School of Engineering

Sponsorship Package

October 2007 - 08

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Project Background

Warwick's Robot Football project was introduced in 2003 with the intention of competing in the UK national championships. As a consequence of the project's success it has since widened its field to incorporate *mobile robotics.* The 2007/08 team consists of 8 engineering master's students including Mechanical, Electronic, Manufacturing and Systems engineers as well as benefiting from knowledge and experience of three PhD students.

Previous teams have entered the robot football competition known as MiroSot, regulated by the global federation FIRA (Federation of International Robosoccer Association). The aim of this competition is to produce a competitive team of 5 FIRA certified robots, each 7.5cm square. MiroSot is an inter-university competition consisting of 22 teams from all over the world including China and Singapore, Russia, Europe and the US. It has high profile sponsorship from Microsoft, HSBC and Quin Scape and many other Global Organisations. The competition uses a computer controlled algorithm to calculate robot positions based on data from a vision system and output the playing strategy. Last year we achieved 2nd place at the UK national championships and we are confident we can improve on this result in 2008.

Achievements

- Quarter Finals at 2006 FIRA International Championship (Singapore)
- 1st place 2006 UK MiroSot Simulation Championship
- 2nd place at 2007 UK MiroSot Championship
- Hosted 2006 MiroSot Championship in collaboration with the IMechE

2007/08

This year as well as continuing strategic development of the MiroSot robots we are also looking to enter another demanding international competition; RoboCup Rescue. It requires autonomous search and rescue in an earthquake scenario involving a partially collapsed building.

The ambition of the competition is to increase awareness of the challenges involved in autonomous search and rescue applications. It requires robots to demonstrate their capabilities in mobility, sensory perception, planning, mapping and practical operator interfaces while searching for simulated victims in unstructured environments. As robot teams begin demonstrating repeated successes against the obstacles posed in the arenas the level of difficulty will be increased accordingly so that the arenas provide a stepping-stone from the laboratory to the real world. Meanwhile, the yearly competitions will provide public proving ground for field-able robotic systems that will ultimately be used to save lives.

Laboratory

Our laboratory is situated in a prime location within the Warwick International Manufacturing Centre which also houses the Warwick Manufacturing Group. Both are World renowned and boast a large number of corporate visitors including the current and previous Prime Ministers, Gordon Brown and Tony Blair, Renault's Formula 1 Director of Engineering, Pat Symonds, Jack Straw, and the Ex-president of India, President Abdul Kalam.

WMR is located in the main hall with a frontage of 10 metres adjacent to the entrance concourse. We benefit from impressive facilities within the IMC including 5 axis machining, robotic cells, laser cutting and etching, 3D co-ordinate measuring, super computers and the robotics research department.

Our intention is to open up the laboratory allowing students and visitors more involvement in our work. Starting with a complete office overhaul including new cabinets, display units, lighting and wall sized posters showing our progress and a more corporate approach to organisation. We will shortly be investing in some new display equipment for presentations and publicity media for WMR and our sponsors.

Media Coverage

We feel we have a responsibility to all of our stakeholders to update them of our progress, which we intend to do though a bimonthly newsletter. Previous years have gained exposure through radio and a campus newspaper, open days, events and national television coverage on Channel4 news and Richard and Judy. This year we would like to explore additional exposure to attract a wider audience.

The new look website (*www.robotfootball.warwick.ac.uk*) has inherited the new Warwick style and several other improvements including weekly progress updates and images and videos of competitions and upcoming events.

We aim to attract more visitors to our laboratory at open days and corporate events through an active publicity campaign. Team uniform is in the process of re-design to create a more professional look throughout competitions and events, displaying both the team and sponsor logos. To raise awareness of Engineering in the local area we visit several schools to give talks and presentations which receive media coverage.

Finally we have access to several notice boards and electronic displays around the Engineering department and WMG building, which are used to promote the project and provide updates for students, staff and visitors through both textual and visual mediums.

