COMMUNITY

News

Conference Report

CVPR 2011—IEEE International Conference on Computer Vision and Pattern Recognition

June 20–25, 2011, Colorado Springs, Colorado, USA
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The International Conference on Computer Vision and Pattern Recognition (CVPR) is one of the three top conferences in computer vision along with ICCV and ECCV (International/European Conference on Computer Vision). It is organized annually by the IEEE society in different locations in the US, starting from 1983 in Washington DC.

As a premiere computer vision event, the conference has a high impact factor and is quite selective with high quality publications. This year there were 1677 submissions, overall 438 accepted papers (26% acceptance rate), 59 of which were accepted for an oral presentation (3.5%). Interestingly, the registration process has been closed after 1500 registered attendees. To keep up with this remarkably high rush of visitors a novel virtual attendee registration was provided, offering live broadcasting of the main conference over the web.

This year the CVPR took place in Colorado Springs, Colorado, in June 20–25. It was right next to Rocky Mountains, offering a beautiful view of the mountain chains. The host hotel Crowne Plaza was close to local attractions like Pikes Peak and Garden of the Gods.

The main conference was held on three days from Tuesday to Thursday. Each day there were four oral sessions and four poster sessions. The conference is double tracked, i.e. two oral sessions take place in parallel. This gives room for more oral presentations, but on the other hand it also means that one can attend only one of the two simultaneous talks.

The orals and posters covered all major topics in computer vision, ranging from image-based modeling and scene understanding, over learning, optimization methods and object recognition, to stereo and structure from motion, and vision for robotics. This gives one a great overview of current developments. It seems that learning methods, object recognition and 3D reconstruction were especially well represented.

CVPR 2011 also featured many associated extra events. There were overall 27 workshops and tutorials before and after the main conference. Demo sessions and exhibits of many companies like Google, nVidia and Willow Garage rounded up the conference. As a novelty, the Doctoral Consortium was organized for the first time this year. It gives senior Ph.D. student an opportunity to discuss their work with leading experts in their fields.

Wednesday there was the award session followed by the Dinner Buffet at Crowne Plaza as a social event. The paper "Real-time Human Pose Recognition in Parts from Single Depth Images" by Shotton et al. (Microsoft Research Cambridge) received the best paper award. Using the recent Kinect depth sensor they developed a fast pose recognition method and built up a large database for training and evaluation. The leveraging of depth information is a novel and very promising development which will possibly offer new perspectives for computer vision in the future. Exclusively at CVPR there is also the annually awarded Longuet-Higgins Prize for fundamental contributions in the last ten years. This time it was awarded to the paper "Rapid Object Detection using a Boosted Cascade of Simple Features" by Viola et al.

Overall, CVPR 2011 was worthwhile with many interesting contributions. It showed once more that computer vision is a popular, growing and quite active field. The next CVPR 2012 will take place in Providence, Rhode Island, in June 16–21, 2012. I greatly recommend attending this conference.

Conference Report

RoboCup 2011

July 5–11, 2011, Istanbul, Turkey
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Have you ever been in a tent camp or in a "Schullandheim"? —OK, then you know how the students felt participating in RoboCupJunior Istanbul 2011. The main difference between Schullandheim and RoboCupJunior competitions is that there were not only students from one school, but students from 278 teams from 24 countries from all over the world. They all had only one goal: to show the result of their hard work, their own built and programmed robots, to the world.

While the result of the hard work was often the same—robots performing the tasks of the soccer, rescue, and dance competitions—the operation method was quite different from country to country. Most of the German students distinguished themselves as very good engineers and programmers. They designed their robots on their own and rarely used—especially in soccer—standard platforms. So they became firm with mechanical engineering, electronics and computer science while constructing and programming their robots. In the Istanbul competition, the hard work of quite a few German junior teams paid off, so that at the end they stood on the winners' podium.

