STUDENT ROBOTICS

2008 Competion Review

Date: 12th April 2008
Venue: The Cube, Highfield Campus
University of Southampton

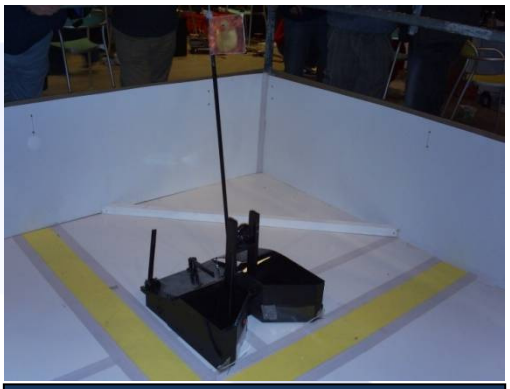
Warming Up

There was a wide range of creativity on show for the 1st Student Robotics competition, held at Southampton University on the 12th April 2008. Nine teams of students from colleges in and around the Southampton area came to test out specially built and programmed robots. The robots were designed to use a camera to detect and collect coloured block tokens from a large white arena and return them to their designated corner to score points.

Early in the day several teams tried out the full size arena for the first time, collecting red tokens that had been scattered before them. Teams made several small tweaks to their robots and then the real competition began.

After a shaky start, where most robots failed to move from their corners, a short break was taken and SR team members helped the school and college students fix the early problems. After this work the competition got underway with several competitive rounds.

Early Rounds



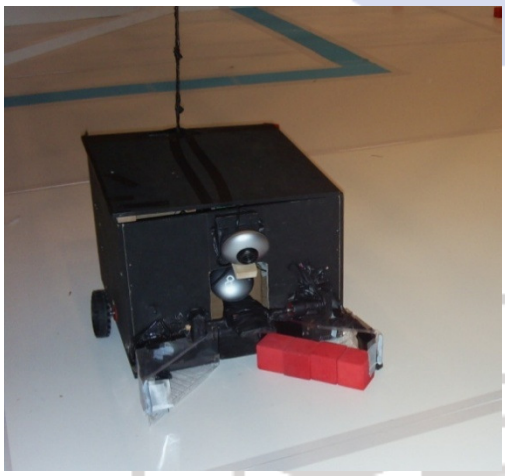
Peter Symonds (Team 2) preparing to move off

Most robots had early success in moving around the arena though there were two early casualties: Team 1 from Peter Symonds suffered a smoke inducing electronics failure early on from a battery short circuit, relegating their design to a work bench for most of the morning as SR electronic specialists worked on solving the problem. Team 4 from Taunton College suffered failures from the start and required a new electronics set to continue.

In the arena Team 2 from Peter Symonds dominated proceedings with their impressively engineered scoop mechanism, scoring more points than all the other teams put together. Team 6 from St Anne's started slowly but ploughed through with mechanical help from an attending University technician and Student Robotics engineers, pulling them up into a solid second place in the league table; Brockenhurst College were close behind with a series of decent rounds. As lunch approached most teams were picking up points in spite of the occasional technical problem or programming error. Team 7 from Southampton City College began to pick up steam with their neatly engineered and fast moving design and moved into fourth place in the tables.

Competition Heats Up

As the competition resumed the robots had received further tweaks and improvements. Team 1 from Peter Symonds got back in the competition having had electronic repairs completed and began to score well. Team 5 from St Anne's and Team 3 from Peter Symonds also began to improve with better programming helping improve round by round performance.



St Anne's (Team 6) with its "Sandwich Box" modifications

As the robots improved they began fighting over tokens and several times robots collided with one another attempting to grab the same token; watching teams looked on to see which robot could push the other away.

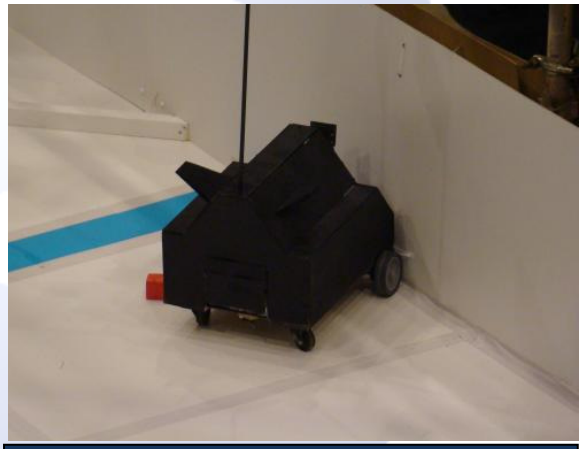
The rounds went by with Team 2 continuing to score heavily though they hit problems with their scoop becoming jammed. The design occasionally strayed into a token saturated area and multiple tokens caused their scoop to jam allowing other designs to catch up. Team 6 began to suffer at the hands of more sophisticated designs capable of storing more tokens such as City College's Team 7, who after early troubles had improved significantly to appear the strongest challenger to Peter Symond's Team 2. Various robots took minor damage hitting walls or other robots and some designs began to show the strain of competition late on.

