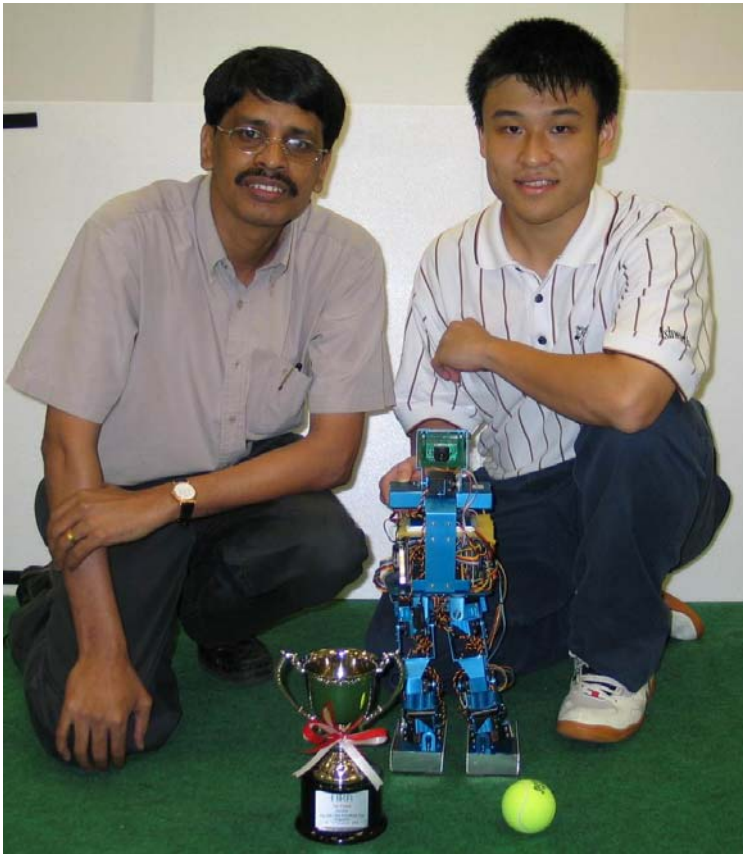


## 10<sup>th</sup> FIRA RoboWorld Cup Singapore 2005 – Humanoid Category Overall Champion



The 10<sup>th</sup> FIRA (Federation of International Robot-soccer Association) RoboWorld Cup Singapore 2005 was held at Orchard Hotel in December 2005. The humanoid category competition saw a huge increase in the number of participating teams this year with a total of 11 teams. There were only 5 teams competing in the same category the year before.

The NUS team, Manus, was represented by Tan Li Yu, an EE4 student from the Bachelor of Electrical Engineering program in ECE Dept. The home ground advantage this year meant that there was intense pressure from the nation, university as well as the department for the team to excel in this year's competition. The participation of the humanoid team from Mechanical Engineering Department of NUS made the competition even more interesting given the traditional friendly rivalry between ME and EE. Many other participating universities consisted of teams of 3 to 8 post-graduate (Masters and P.H.D) students leaving our NUS team as the smallest contingent (1 student) and with the least educational knowledge (Bachelors). This made the task of winning the competition all the more challenging.

The competition this year consisted of 4 events: Robot Dash, Penalty Kicks, Obstacle Course and Lift & Carry. Each of these events was held 3 times and the best 2 results for each event were added to the final result.



#### Robot Dash:

The humanoid is expected to walk forward for 1.2 metres then autonomously stop and switch to walking backwards for another 1.2 metres. Our humanoid was the hot favourites for this event as the world record holder completing the course in a total time of 52 seconds (16 seconds forward and 36 seconds backward) during the event last year. This year, our humanoid won all 3 Robot Dash events while smashing its own world record during on the first day of the competition. Our humanoid set a new world record of 42 seconds (17 seconds forward and 25 seconds backward).

#### Penalty Kicks and Goalkeeping:

The humanoid is expected to shoot a ball past an opponent humanoid goalkeeper into the goal for this event. The ball is placed in a random position in the penalty box, making the task even more difficult. Our team managed to score 1 goal in 5 attempts the year before. A huge improvement in this category was needed for the humanoid to have any chance winning the competition. With a whole new attacking strategy implemented by Li Yu, our humanoid proved to be too hot for the opponents scoring goals as if it was for fun. We scored a total of 22 goals in 28 attempts this year, a feat never seen before in FIRA's history. The next closest team only managed to score 7 goals.

#### Obstacle Course:

The humanoid is expected to move past a field of 1.2 metres in length and filled with obstacles placed in its path. Our humanoid won this event hands down with no humanoids other than the NUS one managing to clear the obstacles.

#### Lift & Carry:

The humanoid is expected to carry batteries with a basket attached to it. Our humanoid managed to carry 12 AA sized batteries.

#### Final Result:

The magnificent results from the first 2 days of the competition meant our humanoid won the competition even before the start of the 3<sup>rd</sup> day of the competition. At the end of the 2<sup>nd</sup> day where each event had been held twice, our humanoid had already held an unassailable lead from the other teams, making it mathematically impossible for it to be overtaken. The 3<sup>rd</sup> day of competition was to be only a formality and finally, our humanoid managed to regain its world champion title, having won it in 2003 but narrowly missing out last year!