Objectives 07/08

- Design and build a RoboCup Rescue certified robot

    i) Develop a robot capable of navigating the scenario terrain

    ii) Produce a sensor array capable of mapping the environment

    iii) Provide support for tele-operation and autonomous navigation

    iv) Investigate the implementation of victim identification using thermal imaging, motion, sound and CO_2 sensors

- Compete at the European Rescue league within 3 years

- Optimise our MiroSot strategy for national championships

- Raise the profile of WMR and sponsors through our revised Marketing Strategy

- Increase awareness of Engineering at Warwick and as a profession

Responsibilities to Stakeholders

For the academic period 07/08 we aim to provide exposure for all our sponsors based on a tiered system offering differing levels of publicity;

Contributions up to £2000 in value or hardware are entitled to the following;

- Company Logo displayed on publicity material including;

    ➤ Fact sheets on display within our laboratory and the Engineering department

    ➤ Inclusion in all our posters and presentation material.

    ➤ The laboratory wall and window displays.

    ➤ Bimonthly newsletter distributed to all stakeholders including sponsors and associates.

    ➤ Media coverage including magazines, newspapers and television.

- Information about your company and links to your website under the website sponsorship section

Premium Sponsorship

Contributions over £2000 in value or hardware receive the following benefits in addition to above;

- Promotion of your company logo in more prestigious places including;

    ➤ The main page of our website

    ➤ Displayed on all robots, including competition entries

    ➤ Team uniform and the sponsor banner around the MiroSot football pitch

    ➤ Official stationary and email/letter templates

- Your information will also be displayed on the Engineering WMR notice board subject to approval

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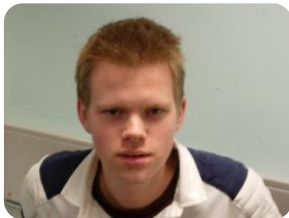**E:** E.P.Elbourne@warwick.ac.uk

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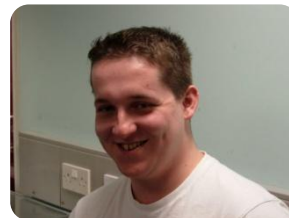
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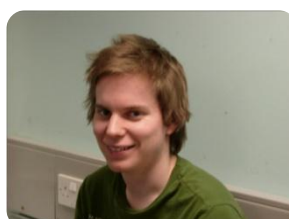
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Office IT Equipment and Mirosot Controllers

- High specification computers for Strategy calculations (x 2)
  - ➢ Minimum requirements
    - ▪ Dual Core
    - ▪ 2 Gb Ram
    - ▪ Gigabit Ethernet
    - ▪ Dual head graphics
    - ▪ Windows XP Professional (Requirement for WMG network)
- Desktop Workstations (x 2)
  - ➢ Minimum requirements
    - ▪ 1 Gb Ram
    - ▪ 100/1000 Ethernet
    - ▪ Windows XP Professional (Requirement for WMG network)
- 19" LCD/TFT monitors (x 6)

NB: If all of the above is provided by a single supplier we would like to display "Warwick Mobile Robotics powered by: <supplier>" on all of our Mirosot publicity material and grant the supplier our Premium Sponsorship package.

Mobile Robot Computing (Robot Rescue)

- Industrial Computer or Laptop as platform for RoboCup Rescue robot
- Industrial or embedded PC for tele-operation unit

Sensors (Robot Rescue – Victim Identification)

- LADAR (Laser Radar)
- Sonar
- Infra Red sensing/camera
- Stereo Vision cameras
- Carbon Dioxide

Mechanical (Robot Rescue Chassis)

- Robot Chassis, max 80cm square, pref. lightweight
- Caterpillar Tracks / Wheels
- Drive motors/gearboxes
- Robot arm (Searching entombed spaces)

Electronics (Robot Rescue Hardware/Computer Interfacing)

- PIC microcontrollers, currently familiar with Atmel equipment
- Computer interfacing
- Wireless communication (WIFI / Bluetooth preferable)
- Power electronics (Motor Controllers)
- Batteries