In contrast to the junior competitions, which focus on education, the major competitions for university teams focus on research, but the scene in the halls of Istanbul Expo also looked a lot like a LAN party—with playing fields for robots in between.

The major league rules are modified every year to keep the competitions challenging. In the TeenSize class of the Humanoid soccer league, for example, the size of the playing field was enlarged considerably, to have more space for the fast walking robots. In the Standard Platform League, where small humanoid Nao robots compete, the number of players was increased to four per team, which made team play more important. In the @Home league, where domestic service robots show their skills, the requirements were increased as well. The autonomous robots had to understand complex spoken commands and to clean-up an apartment. In the Rescue League, for the first time, flying robots were

allowed to map the environment for the support of ground robots.

After two setup days and four days of intense competitions, the winners were determined in the finals. Among them were some well-known German teams, like B-Human form DFKI and University of Bremen, which won the Standard Platform League for the third time in a row. In the final, they clearly won vs. Nao Devils of TU Dortmund. The team NimbRo of University of Bonn could celebrate two victories. They defended the title in Humanoid TeenSize soccer and won, for the first time, the @Home league, where bit-bots of Hochschule Rhein Sieg came in third. The team Hector of TU Darmstadt was runner-up in the challenging autonomy competition of the Rescue League and their soccer team Darmstadt Dribblers won the third-place game in the Humanoid KidSize class vs. FUmanoids of FU Berlin. After the lengthy award ceremony, the teams could celebrate at the banquet, which was held in the space between the exhibition halls and featured local specialties.

The final day of RoboCup 2011 was devoted to the 15th RoboCup Symposium, which took place in the Boğaziçi University at the Bosporus. The single-track program featured eleven oral and 32 poster presentations on a wide range of topics from mechatronics, to environment perception, to robot control, to motion planning. Highlights of the symposium were the invited talks of Luc Steels (Sony Lab, Paris) on the emergence of robot languages and Dieter Fox (University of Washington, Seattle) on the use of RGB-D cameras for SLAM and learning object models. The Symposium concluded with a lively podium discussion of the winning teams on what it takes to win RoboCup competitions.

RoboCup 2011 was organized by the team of Levent Akin (Boğaziçi University, Istanbul). Overall, the large event, which hosted about 2500 participants and about 1500 robots, went smoothly. The only missing piece was the general audience, which probably can be attributed to the location outside the city centre, entrance fees, and the lack of local advertisement.

Next year, RoboCup 2012 will take place in the World Trade Center of Mexico City—for the first time in Latin America.

Conference Report

14th International Conference on Human Computer Interaction (HCI International 2011)

July 1–14, 2011, Orlando, Florida, USA
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The 14th International conference on Human Computer Interaction was held jointly with affiliated conferences on July 9–14, 2011 at Hilton Orlando Bonnet Creek, Orlando, Florida, USA. HCI International is renowned to be a forum for dissemination and up-to-date scientific information. General chair for HCI International since 2007 is Professor Constantine Stephanidis, on his side he has amongst others Gevriel Salvendy who is the conference series founder and current scientific advisor.

Approximately 2000 individuals from 61 countries registered for this year's conference. The conference started off with three days during which 23 tutorials and an open network session on the "Global Public Inclusive Infrastructure" were given and continued with three days filled with 212 parallel sessions during which 1318 papers were scheduled to be presented. Also an exhibition with 18 exhibitors and 241 posters were open to all conference participants throughout the last three days of the conference. The 23-volume conference proceedings are published in the Lecture Notes in Computer Science (LNCS), Lecture Notes in Artificial Intelligence (LNAI) and Communications in Computer and Information Science (CCIS) series.

During the conference one paper from each of the twelve thematic areas and the poster session were awarded with a best paper award. Among the twelve papers, one was selected to receive the Best Paper Golden Award. The best conference paper of HCI International 2011 was "Effective Shift Handover" by Tom Plocher, ShanQing Yin, Jason Laberge, Brian Thompson and Jason Telner. The authors report about an experiment comparing shift handover using structured checklist-integrated logbooks to a more traditional logging approach. The results of the experiment show significant benefits to situation awareness deriving from the structured approach.

