

Summer School on Human-Robot Interaction

The first instantiation of the RAS-IFRR School on Robotics Science took place 19–23 July 2004 in Volterra, Italy. The theme for the first workshop was “human-robot interaction” (HRI), an interdisciplinary topic of significant current interest. The school was conceived as a high-quality international school to take place every summer.

The school was organized as a full-week event at the recently renovated Dentro il Centro Studi. Given the theme of HRI, the school provided comprehensive coverage from fundamentals to applications of this emerging area. A tutorial on human-computer interaction was first provided by Erika Rogers (CALPOLY). As interface science starts to develop, the issue of usability and evaluation becomes critical to permit empirical analysis and comparison of methods and implementations. To illustrate this, a thorough introduction to these issues was presented by Jean Scholtz (NIST). Another important aspect of interaction with robots regards learning, in particular, by imitation. This subject, including its biological motivation, and example applications were presented by Aude Billard (EPFL). At present, with the introduction of service robots that coexist with humans in everyday environments, the topic of social interaction becomes increasingly important, as described by Cynthia Breazeal (MIT). The introduction of many different types of robots into work and domestic environments calls for us to address the issue of collaborative interfaces where the operator(s) collaborates with a number of robots to achieve a particular set of tasks. Alan Schultz (NRL) illustrated how cognitive modeling and utilization of multiple sensory modalities allows designing efficient ways to engage in dialogues with one of more mobile systems. Another type of robotic systems is that of “entertainment” and humanoid robots, in particular, interaction with inexperienced users. This opens a number of interesting issues in terms of embodiment, behavioral modeling, and long-term interaction as explained by Hiroshi Ishiguro (Osaka). In addition to a rich set of lectures, the event also involved daily exercises that ranged from hands-on programming to video annotation, to questionnaire design/analysis. The exercises served an important role in the educational process, but also had an essential social side effect in terms of establishing a community among the students. Finally, two panels, one composed of lecturers and another composed of six students, provided an opportunity for a discussion of the numerous open challenges and opportunities in HRI at the conclusion of the school.

An open call for student participation was issued in January 2004. By the deadline, 52 applications had been

received. Based on an analysis of student motivation, research experience, and recommendations from their supervisors, a set of 34 students was admitted to the school. The students were geographically diverse, with six students from Asia, 12 from North America, and 16 from Europe. It was highly encouraging to see that 14 of the admitted students were women. The students’ backgrounds covered traditional areas, such as mechanical engineering, computer science, mechatronics, etc., but also topics such as psychology, cognitive science etc., so the school provided an excellent mix of disciplines, nationalities, and gender. The students were extremely active and highly motivated. Based on this year’s event, the students hope to organize a follow-up HRI event themselves next summer.

To keep registration costs at a reasonable level, we were fortunate to receive financial sponsorships from SAIC and EURON. Unfortunately no sponsor from Asia was available, which likely limited the participation from that region. The support from SAIC and EURON allowed the design of a summer school with some of the best lecturers in the field and a number of support activities such as a half-day tour to nearby Siena and a social dinner. We are, thus, most grateful for the financial support from these organizations. In addition to the direct financial support, significant support in terms of arrangements, logistics, etc., was provided by the local organizers at Scuola Superiore Sant’Anna under the leadership of Paolo Dario and Cecilia Laschi. We have been deeply indebted to them for their dedication and support from the very start. Without their help the event would not have been possible.

While it is planned that the School of Robotic Science will take place again next summer on a different topical area, the exact subject and organizers have not yet been settled, but we hope they will have as much fun as we had organizing this event. For additional information visit <http://www.cas.kth.se/ras-ifrr-ss04/>.

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