITK's (Informacios Tarsadalomes Trend kutato Kozpont) robo-soccer team. I remember the first time a closed-loop control on a simple Lego robot was able to track a golf ball; it seemed like the robot had a mind of its own trying to follow the golf ball in its own silly way like an adorable dog. I had the "wow" moment and have been hooked ever since.

I competed in local robot competitions like Techkriti and was given an opportunity to compete in the SRG 2000 [Singapore Robotic Games] robo-soccer competition. After that experience, I focused on robotics courses and subsequently pursued a Ph.D. that allowed me to develop in this area.

What He Learned From the Competition: This was the first international experience for me as a student. Watching other teams perform and exposure to different approaches and designs really opened up my mental horizons. I learned that hands-on experience is absolutely essential in the field of robotics. Most major limitations cannot be recognized until you start building the robotic system.

Advice for Up and Coming Students: As I said earlier, get your hands dirty! Especially since robotics is an interdisciplinary subject, it is difficult to know all the theories you will need in advance. In fact, more often than not you will discover other areas that you need only when you are knee-deep in real projects. This experience translates to a deeper understanding of issues and churns out new ideas for research.

What He'd Like to Do: I would really enjoy doing research leading to applications of robotics to solve problems on the ground. In my opinion, simple systems work best in the field, and designing such with robust algorithms to perform in the field would be the focus of my research.

Applications I would ideally like to explore are in the area of environmental monitoring and surveillance. These could be used in wildlife surveillance and environmental monitoring of water/air quality amongst others.

The Biggest Challenge He Sees Facing the Industry: Power is one of the major bottlenecks in robotics. Autonomous applications are greatly limited in their run time and performance by their power supply. A good power supply can really close the gap in bringing smaller robots into the human environment. Another major requirement is the robotics hardware. Major advances have always taken place around the successful development of cheap, practical, energy-efficient sensors or the novel use of off-the-shelf products in robotics applications. (e.g. Higher computational power and accurate laser and camera sensors have advanced the field of autonomous robot navigation by a huge margin.)