The conference had one invited key-note speaker: Professor Ben Schneiderman (University of Maryland). Being his 4th key-note speech at HCI International, this year's topic was "Technology-Mediated Social Participation: The Next 25 Years of HCI Challenges". During Schneiderman's full

speech, which is published online at the conference web-page www.hcii2011.org, he outlined what he believes is the future of HCI: Micro-HCI (Computing, Psychology & Ergonomics) and Macro-HCI (Business, Sociology & New Media). The goal is to apply social media to transform society. He envisions that social participation will have several advantages such as for example increased safety, energy preservation and resolution of conflicts.

It is likely that everyone involved in the HCI scientific area will find their own interesting sessions filled with read-worthy papers. It is advisable to look at the final Conference program and browse it for keywords of interest. Due to personal research interests being "evaluation of usage of robotic telepresence systems by elderly", I mainly attended sessions belonging to the Universal Access in Human-Computer Interaction thematic area. The area included sessions about Conversational Robots in HCI (S010), Ageing and HCI S135 and SMART Interfaces for Consumer Health Applications (S028 and S083). Among the presented papers in the Conversational robots session were also less obvious robots such as Phynocation (a teaching assistant robot during C-language classes) and modeling of users through interaction in a smart shop environment. From a navigation method perspective an experiment of using a grounded bar interface to involve the whole body when navigating a maze was presented during a Virtual and Mixed Reality area session called Human Behaviour in Virtual and Augmented Environments (S048).

A reflection of the conference is that many sessions were consisting of papers originating from the same university/country or similar culture rather than being of high quality. I sometimes ended up listening to seemingly interesting sessions during which everybody read their text from their laptop screens monotonously or even at sessions where only a few presenters showed up whereas in others everyone were accustomed speakers catching the audience. My belief is that mixing papers from different origins to a further extent would open up for more interaction on thoughts to bring research forward. Due to the vast amount of accepted papers the sessions, chairs had to keep track on time leaving little time for questions and interaction between the session attendees.

The conference is organized every 2nd year and the next HCI International will be held jointly with affiliated conferences at Mirage Hotel, Las Vegas, Nevada, USA on July 21–26, 2011.

Conference Report

ICAPS 2011—Twenty-First International Conference on Automated Planning and Scheduling

June 11–16, 2011, Freiburg, Germany
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General Information

This year's International Conference on Automated Planning and Scheduling was hosted by the University of Freiburg and attracted 227 participants from all over the world. The technical program of the main conference comprised 47 oral presentations selected from 138 submissions, three invited talks by Jason D. Williams (AT&T Labs), Pascal Van Hentenryck (Brown University), and Michael P. Wellman (University of Michigan), eight workshops, eight tutorials, and a systems demo track.

Satellite Events

The main conference was preceded by the ACAI Summer School at Schloss Reinach near Freiburg (June 7–10), a program aimed at graduate students and young researchers, with 60 participants and 10 lecturers giving 9 tutorials on various aspects of Automated Planning and Scheduling, and with its own separate social program including a dinner and an excursion with a local wine tasting. The first day of ICAPS was reserved exclusively for the doctoral consortium, followed by two days of workshops and tutorials in five parallel tracks.

The conference was accompanied by the 7th International Planning Competition, consisting of a deterministic track organized by Ángel García Olaya, Carlos Linares López, and Sergio Jiménez, a learning track organized by Sergio Jiménez Celorrio, Amanda Coles, and Andrew Coles, and an uncertainty track organized by Scott Sanner and Sungwook Yoon and featuring a new modeling language, RDDL. The competition results reinforced the perceived supremacy of heuristic search techniques (in the deterministic track), Monte-Carlo tree search (uncertainty track), and automated parameter tuning and portfolio-based planning (learning track).

