Tightening the Chord Between Academia and Industry

After a successful IEEE International Conference on Robotics and Automation (ICRA) that marked the silver anniversary of our flagship conference (from Atlanta in 1984 to Pasadena in 2008), I am writing this column while attending the IEEE/International Federation of Robotics (IFR) Joint Forum on Innovation and Entrepreneurship in Robotics and Automation (IERA) in Munich (see my message in the March issue), as part of Automatica 2008 (the largest biennial fair in robotics and automation in Europe), in parallel with two annual local events [the symposium of the German Association for Pattern Recognition, and Robotik organized by the German Society for Robotics (DGR)].

With ICRA and IERA, we are looking forward to another long summer on the road to conferences and meetings, which will take me—among others—to Xi'an, China, for the International Conference on Advanced Intelligent Mechatronics (AIM) in early July, to Washington, DC, for the Conference on Automation and Science Engineering (CASE) in late August, and to Nice in late September for the International Conference on Intelligent Robots and Systems (IROS).

This is a good and vibrant time for our field. The robotics industry is a more than US$10 billion enterprise worldwide, with a growth rate estimated to be about 8% annually. In Munich, I gave a keynote talk on "The Importance of Close Collaboration Between Academia and Industry—Successful Examples from Recent Years and Future Challenges." During the event, the European Commission announced a policy to boost European robotics (see "Robots in the News" at www.ieee-ras.org/news). The European Union will double its investments between 2007 and 2010 with almost €400 million to support European robotics research. This ambitious program aims to forge stronger links between academia and industry and plans to fund a widespread experimentation by academic researchers and industry.

Both Japan and Korea have ongoing, aggressive national plans to promote their competitiveness in robotics. The Japanese strategy for creating new industries includes robotics as one of the seven areas of emphasis, while Korean robotics is one of the ten next-generation growth engines. Interestingly enough, a policy change is taking place in the United States after years of inadequate government funding. A Congressional Robotics Caucus was established in June 2007: IEEE-USA with the IEEE Robotics

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and Automation Society (RAS) has played an active role in its formation and serves as a member of the caucus' advisory committee (see http://www.ieeeusa.org/communications/presidentscolumn/Lefevre/jun.asp).

The group acts as a resource for caucus members on the state of robotics technology and key issues facing the robotics industry. Growth in the industry means job opportunities for IEEE and RAS Members and gives us new vigor to educate and train our students and graduates in robotics and automation with the challenge of working on new and exciting projects that will have positive effects on our lives and lifestyles.

As with my previous messages, you will find the highlights from our boards, mostly based on the outcome of our Spring Administrative Committee (AdCom) meeting in Pasadena. Detailed reports are available in the "Society News" column in this issue. Indeed, as a new experiment, three of the next board meetings (Conference Activities Board, Publications Activities Board, and Technical Activities Board) will take place for the first time at CASE, in preparation for the Fall AdCom meeting in Nice during IROS: the intent of this strategic choice is to bring Society officers to get acquainted with our newest RAS annual conference on automation and science engineering.

Conference Activities Board (CAB)

- RAS is the sole financial sponsor of ten conferences, financial cosponsor of 17 others, and technical cosponsor of more than 20 conferences. While ICRA remains our flagship conference, other conferences place their proceedings on *IEEE Xplore* with RAS' imprimatur and impact the financial health of our Society. The paperwork involved with these conference operations is swamping our volunteers, especially the CAB and RAS treasurers. To offload much of the routine work, AdCom in Pasadena approved hiring a part-time assistant for the CAB, who will report to Shigeki Sugano, associate vice-president of the CAB. Other societies are increasingly hiring such assistants for similar reasons.
- Speaking of ICRA, it used to be the case that AdCom chose the location of future ICRAs after competitive presentations. In recent years, this decision has been left to the CAB, and future ICRAs have now been planned out till 2015. This amount of forward planning is probably not good for the Society, as it does not allow for the tracking of changes in the field or emergence of new robotics geographical regions or interest groups. AdCom approved a proposal to limit the advance selection of ICRAs to no more than five years, which means that ICRA 2016 will be chosen in 2011. An open call for ICRA proposals will be issued one year in advance, and AdCom will once again choose between the finalists. This could be done in an open forum to allow the community to participate.
- ICRA 2008 was the second year of operation of the Conference Editorial Board (CEB). Although there was some initial hesitation, it is fair to say that the community generally considers the CEB to be a resounding success and to have improved the quality of reviews and decision making for ICRA papers. The reputation of ICRA has been reestablished in terms of attending and presenting one's best work. The inaugural editor-in-chief of the CEB, Seth Hutchinson, deserves a strong vote of thanks for launching the CEB and ensuring its proper functioning. It is no surprise that Seth was asked to be the next editor-in-chief of *IEEE Transactions on Robotics (T-RO)* starting October 2008, succeeding Alessandro De Luca. The Steering Committee for Technical Programs, led by Vijay Kumar, took on the task of selecting a replacement. Four highly capable and respected individuals put their names into the hat for election, which is testimony to the importance our Society now places on the CEB and ICRA. After a close election, Antonio Bicchi was elected to replace Seth as the new CEB editor-in-chief, effective after ICRA 2008. We thank Antonio for stepping forward to undertake this important position.

