

# ASIA-PACIFIC ROBOT CONTEST 2009

## Students eager to show off robotic skills

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The Bangladesh team is set to show off their robotic skills in the upcoming ABU Asia-Pacific Robot Contest 2009 to be held in Tokyo, Japan in August.

The team comprising the students of mechanical engineering department of Bangladesh University of Engineering and Technology (Buet) has developed three highly technically advanced robots, which are ready for shipment to Japan for participation in the contest.

These autonomous robots can move through steep slopes and sharply winding roads to a certain destination and can take further decisions after reaching the goal. No camera is installed with the robots to reach the target, rather these robots function through pre-programmed control system.

In the competition that will take place at the gymnasium of the Metropolitan Komazawa Olympic Park in Tokyo on August 21 and 22, the Bangladesh team will compete with 21 teams from technically advanced countries of the Asia-Pacific region, including Japan, China, India, South Korea, Vietnam, Malaysia, Thailand and Egypt.

The Asia Pacific Broadcasting Union (ABU) has been organising this competition annually since 2002. The event is widely known as ABU Robocon, which is an international educational event with a fresh and unique concept for university, college, and polytechnic students in the Asia Pacific region.

The four-member Bangladeshi team comprising three students and a teacher will leave Dhaka on August 20. Saiful Islam Mithu is the team leader while Mezbahur Rahman Evan and Omar Bin Yusuf are other members of the team. Their teacher Dr M Zahurul Haq will participate in the game as their instructor.

Cooperation between people and robots is the theme of this year's contest. The technical requirements of this year's contest is more

advanced than the previous years' arrangement, since the organisers have conceived of this year as a step towards the goal of close cooperation between manual (or directly human-controlled) and automatic robots.

The core item of this year's contest is Kago, the traditional Japanese palanquin of the pre-modern era, which was used to carry the traditional Samurais by two men, one in front and the other behind, to distant places. Following the tradition, three robots from each participating team will travel a distance in the competition.

Like the Kago carriers of the ancient time, an Automatic Carrier Robot will lead a Manual Carrier Robot to carry a Traveller Robot, which is also an Automatic Robot, on a replica of a Kago to a distance of about 80 metres through replicas of mountains, steep slopes, and sharply winding roads. At the end the robots will reach a bell and the traveller robot will have to ring the bell.

"That is not an easy challenge," said Dr M Zahurul Haq. "During the three-minute delicate game, everything will have to be done by the robots without any intervention from the participants."

"This year's competition is really challenging because some conditions of the game such as the carrier robots will not be allowed to touch the surface except the zigzag path through slopes and they must adjust the seat of the Traveller Robot so that it does not slide or fall even if the seat is inclined by 20 degrees in either the longitudinal or the transverse direction during the travel," he adds.

According to Dr M Zahurul Haq, Bangladeshi robots will be able to maintain all the requirements of the game, since the robots are more intelligent and well controlled.

"The automatic robots developed for the competition will be controlled through high-speed sensor-based communication system. The control system receives 1000 commands per second for taking the corrective



PHOTO: STAR

Buet students and their teacher test robots at the laboratory of mechanical engineering department.

measures during the game, earlier the movement of the robots was movement dependent," he said.

Buet students have been participating in this annual competition since 2005 and won the prestigious Panasonic Award in the Robocon contest in 2005.

All these robots have been developed under a regular project for the undergraduate students of the department of Mechanical Engineering at Buet.

This year, about 12 students under the supervision of Dr Haq have developed these robots with used motor parts, aluminum sheet, nylon fibre, steel sheet and other materials collected from the city's Dholaikhal and Patuatuli areas. Importing the micro-controller chips and hardware from the US, Dr Haq developed the control system.

On the limitations of developing robots here, Dr Haq said that they have to use reverse engineering due to lack of raw materials in the country.

"We collect the used motor parts and sensors from old Dhaka and design the robots based on the shape and capacity of these components. High-speed communication system and other chips have to be collected from the US," he added.

He said there is a huge scope for the industrial applications of robots in delicate and repetitive works in Bangladesh. Moreover, robots can be used to develop the defence system of the country such as mine detection purpose.

For sustainable development of robotics in the country, Dr Haq suggested that the industry be developed gradually in different phases.



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