Activity Report 2011

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ALPAGE Project-Team (section vide)
METISS Project-Team

2.2. Highlights

Rémi Gribonval was awarded the 2011 Blaise Pascal Award of the GAMNI-SMAI by the French Academy of Sciences.

Rémi Gribonval obtained in 2011 a Starting Grant from the European Research Council.

Our group organized and participated in the PASCAL ‘CHiME’ Speech Separation and Recognition Challenge, aiming to evaluate speech separation, feature extraction and speech recognition algorithms in everyday listening conditions. The challenge attracted 13 groups worldwide, which is a major success compared to previous events in this field. For datasets and detailed results, please see http://www.dcs.shef.ac.uk/spandh/chime/challenge.html.

For his contributions to the field, Emmanuel Vincent will be awarded the 2012 SPIE ICA Unsupervised Learning Pioneer Award.
PAROLE Project-Team (section vide)
2.2. Highlights

Sylvain Pogodalla chaired the international conference Logical Aspects of Computational Linguistics (LACL 2011) organized in Montpellier.
2.4. Highlights

2.4.1. Generating Instructions in a Virtual Environment.
Talaris participated in the preparation of the international GIVE 2.5 challenge on the Generation of Instructions in a Virtual Environment. This challenge brought together researchers from six universities and evaluated the participating systems on their ability to generate instructions in a dynamic 3D setting [40]. One of the two systems developed by TALARIS [26] won the second place both in terms of objective and of subjective metrics.

2.4.2. Generating from Knowledge Bases.
Talaris’ work on data-to-text generation has attracted increasing interest this year. The GenI sentence generator developed by Talaris was licensed to be used by Stanford Research International (SRI) in the large scale AURA (Automated User-centered Reasoning and Acquisition System) project whose aim is to provide an Intelligent Electronic Textbook that could be used by teachers and students; negotiations are currently underway with SeeReason Partners LLC for another commercial license; and a two day invited visit to Bolzano lead to the launch of a new collaboration which will focus on integrating GenI in the Quelo system developed by the KRDB group to verbalise queries on knowledge bases. In parallel, Claire Gardent gave an invited talk on data-to-text generation at the French NLP conference (TALN, Traitement Automatique des Langues Naturelles) and an invited tutorial on Generation for the Semantic Web at the K-CAP (Knowledge Capture) conference in Banff, Canada.
ALICE Project-Team

2.2. Highlights

- B. Lévy received the Inria young researcher award.
- N. Cherpeau received an award of merit for his paper "Stochastic simulation of fault networks from 2D seismic lines", awarded by the SEG (Society of Exploration Geophysicists).
ARTIS Project-Team (section vide)
2.3. Highlights

In 2011, AVIZ has been very successful in obtaining funded projects.

Google Research Award: Jean-Daniel Fekete has received an Research Award by Google for a project called “Data Visualization for the People” to be done with Jeremy Boy and AVIZ.

National Equipment of Excellence: The Digiscope project has been selected on the competitive call (acceptance rate of 51/336 or 15%). AVIZ is in charge of setting up a Fab Lab available to all the partners of the Digiscope project.

National ANR Projects: We received 2 projects: ANR FITOC, a 4 years “Starting Grant” project (ANR Jeune Chercheuse) obtained by Petra Isenberg on collaborative information visualization, and the 2 years EASEA-Cloud Infrastructure project obtained by Évelyne Lutton on multi-dimensional visualization for monitoring and steering high-performance evolutionary algorithms.

European Project: the 4 year CENDARI Infrastructure project on integrating digital archives and resources for research on European history.

Publications: this year, members of AVIZ collaborated on 24 publications overall and were present at all the most prestigious conferences in our fields: ACM CHI, ACM UIST, IEEE InfoVis, IEEE VAST.
2.2. Highlights

- European Research Council (ERC) advance grant 2011, Marie-Paule Cani.
- Eurographics Outstanding Technical Contributions Award 2011, Marie-Paule Cani.
- Papers accepted at TOG [3], [4], and SPM [2].
- The Hand Navigator was presented at cité de la Vilette as part of Fête de la science.
- Aestem Studio and Hand Navigator were presented at Experimenta, Salon de la Biennale Arts et Sciences, organized by CEA-LETI and Theatre de l’Hexagone in Grenoble.
IN-SITU Project-Team

2.3. Highlights

- INSITU had 3 papers accepted at the most prestigious conference in our field, ACM CHI 2011, including a Best paper award for *Mid-air Pan-and-Zoom on Wall-sized Displays* authored by Mathieu Nancel, Julie Wagner, Emmanuel Pietriga, Olivier Chapuis and Wendy Mackay.


- Michel Beaudouin-Lafon was inducted as senior member of the Institut Universitaire de France.
2.2. Highlights

2.2.1. Shape Visualization

Thanks to the PhD of Romain Vergne, we have developed new techniques to legibly depict the shape of 3D objects. For this purpose, we have explored Non-Photorealistic Rendering approaches [36], realistic approaches by tuning light directions [37] (front cover of the special issue of ACM Transaction of Graphics) or light intensities [38] (best paper award). The success of such an approach has increased this year [17]. Furthermore, we have shown that we can depict the shape in a temporally coherent manner with stylized lines [18] (3rd best paper award).