The one exception was Team 4 from Taunton's, who for most of the day had been on the bench with technical issues. They were able to join in late in the league matches and immediately impressed with a fast and effective design, picking up large numbers of tokens as it went.

Finally the league completed with Team 2 well on top, though the rest of the field was closely matched with several robots tied within the table.

Semi-Finals

The first semi-final took place between Team 2 from Peter Symonds, Team 10 from Fareham College and Team 12 from Brockenhurst, who had finished 1st, 7th and 4th in the league. Sadly Brockenhurst's design, which had been one of the most reliable up to that point, suffered driveshaft problems and never left its corner. Fareham's design managed to manoeuvre around the arena collecting some tokens, though it couldn't make it back to the corner. Peter Symonds' design continued to perform strongly, collecting several blocks and returning to the corner to advance to the final.



City College (Team 7) suffered navigation issues but still made the final

The second semi-final included the resurgent Taunton's team as well as both teams from St Anne's. Team 5 from St Anne's suffered a failure prior to the round and was unable to take part, leaving the other two teams to fight it out for a place in the final. St Anne's Team 6 had cunningly upgraded their design by sticking two sandwich boxes on the front, allowing for more effective token collection and subsequently prevailed, returning one token to their corner before suffering a breakdown. Taunton's again picked up several tokens though failed to reach their corner, losing the round.

The third semi-final was a close affair, with Teams 1 and 3 from Peter Symonds as well as City College's Team 7 going head to head. Though not a high scoring round, the speed of City College's machine allowed it to succeed in winning the semi-final in a tie-break, despite getting stuck on a wall halfway through the match.

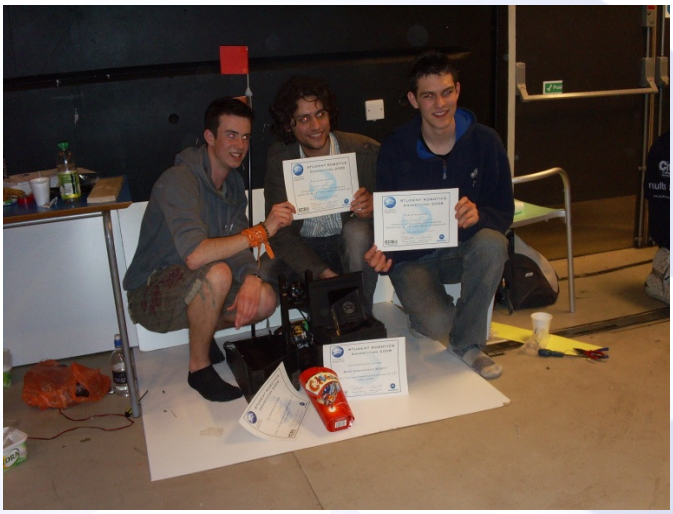
The Final as seen from the flag pole of City College's machine

Final

The final four robots entered the arena for the top prize with Peter Symonds (Team 2), St Anne's (Team 6) and City College (Team 7) joined by Taunton (Team 4) who progressed as highest scoring loser from the semi-finals.

On the start signal all robots got away cleanly. City College suffered a sudden loss of navigation and crashed into a wall prior to scoring tokens, leaving the other three in action. Peter Symonds managed

to successfully move back to their corner after moving out for tokens, picking up what would be vital points. Taunton and St Anne's fought on, with both teams collecting tokens before the end of the match, though neither managed to make it back to their corner. At the conclusion of the match, Peter Symonds were victorious by a single point from both Taunton and St Anne's, with St Anne's taking second owing to having more tokens on board their robot at the end of the match.



