IW-NMWR-2010: Networked Mobile Wireless Robotics

Inaugural Session: (L to R: Er. R.C. Vyas, Dr. Martin Howarth, Dr. RC Purohit, Dr. S.R. Maloo, Dr. PN Goswami, Dr. S.S. Rathore, Dr. Y.C. Bhatt, Dr. Dharm Singh delivering keynote address)

A three days In-country workshop on “Networked Mobile Wireless Robotics (IW-NMWR-2010)” was organized by Special Interest Groups-Wireless Networks (SIG-WNs) of Computer Society of India and Udaipur Chapter, Techno India NJR (TINJR) Institute of Engineering, Udaipur, Institution of Engineers, India, Udaipur Local Centre and Department of Computer Science and Engineering, College of Technology and Engineering, Udaipur during 26-28 October, 2010 at Techno NJR Campus Udaipur.

Inaugural Session

Inaugurating the workshop, Prof. R.C. Purohit, Dean College of Technology and Engineering, Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur and Chief Guest, appreciated the initiative taken by the SIG-WNs CSI and TINJR.

Guest of Honour Dr. S.R. Maloo, Director Research, and MPUAT expressed his views about the importance of this workshop and emphasised on the practical utility of Mobile Robotics. He spoke about the advances in wireless sensor technologies, and communication devices like cell phones continue to change the ways of agriculture. Like sensor technologies, the advent of intelligent robots in agriculture has the potential to raise the quality of fresh produce, lower production costs and reduce the drudgery of manual labour. Dr. Martin Howarth, Sheffield Hallam University, U.K. delivered the keynote address.

Prof. R.S. Vyas, Chairman, OC and MD TINJR welcomed the guests, participants and students to the workshop. Organising Secretary Dr. Dharm Singh spelt out in brief the objectives of the workshop and the effectiveness of hands-on-exercises. He gave the brief introduction about the CSI, and SIG-WNs of CSI. Dr. Y.C. Bhatt, Honorary Secretary gave a vote of thanks to delegates, guest and participants

Robotics and automation

Dr Martin Howarth, Head of Department Engineering and Mathematics, Sheffield Hallam University, U.K. gave the key not speech on technologies and various projects on Robotics
and automation like Distributed Human-Robot System for Chemical Incident Management. He said a large nanotechnology research programme on Nanorobotics - technologies for simultaneous multidimensional imaging and manipulation of nano-objects are going on in Howarth, Sheffield Hallam University.

The integration of different technologies to act as simultaneous real-time nanoscale "eyes" and "hands", including the advanced nanorobotics, high-resolution ion/electron microscopy, image processing/vision control and sophisticated sensors, will lead to the ability to manipulate matter at the scale of atoms or molecules.

The Nanorobotics programme will thus allow unique experiments to be carried out on the manipulation and observation of the smallest quantities of materials, including research into nanoscale electronic, magnetic and electromechanical devices, manipulation of fullerenes and nanoparticles, nanoscale friction and wear, biomaterials, and systems for carrying out quantum information processing.

**Keynote address: Dr. Martin Howarth delivering the keynote address**

**Robotic System Safeguards Employees' Health**

Dr. Martin Hawarth, Sheffield Hallam University, U.K. spoke the automation and robotic system enable human-beings to execute works in very dangerous places and they also preserve their health. According to him, there are extreme temperature sites in which man cannot work but a robot can do so. The creation of these technologies not only secures the quality of services and finished products, but also ensures the quality of workers' living standards. Dr. Hawarth says the aim is to develop automated systems to a level where operator stress is reduced at the same time as productivity is lifted.

**Robot Miners of the Future**

Advanced robotics is making many mining jobs more efficient and less dangerous said Dr. S.S. Rathore, Chairman, IEI, ULC. Mining robotics is tipped to have wide application, in
particular the automation of potentially dangerous work such as rock-breaking, rock-bolting in unstable geology and hole-drilling and charging. Automation, mining companies are hoping their machines will run more efficiently and with less downtime.

Valedictory Session
The valedictory function began with the welcome address by Dr. P.N. Goswami, Director TINJR and expressed his satisfaction over the excellent conduct and successful closure of the workshop.

Valedictory Session (L to R: Er. R.S. Vyas, Dr. Dharm Singh, Dr. PN Goswami, Dr. M.L. Kalra, Mr. M.L. Talesra, S.S. Rathore, Dr. Y.C. Bhatt)

Prof. M.L. Kalra, former Hon’ble Vice-Chancellor, Kota University addressed the house about the importance of automation, control and robots in the development of the country. He said Mobile robots have the capability to move around in their environment and are not fixed to one physical location. An example of a mobile robot that is in common use today is the automated guided vehicle. Mobile robots are also found in industry, military and security environments. They also appear as consumer products, for entertainment or to perform certain tasks like vacuum cleaning. Mobile robots are the focus of a great deal of current research and almost every major university has one or more labs that focus on mobile robot research.

