Dear *IEEE Robotics & Automation Magazine* Readers: We've taken on the daunting task of filtering news releases, determining their relevance to readers, and adhering to the guideline that no company shall be mentioned more than once per year. We hope you find this column useful; your feedback is appreciated at IndustryNews@ieee-ras.org.

–Jeanne & Raj

Robot Applications

Force Feedback Applications Improve Patient's Odds in Surgery

The medical market remains a leading adopter of advanced robotic applications. MAKO Surgical (www.MAKOsurgical.com) recently announced its application of arms with force feedback to improve surgical precision and safety. MAKO has refined the WAM arm, licensed from Barrett Technologies, as part of its solution. During the minimally invasive procedure, a three-dimensional, patient-specific imaging system creates a live-action, virtual view of the bone surface. As the surgeon uses the cable-driven robotic arm to manipulate resurfacing cutting tools, nearly frictionless movement encounters artificial resistance near the plan periphery for tactile guidance during surgery such as knee replacements.

Battelle Battles Rust Where It Counts

The need to improve fuel tank cleaning has driven many automation initiatives. Battelle's (www.Battelle.com) Multi-use Robotic System (MURS) technology improves cleaning of aircraft fuel tanks by running the robot into the tank on a track rather than requiring an expensive crane to lift the robot for insertion. Because some aircraft anticorrosion fuel tank linings are 40 years old, we should all breathe a sigh of relief at Battelle's making this process more affordable for cash-strapped airlines.

Robot Components and Accessories

Leave Machine Vision Synchronization to the Maestro

Synchronizing cameras and light sources to millisecond precision for automated inspection consumes significant time during setup. LMI Technologies (www.LMItechnologies.com) of Vancouver, British Columbia, Canada, has developed a handy system to connect, configure, and conduct up to eight or more cameras and light sources from a single power supply. Connection is with CAT5 cable for configuration under TCP/IP and XML or via browser and conducted from LMI's proprietary controller. The company claims that the module is compatible with all light sources and machine vision systems, which could reduce inventory needs as well as cutting installation time.

New Camera Brings POE to GigE

Baumer Ltd. (www.BaumerElectroinc.com/usa) announces power-over-Ethernet on its high-bandwidth TXG GigE camera to assist robots in pushing through video data at up to 90 fps over distances up to 100 m. These cameras are used to view objects on robotic arms, robotic pick-and-place systems, automated packaging lines, semiconductor manufacturing lines, and other applications where cable wear is a concern.

Robotics Education and Opportunities

Robo-Jobs Workshops Combat Economic Hard Times

Engineers are among those least likely to be affected by the current worldwide economic downturn; still, refocusing skills toward growth industries like robotics makes a good career sense. MobileRobots Inc. (www.MobileRobots.com), and its sales partners have combined forces to offer a series of Certified Robot Installer and Robo-Jobs workshops to train mobile robot application developers, installers, value-added resellers, OEMs, and service providers. These workshops will focus on applied robotics topics including the following: tasks mobile robots do out-of-the-box, how to perform a site review, best practices for workspace mapping, integrating robot accessories, and application case studies. Certified robot installer training will be available as well. The first workshops are scheduled in January and April in New Hampshire and Boston. Later workshops are targeted for Michigan, Texas, Florida, and California. MobileRobots Inc., Amherst, New Hampshire, has provided mobile robot platforms to VARS, OEMs, and researchers since 1995.

New Books

What's NXT for Mindstorms Professors and Hobbyists?

The creative minds behind The NXT STEP Blog and the *LEGO MINDSTORMS NXT Idea Book* have been providing classroom training with tips on how to build unique and compelling robots since 2007. They're back this year with a selection of starter robots built with only one NXT kit. In *LEGO MINDSTORMS NXT One-Kit Wonders*, students will find instructions for building ten bots, including the ones that can balance and steer, sort M&Ms, act as a replacement hand,

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ON THE SHELF

By Pedro Sanz

Robotics: State of the Art and Future Challenges

George Bekey, Robert Ambrose, Vijay Kumar, David Lavery, Arthur Sanderson, Brian Wilcox, Junku Yuh, and Yuan Zheng, Imperial College Press, 2008. ISBN: 978-1-84816-006-4, 1-84816-006-2

This book presents the results of an assessment of the state of robotics in Japan, South Korea, Western Europe, and Australia and a comparison of robotics R&D programs in these countries with those in the United States. The comparisons include areas like robotic vehicles, space robotics, service robots, humanoid robots, networked robots, and robots for biological and medical applications, and based on criteria such as quality, scope, funding, and commercialization. This study identifies a number of areas where the traditional lead of the United States is being overtaken by developments in other countries.

Separate chapters are devoted to robotic vehicles, space robotics, humanoid robots, industrial, service, and personal robots, robotics in biology and medicine, and networked robots.

The book is based in part on a study sponsored by the U.S. National Science Foundation. Some of the material was presented in the *IEEE Robotics and Automation Magazine* in December 2007 and March 2008.

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INDUSTRY/RESEARCH NEWS

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and more. See where your students take them from there! (www.OReilly.com).

World Robotics 2008 Reports Mixed Industry Growth

The detailed World Robotics Report produced by the International Federation of Robotics presents statistics on worldwide sales, manufacture, and implementation of robots in 50 countries. In 2007, 114,365 industrial robots (arms) were installed worldwide, with a value of approximately US$6 billion, excluding software, peripherals, and systems engineering. However, the results in major regions differed considerably, with a decline in Asia, recovery in the Americas, continuing growth in parts of the European Union (EU), and strong emerging markets, especially China (+14%).

The report also includes data on commercial service robots, domestic service robots, and entertainment robots. The study has found that in 2007, 49,000 commercial service robots, 3.4 million domestic service robots, and 2.0 million entertainment robots were installed. The most common service applications are defense, security, and field (agricultural and lawn care) robots; the most common domestic application is floor cleaning (http://www.worldrobotics.org/downloads/2008_Pressinfo_english.pdf).

REGIONAL

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three to four persons) in each of the member countries, while the regional LARC competition, RoboCup Open, and the LARS symposium attract over 200 participants. Additionally, the summer school attracts close to 120 participants. Altogether, LARC activities attract more than 1,000 participants every year, including undergraduates, graduates, and researchers. One particular support LARC offers is student travel awards to top teams in the region in order for them to compete at the regional competitions. These awards have been partially funded by IEEE and RAS in the past.

Since our first event in 2002, which had about 100 participants from Chile and Mexico, we have observed a large increase in robotics activities in the region. In this period, activities have spread from two to six different countries, with the new ones possibly joining in 2009. We are currently working toward a wider extension of our activities to support the creation of networks of researchers working in robotics in the region.

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