Main Conference

The main conference comprised sessions on heuristics, MDPs, plan search engineering, generalized planning, applications, frontiers in planning, limits and possibilities, automated scheduling, incomplete information, and real-time planning. Four papers were selected for best paper awards (or runners-up). "Automatic Construction of Efficient Multiple Battery Usage Policies" by Maria Fox, Derek Long, and Daniele Magazzeni was selected as the best paper, and "Planning to Perceive: Exploiting Mobility for Robust Object Detection" by Javier Velez, Garrett Hemann, Albert Huang, Ingmar Posner, and Nicholas Roy as the best student paper.

The influential paper award, which honors significant and influential papers published at least ten years earlier in a planning and scheduling conference, was awarded to Philippe Laborie for his ECP-2001 paper "Algorithms for Propagating Resource Constraints in AI Planning and Scheduling: Existing Approaches and New Results", and Michael Katz received the best dissertation award for his work on "Implicit Abstraction Heuristics for Cost-Optimal Planning". Jorge Baier and Siddharth Srivastava received honorable mentions for their Dissertations titled "Effective Search Techniques for Non-Classical Planning via Reformulation" and "Foundations and Applications of Generalized Planning", respectively.

The first day of the main conference was closed by the doctoral consortium posters and system demos session, with 26 DC posters and a record number of 21 demos.

Social Program

Besides plenty of opportunities to discuss and socialize during the technical part of the conference and the opening reception at the "Historisches Kaufhaus", there was also an excellent conference banquet at a restaurant on a hill overlooking Freiburg. Probably we will see some of the ideas first born and discussed during the banquet as papers presented at ICAPS 2012.

Conclusion/Future

ICAPS 2011 was a huge success both because of its excellent technical and social program and as "green" ICAPS (organic catering, conference bags made of recycled material, talk recordings for remote participants), setting an example for future conferences. Malte Helmert, Stefan Edelkamp (conference chairs), Fahiem Bacchus, Carmel Domshlak (program chairs), and Gabriele Röger (local arrangement) did an amazing job at organizing the event.

We are looking forward to ICAPS 2012 in Atibaia, Sao Paulo, Brazil, June 24–28, 2012.

Conference Report

Der dritte zivile „European Land-Robot Trial" (C-ELROB 2011)

20. – 24. Juni 2011, Leuven, Belgien
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Die C-ELROB 2011 fand vom 20. bis 24. Juni 2011 auf einem Gelände der Belgischen Armee in der Nähe der Universitätsstadt Leuven statt. Organisiert und durchgeführt wurde die Veranstaltung von der Forschungsgruppe Unbemannte Systeme des Fraunhofer FKIE (kurz FKIE/US), die auch mit einem eigenen Team erfolgreich am Wettbewerb teilgenommen hat, aber in der Gesamtwertung nur inoffiziell berücksichtigt wurde.

Die C-ELROB 2011 war nach den beiden zivilen Veranstaltungen in der Schweiz (2007) und in Finnland (2009) sowie den drei militärischen ELROB in Hammelburg (2006, 2008 und 2010) bereits die sechste Veranstaltung der ELROB-Reihe. Nachdem ursprünglich 16 Teams gemeldet waren, hatte in den letzten Tagen vor der Veranstaltung eine Reihe von gemeldeten Teams hauptsächlich wegen aktuell aufgetretener Hardware-Probleme abgesagt. Ein weiterer Grund für Absagen war die von den belgischen Behörden in letzter Minute verweigerte Genehmigung zum Betrieb der gemeldeten UAVs. So nahmen letztlich nur fünf Teams an der diesjährigen Veranstaltung teil.