Financial Activities Board (FAB)

- The five winners of the 2008 Initiatives Competition were approved during AdCom in Pasadena. The total requested amount from the five approved initiatives was US$75,000. Based on the availability of funds (US$63,000) and what was requested for, all five initiatives are funded, some with reduced amount.
- Promptly after AdCom, the RAS first-pass budget for 2009 has been submitted to the financial analyst at IEEE, including publication rates, conference budgets, and all new activities that have financial impact. As usual, the goal is to keep RAS on a sound financial path while investing in return to our members.

Industrial Activities Board (IAB)

- RAS is working cooperatively with IFR to support activities that promote innovation of new robotics products and services. The IERA forum also recognizes outstanding invention and entrepreneurship in robotics and automation through an award that is judged by an international panel. A report of this year's forum can be found in the "Industry/Research News" column in this issue.
- An important public relations role for the robotics community is to inform the general public about the likely future trends of robotics and automation technology. Technology road maps for robot technology and products with 5-, 10-, and 20-year timelines are being prepared by both government and industry with considerable work done in Korea, Japan, and Europe.

Early-stage road-mapping activity has commenced in the United States. The IAB is currently compiling road-mapping material and resources that will be published on the RAS Web site.

- Much of today's robotics is based on experimental demonstration platforms. To transform robotics into a full product and service-based industry will require industry standards. There is a general expectation that robots will work and operate in public places. Without robots meeting stringent safety and environment standards, deployment in public places will not be possible. IAB has a Standards Committee that is working closely with IEEE Standards; the committee is chaired by Erwin Prassler. The current focus of the Standards Committee is on robot middleware that will allow the development of common platforms for sensors and systems software. Working groups on standards commenced activities at ICRA 2008.
- IAB is working closely with the editor-in-chief of *IEEE Robotics and Automation Magazine* to develop a regular one-page column on industrial activities. The first column will report on innovations in robotics and automation with a focus on new technologies and products.

Member Activities Board (MAB)

- The first Local and Student Chapters Workshop, http://www.mech.uwa.edu.au/spns/clw/, was organized within the frame of ICRA 2008 in Pasadena as a means to share, reinforce, and brainstorm various chapters' activities. The goal of this workshop was to build a support group for the chapters to encourage members, network with other chapters, and help the RAS Committee figure out how to best assist these groups. RAS awarded travel grants so that nine out of 39 local chapters and one out of 18 student chapters could come and participate in the event. MAB Chair Alícia Casals and Chair of Student Activities Committee Carol Reiley presented the possibilities of both kind of chapters and the future of RAS committees. Each chapter chair gave a brief presentation about their chapter activities giving place to a discussion on how RAS could help and how chapters could cooperate for the benefit of all the members.
- From the presentations, a common activity was to start and promote local robotics competitions, and, consequently, two initiatives were put forth to help chapters with these competitions. A first motion approved by AdCom was the generation of a competition resource wikipage aimed to pull the chapters together and serve as a repository of rules, competitions, organizing tools, as well as providing a Robot Competition Quick Start Kit, which would give information and advice on how to organize a competition easily. Additionally, and complementarily, the second initiative was to the regular chapter grants: MAB will encourage local competitions by coordinating a grant pool.

