News

Conference Report

CVPR 2012—IEEE International Conference on Computer Vision and Pattern Recognition

16–21 June 2012, Providence, Rhode Island, USA

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The international Conference on Computer Vision and Pattern Recognition (CVPR) is among ICCV and ECCV (International/European Conference on Computer Vision) one of the top three conferences in computer vision. It is organized annually by the IEEE society and held in different locations in the US.

Besides having a high impact factor, the conference has increasing popularity and selectivity. In comparison to last years' CVPR, the number of submissions rose to a number of 1933 (from 1677 last year), while the acceptance rate in turn decreased to 24.1 % (from 26 % last year). Overall, there were 466 accepted papers of which 48 were accepted for an oral presentation, i.e. 2.5 % (3.5 % last year). According to the conference chair it was the first time for CVPR that an automated assignment system was used for distributing the papers among the area chairs and reviewers in order to reduce the organizational effort.

The conference took place in Providence—the capitol of Rhode Island—and was held in the Convention Center located in the beautiful historic city center. The main confer-

ence was held on three days from Monday 16th to Wednesday 21st. Each conference day comprised two dual-track oral sessions and three poster sessions, each session covering a different area in computer vision.

In my opinion, the dual-track system is a good compromise to deal with the large amount of contributions although the choice might be difficult if two oral presentations of your interest run in parallel. The oral sessions as well as the poster sessions covered all major areas in computer vision.

Judging by the amount of papers the most prominent topics of the conference appeared to be object recognition and learning methods.

Further, in parallel to all poster sessions there were many interesting demo sessions and exhibits from academic institutions as well as from industry showing recent developments in a practical manner.

Additionally, a large variety of workshops and tutorials with recent computer vision topics was offered two days before and after the main conference. I think these tutorials and workshops are a great opportunity to get to know new methods and technologies or deepen one's knowledge on different computer vision topics. For instance, there was a full-day workshop on point cloud processing and a half-day tutorial on Willow Garage's open source Point Cloud Library.

On the 2nd day's evening was a social event in form of a conference banquet. During the dinner the best contributions were honored. The best paper award was given to Yuchao Dai, Hongdong Li, Mingyi He for "A Simple Prior-free Method for Non-Rigid Structure-from-Motion Factorization". Moreover, Professor Ulf Grenander was awarded the Pioneer Award in appreciation of his pathbreaking contributions to pattern theory.

Overall, CVPR 2012 was an inspiring and worthwhile event demonstrating that Computer Vision is a very active research field with growing popularity. Generally, it seems

impossible to keep track of every contribution, but the outstanding conference organization with well-arranged time schedules, room plans, and pocket guides made it easy to follow the topics of interest.

Next years' CVPR 2013 will take place in Portland, Oregon, from June 25 to 27. In order to keep track of important and most recent developments in Computer Vision, I highly recommend the attendance at this conference.

RoboCup 2012

18–24 June 2012, Mexico City

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Mexico was the host of the 16th RoboCup competition from June 18th to 24th 2012. It was the first time that the RoboCup world championship took place in Latin America. About 2,300 participants and over 400 teams from 45 countries came to the World Trade Center in Mexico City to compete with their robots in many different leagues.

In the "traditional" soccer middle-size league (MSL) robots with a maximum height of 80 cm play on a 12×18 m large field against each other. Each team has five robots including the goalkeeper. Current research interests include the development of adaptive, self-learning and cooperative behaviors with a high game dynamic. A landmark change in rules for the promotion of cooperative behavior took place this year. The robot teams are forced to pass the ball over the middle line. Consequently it was the first time that teams showed well-tuned passing behaviors at a high speed of up to 5.5 m/s. Team Tech United from the Netherlands won the competition, followed by MRL from Iran and Water from China. The Small Size League (SSL) focuses on the problem of intelligent multi-agent cooperation and control in a highly dynamic environment with a hybrid centralized/distributed system. This setup includes an external, standardized vision system for tracking as well as external computers that can evaluate complex strategies and communicate these to the robots. In 2012, the SSL increased the number of robots per team, playing now 6 vs. 6 matches, and thereby aims to remain the robot league that plays the most sophisticated soccer moves. Here, the team Skuba from Thailand bet the team ZjuNlict from China. The team KIKS from Japan finished on third place.