2.2.2. Cultural Heritage and Computer Graphics

For the last years, we are investigating the convergence between the Computer Graphics tools that we are developing and Cultural Heritage related tools. In 2009, we have initiated the ANR SeARCH project (http://anr-search.labri.fr) on this topic. The results developed with our close partner Archéovision (http://archeovision.cnrs.fr) have been well recognized, and thanks to our common expertise, in 2011, we have joined the European Network of Excellence V-Must.net (http://www.v-must.net). In this consortium, we particularly explore new interaction and visualization techniques that support museums in their three main goals: the transmission, the conservation, and the study of Cultural Heritage.

2.2.3. Toucheo: Multitouch + Stereo

We have designed a new system, Toucheo, that efficiently combines fast and easy multitouch interaction, with 3D stereoscopic immersive visualization. This system is the result of the collaboration between IPARLA, and a company called Immersion. This work is part of the ANR InSTInCT project. We demonstrated the technology at Siggraph 2011 Emergingtech [19], and we published at UIST 2011 [25]. We submitted a joint patent with Immersion for this new system, and it is now available as a commercial product. Toucheo is currently part of the "Numeriquement votre" exhibition that takes place at Cap Sciences, Bordeaux.
MIMETIC Team

2.2. Highlights

- Accepted papers in major venues:
  - "Imperceptible Relaxation of Collision Avoidance Constraints in Virtual Crowds" accepted at ACM Siggraph Asia 2011 (acceptance rate 17%) [4]
  - "The Director’s Lens: An Intelligent Assistant for Virtual Cinematography" accepted at ACM Multimedia 2011 (acceptance rate 17%) [16]

- Organization of the Symposium "Simulation of Sports Motions" co-located with CASA in Chengdu, China (May, 26-28 2011).
MINT Team

2.2. Highlights

- S. Degrande received a “Crystal” award from CNRS, a distinction attributed every year to technical staff members whose original and inventive contributions benefit a body of professionals beyond the confines of a single laboratory or department;
- G. Casiez, N. Roussel, R. Vanbelleghem and F. Giraud’s paper on the Surfpad pointing facilitation technique [17] received an *honorable mention* award (top 5% of the 1540 submissions) from the ACM CHI 2011 conference;
- M. Amberg, F. Giraud, B. Lemaire-Semail, P. Olivo, G. Casiez and N. Roussel’s demo of the STIMTAC [15] received the second place award for best demo from the ACM UIST 2011 conference attendees;
- B. Lemaire-Semail, M. Amberg, F. Giraud, N. Roussel and P. Olivo’s work on the 3DTOUCH project received a “5 stars” label from STMicroelectronics’ Core Innovation Team;
- L. Grisoni, N. Bremard and S. Degrande collaborated with artists Alexandre Maubert and Léonore Mercier on Monade and Damassama, two interactive pieces shown at Le Fresnoy’s Panorama 13 exhibition;
- N. Bremard, J. Gilliot, L. Grisoni, D. Marchal, C. Moerman, P. Olivo, Y. Rekik, N. Roussel and D. Selosse visited 38 college and high school classes during the “Fête de la Science” (October 10-14, about 900 students);
- About 200 researchers, artists, practitioners and enthusiasts participated in FITG II + ArtLab, an open event co-organized by N. Roussel and C. Chaillou in cooperation with Pôle Images (September 22-23);
- T. Pietrzak joined the team in September 2011 after a PhD at the University of Metz and post-doctoral stays at Telecom ParisTech (INFRES, IC2/VIA) and the University of Toronto (DGP).

**BEST PAPER AWARD:**

REVES Project-Team

2.2. Highlights

Adrien Bousseau won the Eurographic Ph.D. award in 2011 (three awards are given each year). He also co-authored the paper [23], which won the “Best Paper Award” at the ACM Symposium on Interactive 3D Graphics and Games. Finally, A. Bousseau is a co-author of the paper on Diffusion Curves which was selected for publication in the “Communications of the ACM”.

Marcio Cabral won the best PhD thesis in CG Award at SIBGRAPI 2011 (Brazilian conference of Computer Graphics), and Pierre-Yves Laffont won the best paper award at AFIG 2011 for his papers [21]. Charles Verron received the 2011 Rocard Price from the Société Française d’Acoustique (SFA) in November 2011.
2.2. Highlights

2.2.1. A new Virtual Reality room

This year, our virtual reality room is renewed. It is composed of a new wall with four faces (front, two sides and ground), an ART tracker to track user position and a Yamaha sound rendering system linked to Genelec speakers with 10.2 format sound controlled by the user position. The dimension is 9.6 m wide, 2.9 m deep and 3.1 m high. This new equipment allowed us to become a key partner of the VISIONAIR European project which aims at creating a European infrastructure that should be a unique, visible and attractive entry towards high-level visualization facilities open to a wide set of research communities.