Publications Activities Board (PAB)

- The latest impact factor (IF) from 2007 journal citation report (JCR) has just come out. For *IEEE Transactions on Automation Science and Engineering* (*T-ASE*), the IF is 1.229, indicating that for each paper published in 2005 and 2006 in *T-ASE*, it was cited by 2007 papers published in all the journals in the ISI database 1.229 times on the average. In view that the first issue of *T-ASE* was published in July 2004, this is the first time that *T-ASE* has a complete IF. The IF for 2006 was 0.929.
- The highest 2007 IF in the category of automation and control systems is 2.824 by *IEEE Transactions on Automatic Control*. The IF for *IEEE Robotics and Automation Magazine* is 0.892, and the IF for *IEEE/ASME Transactions on Mechatronics* is 0.908.
- For *T-RO*, there were mistakes in the calculation of its IF. The editor-in-chief of *T-RO*, Alessandro De Luca, gathered data and submitted it to the IEEE, which is discussing with JCR staff to correct this issue. This is very unfortunate, especially in view that 2006 IF for *T-RO* was wrongly calculated by JCR, and it was corrected only after a major effort by De Luca and the IEEE.

Technical Activities Board (TAB)

- Worldwide research in robotics and automation is thriving. Please visit http://goldberg.berkeley.edu/vpta/ for information on joining or proposing RAS Technical Committees (TCs), inviting Distinguished Lecturers to speak, and other opportunities for participating.
- Our 22 TCs are more active than ever, playing the role of research amplifiers rather than capacitors. This year, TAB initiated a triennial review for all TCs: RAS TCs are initiated to grow research in a new topic or re-energize research in an established topic related to robotics and automation. RAS TCs are expected to retire after six to nine years as their topic becomes established to make room for new TCs. TAB Associate Vice Presidents Eugenio Guglielmelli and Yasuhisa Hasegawa coordinated the first triennial review of eight TCs during ICRA, and three were retired. Two new TCs were proposed and approved, one on robot learning and one on marine robotics. Please see tab.ieee-ras.org for details and information on how to join.
- The RAS Distinguished Lecturer program has also been expanded, from 15 to 24 speakers, eight from each major region, including nine speakers from underrepresented regions. We have developed a new database with info on each speaker (see Web site mentioned earlier).
- A successful and well-attended Graduates of Last Decade (GOLD) reception was hosted at ICRA, and the program will be extended to CASE in August.

These GOLD gatherings are just perfect to bring along the experience from recent graduates to the students of our Society.

- TAB is working with *IEEE Robotics and Automation Magazine* Editor-in-Chief Stefano Stramigioli to develop a regular column for TCs and welcomes ideas and contributions from all RAS members.
- After the expansion of the Distinguished Lecturer (DL) program with an increase from 15 to 24 lecturers, the transportation budget has been increased from US$10,000 to US$15,000 a year. The DL program is a wonderful opportunity to disseminate robotics and automation among various chapters and sections.

Electronic Products and Service Board (EPSB)

Despite its name, EPSB is only a standing committee, which has been massively involved in the restructuring of our Web site over the past couple of years.

By the time this issue will be in print, Version 2 of the Web site will be online! Great efforts have been made to get a versatile, robust, easy-to-use and high-tech portal facility for RAS. The developing team chaired by Stefano Stramigioli and the gurus behind the scene, Olaf van Zandwijk and Hubert Flisijn, has found a way to implement a completely new database structure, which will support volunteers in their work and help members in searching information and archiving historical data and multimedia documents, and has given the site a completely new look. It is now possible to maintain one's own agenda for robotics and automation-related activities and couple it to the Google calendar or Outlook easily. These are just few of the new useful features, which can be checked out at http://www.ieee-ras.org.

As you can see, RAS and its volunteers keep themselves active with new ideas and initiatives, inspired by one common mission: promote robotics and automation worldwide. Please send your comments to me, any of the officers, or our Society Activities Coordinator Rosalyn Snyder. Contact information for RAS officers and committee chairs is on our home page.

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