In the Standard Platform League (SPL) a standardized robot platform—the humanoid robot NAO, manufactured by Aldebaran Robotics—is used to play soccer. This year,

keeping track of the robots' positions on the field was in the center of the development, since both goals had the same color now. Therefore, the participating teams had to develop new methods for their robots to determine their orientation on the field. In the future, the SPL shall become the league with most robot players per team, since the common hardware makes this a lot easier than in leagues in which teams build their robots by themselves. The winner in this league was TT-UT Austin Villa from the USA, followed by team B-Human from Bremen and rUNSWift from Australia.

The 3D soccer simulation league is played with simulated NAO robots. This year games were played 11 vs. 11 on a virtual field that's size resembles the dimensions of a real soccer field. 2D simulation is played on simplified robot models with a focus on strategy and collaboration. It is worthwhile to mention that this lead to publications already in real soccer journals.

In the Humanoid League, autonomous robots, which are frequently constructed by the teams themselves, play in three size classes: KidSize (<60 cm), TeenSize (90–120 cm), and AdultSize. This year, many KidSize teams used the DARwIn-OP robot, which is sold by the Korean company Robotis. Team DARwIn (Virginia Tech & University of Pennsylvania) clearly won with this robot the KidSize soccer tournament. After the Japanese team CIT Brains, Darmstadt Dribblers (TU Darmstadt) reached the third place. Team NimbRo (University of Bonn) defended the TeenSize title and was elected Best Humanoid by the team leaders of the entire league, not the least because of maximal number of points in the Technical Challenge. To make entry in this size class easier, the Bonn team is developing a TeenSize robot who's hard- and software will be released. New technical challenges this year were obstacle dribbling with an unknown ball and kicking high. Next year, the Humanoid League will also use only one goal color and will increase the number of players in KidSize to four per team.

The Rescue Robot League (RRL) is now in its 11th year and provides a stepping-stone for robot developers interested in demonstrating and practicing relevant operational tasks for emergency responders. The autonomous or teleoperated robots operate in a simulated disaster area; their task is to find victims and report their position and condition to the responders. This year, QR-codes were placed all over the arena to measure the coverage of the search. The detection and identification of a QR code showed the capability of the sensor set of the robot and the effectiveness of the exploration strategy; the correct mapping of the code the ability to localize and map the environment. The robot Hector UGV from TU Darmstadt demonstrated very good performance in these areas and finally scored second after the team MRL from Iran and before the teams Stabilize from Thailand and YRA from Iran that were tied third place. Team Stabilize
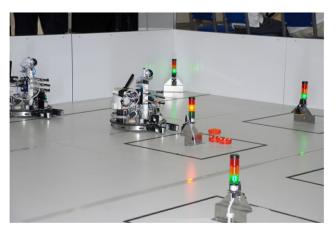
also succeeded in the Best in Class Mobility and Team Hector in the Best in Class Autonomy competition. Team DML from Iran won the Best in Class Manipulation challenge.

In 2012, RoboCup introduced a new league: the Logistics League Sponsored by Festo (LLSF). The focus is not a sport competition but the competition environment provides the flair of a flexible production. The logistics for different level of production processes must be autonomously managed by three mobile robots called Robotino® of Festo (see www.festo.com). This year, the challenge focused on the development of multi-agent planning and scheduling methods and creating reliable software implementations on the given PC104 controller of the Robotino. For next year this restriction will be skipped, which allows the participants to extend the Robotino controller by their own computers in order enable the teams to integrate more sophisticated AI methods.

Other leagues at the RoboCup were the RoboCup@Home league (with team NimbRo from Bonn on first, team Er@sers from Japan on second, and team Tobi from Bielefeld on third place), the RoboCup@Work demo, the RoboCup Rescue Simulation League, as well as the soccer, rescue and dance competitions in RoboCup Junior.

On Sunday after the competition, the 16th RoboCup Symposium took place in the Mexico City WTC Auditorium. The well attended oral presentations consisted of

twelve papers and two invited talks by Martial Hebert (from Carnegie Mellon University) and Edwin Olson (from University of Michigan). Thirteen more papers and seven RoboCup projects were presented as poster. The accepted papers were selected from 64 submissions. The work of J.J. Alcaraz-Jiménez et al. "Lateral Disturbance Rejection for the NAO Robot" received the Best Paper Award.

The organizing committee in Mexico City managed to set up a great event which was well received by the participants. The next RoboCup Competition will be hosted in Eindhoven, Netherlands from June 24th to 30th 2013. Daniele Nardi, the president of the RoboCup Federation, also announced the location of 2014 RoboCup 2014: The RoboCup community will again travel to America: to Brazil.