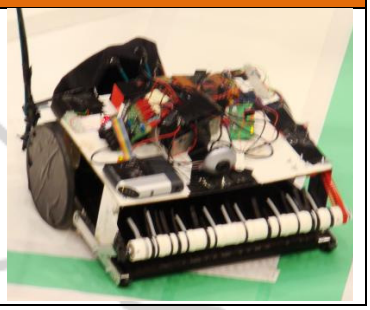
The Victorious Team 2 from Peter Symonds, who also took home the 'Best Engineered Robot' award

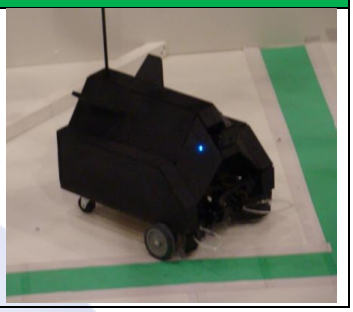
2008 Competion Robots

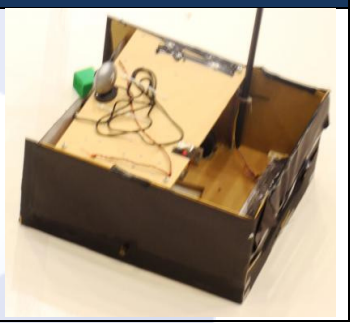
STUDENT ROBOTICS

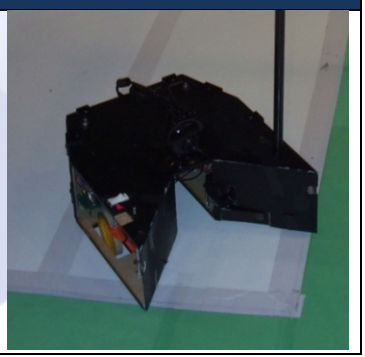
Peter Symonds College (Team 2)	Placed 1st
The largest and most complex robot in the competition in terms of design and construction, “Barry” as it came to be known was the dominant robot in the 2008 competition. The robot came top in every round it competed in, scoring more points than all the others put together. It utilised a swinging scoop mechanism which pulled tokens up onto a sorting tray where tokens were either rejected if incorrectly coloured or stored for depositing in the corner zones. The design only failed when it encountered a large number of tokens at once, which caused the mechanism to jam.	

St Anne’s College (Team 6)	Placed 2nd
A simple cube design which powered on through the day despite several small mechanical issues. It utilised a spinning paddle to pull tokens in and eject them later. The paddle was prone to failure so two “sandwich box” jaws were added later to help direct tokens, dramatically improving performance. The robot had a fairly effective vision system though suffered from slow movement and unreliable drive. In spite of these issues the team persevered to take a deserved podium finish.	

Taunton College (Team 4)	Placed 3rd
A wedge shaped design with a spinning brush drum and conveyer belt used to pull in tokens and store them in a rear attached bag. Its grabber was devastatingly effective and the robot itself was one of the fastest in the competition, only let down by poor navigation which limited its score in rounds as it could not return tokens to its corner.	

Southampton City College (Team 7)	Placed 4th
A well engineered and swift design, it relied on a spinning paddle and conveyer belt to pull in tokens before ejecting them from a rear mounted hopper. Impressive to watch with its fins and eerie blue LED eyes, the design was only let down by steering troubles and malfunctioning bump sensors which caused it to crash into walls frequently and become stuck.	

Peter Symonds College (Team 1)	
A simple design similar to Team 6, though had larger jaws and no paddle system. It suffered early electrical problems though was repaired and scored well in some rounds, narrowly losing out on a place in the final.	

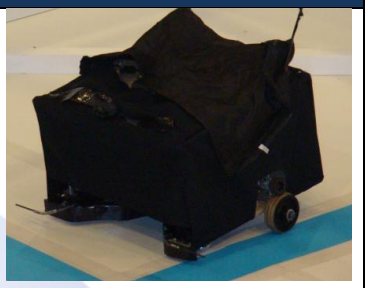
Peter Symonds College (Team 3)	
A neatly assembled, compact and swift design, Team 3's design was one of the early successful designs. The robot was extremely manoeuvrable due to its low weight and covered the arena quickly. It was only let down by low token storage capacity and apparently erratic steering.	

St Anne's College (Team 5)	
A butterfly shaped chassis, though lacking an effective grabber system or high top speed, the design was geared towards picking up points for manoeuvrability and scored consistently until late technical troubles ended its run.	

Fareham College (Team 10)

Equipped with a simple grabber, Fareham's robot was another cuboid shaped shell with average speed and manoeuvring capabilities. More reliable than some of its rivals, it picked up decent scores in some rounds and also narrowly missed out on a place in the final.

The design utilised a unique but seemingly effective twin wheel drive train on each side, where a smaller rubber wheel connected to the motor would drive the main wheel in the opposite direction.



Brockenhurst College (Team 12)

A simple jawed design with an optional servo operated shunt, using twin wheeled axles for extra grip, the robot had one of the largest token storage capacities of the competition and had decent straight line speed. It was the most reliable of the designs until a late driveshaft failure knocked it out of the semi-finals.