In insgesamt vier Szenarien konnten sich die Teams beweisen. Die Roboter sollten die gestellten Aufgaben möglichst eigenständig innerhalb von 60 Minuten lösen, dementsprechend wurden manuelle Eingriffe mit empfindlichen Zeitstrafen belegt. Für das Szenario „Reconnaissance and Surveillance" musste von einem festgelegten Startpunkt aus über eine Reihe von Zwischenpunkten ein Ziel angesteuert werden, das zu fotografieren war. Kein Team erreichte das Ziel, die weiteste zurückgelegte Distanz war mit 1000 m (Team FKIE/US) etwa 90 % der Strecke. Im Szenario „Mule" sollte mittels Pendelverkehr ein Transport von fiktiven Gütern zwischen zwei vorgegebenen Punkten durchgeführt werden. Hier erreichten die Teams von FKIE/US und der Universität Hannover mit drei durchgeführten Wechseln vergleichbare Leistungen. Im Szenario „Camp Security" musste ein abgegrenztes Gebiet überwacht und Eindringlinge gestellt und fotografiert werden. Zur Erleichterung dieser Aufgabe trugen die Eindringlinge orange Gefahrstoff-Schilder als Marker. Da das Team FKIE/US als einziges wie vom Veranstalter vorgesehen mit mehreren Robotern teilnahm, konnte es auch die meisten Eindringlinge entdecken. Das Szenario „Autonomous Navigation"

war eine reine Fahraufgabe über eine längere Distanz von etwa 3 Kilometern. Hier konnten die Teams FKIE/US und Marble beinahe zwei Drittel der geplanten Strecke in der vorgegebenen Zeit zurücklegen.

Aus wissenschaftlicher Sicht war die ELROB dahingehend interessant, dass zum ersten Mal sämtliche Teilnehmer die gestellten Aufgaben tatsächlich vollständig autonom lösen wollten. Dadurch ergab sich die auf den ersten Blick paradoxe Situation, dass die einzelnen Systeme in ihrer Autonomiefähigkeit den früheren ELROB-Teilnehmern überlegen waren, die Leistung aber weiterhin nicht mit denen eines erfahrenen Teleoperateurs mithalten konnte, weshalb sich für den Außenstehenden der Eindruck der Stagnation bzw. des Rückschritts aufdrängte.

Für die aufgetretenen Probleme während der Szenarien lassen sich zwei Hauptursachen ermitteln. Erstens waren die Waldwege für die größeren Roboter aufgrund des dichten Bewuchses zu eng, so dass sich wegen der erforderlichen Sicherheitsabstände und der fehlenden Möglichkeit, mittels LIDAR zwischen festen und nachgiebigen Hindernissen zu unterscheiden, große Schwierigkeiten ergaben, die vorgegebenen Routen zu befahren. Speziell nach einem Regenschauer hingen viele Äste tief in den Weg hinein, so dass immer wieder manuelle Eingriffe erforderlich wurden,

um den Lauf nicht abbrechen zu müssen. Zweitens traten aufgrund der experimentellen Natur der teilnehmenden Systeme immer wieder kleinere Pannen auf, deren Behebung wertvolle Laufzeit kostete. Störungen des GPS-Empfangs führten zwar ebenfalls zu Schwierigkeiten, waren aber in keinem Fall ausschlaggebend für den Abbruch eines Szenarios.

Vergleicht man die autonomen Leistungen mit denen der vergangenen Jahre, so ist durchaus ein positiver Trend festzustellen. Die Systeme werden robuster und bewältigen unbekanntes Terrain mit steigender Souveränität. Der wesentliche Schwachpunkt ist nach wie vor die mangelnde Fähigkeit, zuverlässig zwischen unterschiedlichen Hindernistypen zu unterscheiden, die von LIDAR-Sensoren detektiert werden. Der Einsatz von alternativen bzw. zusätzlichen Sensoren, seien es Radarsysteme oder Kameras, wird hier hoffentlich in den nächsten Jahren zusammen mit verbesserten Erkennungsalgorithmen Abhilfe schaffen können.

Die gezeigten Leistungen entsprachen im Großen und Ganzen den Erwartungen. Aus Sicht der Veranstalter wie auch der internationalen und nationalen Presse wurde die ELROB als Erfolg gewertet.