DAGM-OAGM 2012—34th Meeting of the German Association for Pattern Recognition, and the 36th Meeting of the Austrian Association for Pattern Recognition

27–31 August 2012, Graz, Austria

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This year's edition was the fourth time that the German (DAGM) and Austrian (OAGM) associations for pattern recognition jointly organize their annual conference. It was hosted by the University of Graz and had over 120 participants, 98 papers submissions and a total of 50 papers accepted for publication, of which 27 were chosen for oral and 23 for poster presentation. Two tutorials and workshops were given, and three invited talks by Antonio Torralba, Jiri Matas, and Francis Bach completed the program. The organization of the event left no room for mistakes or delays, which is remarkable given the tight schedule that was planned.

Because of its beauty and the ease of transportation, the city of Graz is an ideal location for such meetings. Since 1999, it belongs to the UNESCO list of World Cultural Heritage Sites; and it is indeed a pleasant experience to walk by its streets and parks.

Two tutorials and two workshops took place on Tuesday. The first of the tutorials was on the topic of Random Forests, which is one of the current trends in machine vision. It was given by Christian Leistner, from Microsoft Vexcel Imaging

(Graz), and gave an overview on the motivation and the techniques related to these methods. In the afternoon, Stefanie Jegelka from UC Berkeley, and Andreas Krause from ETH Zürich gave a tutorial on submodularity in machine learning, a family of methods that can be used to approximately solve otherwise very difficult discrete optimization problems such as sensor placement in sensor networks, in an efficient and fast manner. Parallelly during the whole day, two workshops were taking place in the topics of Neural Computation and Applications of Computer Vision. The first day ended with the Welcome Reception, where we were kindly hosted at the Alte Universität by the organizing committee and the major of Graz.

Regarding the program of the conference, having an overview on the talks is enough to see that computer vision was the main trend among the topics of the papers. This was the topic of the first day presentations:

Segmentation in the morning and low-level vision in the afternoon, as well as the invited talk by Jiri Matas about tracking: what is tracking and what is not tracking? How good are actually the methods as compared to their reported results? After lunch the first poster session started, where vivid discussions about the presented results took place. In many occasions throughout the conference the importance of the new researchers to the community was emphasized and so they had their own chance to present their work in parallel to the poster session at the Young Researchers Forum.

The second day started with a very inspiring talk by Antonio Torralba. In a very fresh way he showed the need to go towards bigger datasets for solving computer vision problems, but also how some bias is always present is such datasets, so that methods trained in one dataset are not guaranteed to work when tested on another. The oral presentations of the day were grouped on the topics of 3D Reconstruction, Recognition in the afternoon and ended with an oral session about practical applications. A second poster session took place after the second oral session, where the other half of the presenters had the chance to discuss the posters.

The topics of the last day were learning and features. The invited talk corresponded to Francis Bach. He gave an insight on methods for optimization that work with large-scale data. During the oral sessions, an interesting talk was given in the afternoon by A. Elhayek entitled Feature-based Multi-video Synchronization. The last day finished with the awards ceremony. The price to the young researchers was awarded to Stephanie Behrens for her work "Automatic level set based cerebral vessel segmentation and bone removal in CT angiography data sets". Two prizes were awarded to the papers "How well do filter-based MRFs model natural images?" and "Anisotropic Range Image Integration". Finally, the main prize, that recognizes outstanding contributions in computer vision and pattern recognition, was awarded to the paper entitled "Synergy-based Learning of Facial Identity, that had been brilliantly presented in the oral sessions of that morning by Martin Köstinger.

On the evening of the 30th took place the social event in the Schlossberg. It is a hill right in the center of town, that had been used in the past as a fortress, and now is mainly used for recreational purposes because of its beauty and the views of the city it provides. On the way up, one can find the popular "Uhrturm", a tower clock of which the grazers are particularly proud. During the dinner we had the time to get to know other researchers in a more informal atmosphere.

Altogether, the joint conference of the German and Austrian societies on pattern recognition, DAGM and OAGM, was an excellent opportunity for the whole German-speaking community to gather, share experiences, and exchange knowledge. However, not only scientists from the two countries were present at the conference; institutions from 19 other countries were represented. In this trend, it was announced the next year's DAGM conference in Saarbrücken will be called *GCPR* for *German Conference on Pattern Recognition*. It was the intention of the organizers that young researchers actively participate, and that the community in general is open to ideas from other fields of knowledge.