Modern robots are usually used in tightly controlled environments spoke Mr. M.L Talesra, Guest of honor. Domestic robots for cleaning and maintenance are increasingly common in and around homes in developed countries. Robots can also be found in military applications. Dr. Dharm Singh, Organising Secretary presented the three day’s workshop report and recommendations and detailing out the resource persons who made their presented on the assigned topics and the number of participants who enrich their knowledge on Networked Mobile Wireless Robotics. It is pleasure to inform the house about active participation and registration of almost 310 participants, delegates and resource persons.

Among the participants were senior members of CSI Mr. Azimuddin Khan, Vice-Chairman, CSI, Udaipur, Dr. Ashok Jetawat Former chairman, CSI Udaipur Chapter, Ms. Jayshree Jain and Mr. Bharat Deora, to mention a few. The function ended with Dr. Y.C. Bhatt presenting the Vote of Thanks.

Recommendations
1. Wireless communication technologies that totally fit the specific needs of robot systems should be standardized.

2. Sensor based technologies should standardized adopted for agriculture and mining use.

Media Coverage
नेटवर्क मोबाइल वायरलेस रोबोटिक्स पर कार्यशाला

उदयपुर, 28 अक्टुबर (राजस्थान टाइम्स यूनाईटेड)। नेटवर्क मोबाइल वायरलेस रोबोटिक्स के अध्यक्ष के रूप में उदयपुर में नेटवर्क मोबाइल वायरलेस रोबोटिक्स के लिए कार्यशाला का विज्ञापन प्रस्तुत किया।

इस कार्यशाला में विभिन्न विषयों पर समाचार दिया गया। इसमें नेटवर्क मोबाइल वायरलेस रोबोटिक्स के अध्यक्ष के रूप में हस्तित किए गए ये नेटवर्क मोबाइल वायरलेस रोबोटिक्स के लिए कार्यशाला का विज्ञापन प्रस्तुत किया।

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गतिशील वायरलेस संचार स्वचालित मशीन पर कार्यशाला

नेटवर्क मोबाइल वायरलेस रोबोटिक्स पर कार्यशाला

आत्मा की ज्वाला
‘नेटवर्क मोबाइल वायरलेस रोबोटिक्स’ पर कार्यशाला

उदयपुर, 28 अक्टूबर (मि)।
एस.आई.एस. - हर्षवर्धन, समाजसेवी और इंजीनियर, उदयपुर विदेश, उदयपुर सेंट्रल, से अंतर्गत संयुक्त राष्ट्र विदेश सेवा भर्ती बोर्ड ने उदयपुर में इंटरनेट पर एक प्रारंभिक ग्रुप को नेटवर्क मोबाइल वायरलेस रोबोटिक्स के लिए एक नैतिक विकास का विलायत मुद्रा के रूप में बताया।

उदयपुर में कार्यशाला के अध्यक्ष के रूप में संयुक्त राष्ट्र विदेश सेवा भर्ती बोर्ड ने उदयपुर में नेटवर्क मोबाइल वायरलेस रोबोटिक्स की उपस्थिति पर प्रस्ताव दान।
Presented:
A networked robot is a robotic device connected to a communications network as its interface. Currently, internet connectivity has become a necessity. Although robots have been used for a variety of purposes such as TCS UPR, or ROCL, their new capabilities are being developed ranging from autonomous exploration. The conditions of Networked Robotics:

Networked Robotics involves the assembly and deployment of robotic systems that can communicate with other robotic systems over a network. This type of networked robotics is used to control and monitor robots in real-time, allowing for the coordination of multiple robots to perform complex tasks. However, the networked robotics system is still in the early stages of development and there are several challenges that need to be addressed.

Networked Mobile Wireless Robots (MMWRs) are smart devices which sense and communicate over radio, wire and make use of radio, wire and wireless sensors. They communicate with humans (e.g., with a tele-operator) with telescopes, with machines, and with the smart environment, allowing for a range of applications. MMWRs have the potential to revolutionize the way we interact with our environment by enabling seamless and efficient communication and collaboration.

Objectives:
The networked robots will bring together two communities, communications experts and control professionals from academia as well as industry, to address challenges resulting from networked robots. This conference aims to gather the latest research in networked robotics and to bring together experts in the field to discuss current challenges and future directions.

Wireless Networking Communication:
Three days of this conference will focus on the latest research in wireless networking and communication. This includes the development of communication protocols for networked robots, the design of efficient communication algorithms, and the implementation of these algorithms in real-world scenarios. The conference will provide a platform for researchers, engineers, and practitioners to share their latest findings and to discuss future directions in the field.

Communication between the individual components of the robot joint:
The networked robotics system is divided into two main components: the robot itself and the network. The robot joint is a critical component in the overall system, and its performance is directly affected by the communication between the individual components.

Communication between the networked robots:
The networked robotics system is designed to work in coordination with other robots over a network. This allows for the coordination of multiple robots to perform complex tasks. However, the networked robotics system is still in the early stages of development and there are several challenges that need to be addressed.

In-Country Workshop: 05
Networked Mobile Wireless Robotics (MMWR) - 2010
26-28 October, 2010
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