2.2.2. Runner-up award at IEEE 3DUI

Jérôme Ardouin, PhD student, obtained the 2nd best short paper award for his paper entitled "Design and Evaluation of Methods to Prevent Frame Cancellation in Real-Time Stereoscopic Rendering", presented at the IEEE 3DUI conference 2011 [10].

2.2.3. Two presentations at Siggraph E-Tech

The Joyman [33] has been demonstrated in Siggraph Asia while the Virtual Crepe Factory has been presented in Siggraph [14].
2.2. Highlights

1. A best paper at ECIR the major european conference on Information Retrieval and an article accepted [23] in Pattern Recognition journal (Elsevier).

2. AxIS has contributed to the Future Internet Assembly book on Smart Cities and Future Internet: towards cooperation frameworks for Open innovation [39].

3. An important effort has been done this year to get datasets from real applications in order
   – to validate our methods in data mining: it was the case for our ATWUEDA method applied on electric power plant curves from EDF [51].
   – to support our researches in expert finding with the important work of E. Smirnova in building experiment dataset based on the LinkedIn repository (cf. her visit at Intelius, USA) and with the Yahoo! agreement which allows us to get a large sample of the web graph, important for our work on name disambiguation,
   – and to consolidate and support our multi-disciplinary approach in understanding usage data, user experience and co-creation (methodology and data mining) by the data generated from several projects involving experiments with citizen (cf. 6.1 ).

4. SCDS method from Marascu’s thesis (2009) has been implemented as a Web service inside the FocusLab platform and was used for ELLIOT purposes (cf. 4.2.3 ). ATWUEDA has been applied successfully for system monitoring purposes at EDF.

5. AxIS Rocquencourt and AxIS Sophia Antipolis have worked on two common Pacalabs contracts (Ecoffices, an energetical challenge and HOTEL-REF-PACA related to the log analysis of Web sites referencing).

6. Fruitful relations established with the urban community of Nice Cote d’Azur (NCA) and the urban community of Antibes Sophia Antipolis in the context of various projects.

7. AxIS staff has prepared the evaluation of our past four years and our future research as our colleagues from the same topic “Perception, Cognition, Interaction: Knowledge and Data Representation and Management” in October 12-13 (our last evaluation was in November 2007).

Best Papers Awards:
[43] the 33rd European conference on Advances in information retrieval. E. Smirnova, K. Balog.
DAHU Project-Team (section vide)
DREAM Project-Team (section vide)
2.2. Highlights

- Fabien Gandon was nominated INRIA representative at W3C.
EXMO Project-Team (section vide)
2.5. Highlights


Marie-Laure Mugnier was keynote speaker at the International Conference RR 2011 (The Fifth International Conference on Web Reasoning and Rule Systems). This conference is becoming a major forum for discussion and dissemination of new results on all topics concerning Web Reasoning and Rule Systems.
2.1. Highlights

Our work within the ANR CODEX project has lead to several important publications on: the efficient management of RDF data [21], rewriting based on XML materialized views [41] and the maintenance of such views [35], and the efficient processing of updates on XML documents through type projectors [31].

Glucose 2.0 (a SAT solver developed by L. Simon) won the first prize at the international SAT competition 2011, category Application SAT+UNSAT.

AAAI’2011 Outstanding Paper Award for “Complexity of and Algorithms for Borda Manipulation” [38], by Jessica Davies, George Katsirelos, Nina Narodytska, Toby Walsh. George Katsirelos was a PostDoc in Leo until November, 2011.

The YAGO2 demo [40] received the Best Demo Award at the 2011 WWW Conference. Fabian Suchanek was a PostDoc in Leo until September 2011.
MAIA Project-Team (section vide)
MOSTRARE Project-Team (section vide)
2.2. Highlights

This year, the team would like to indicate in this section two kinds of highlights. Firstly, we would like to emphasize the high quality of some publications obtained by the team in high-level conferences and journals, such as CIKM, ICDM, IJCAI, KDD, and Bioinformatics.

Secondly, the application of KDDK process in the domain of Life Sciences made progress in 2011. Fast algorithms for 3D-shape protein classification and docking using polar Fourier correlations on graphics processor units (GPUs) have been published. The GPU-accelerated version of the Hex docking program (http://hex.loria.fr) has had some 4,000 downloads in the last year, and the GPU-powered server (http://hexserver.loria.fr) has performed some 13,000 docking runs for external users.
2.2. Highlights

**BEST PAPER AWARD:**

WAM Project-Team (section vide)
2.2. Highlights

The third edition of the Özsu-Valduriez textbook *Principles of Distributed Database Systems* [11] has been released (by Springer). This long awaited major revision is now about 850 pages. In addition to the fundamental principles of distributed data management, it now covers new hot topics such as web data management, peer-to-peer, data streaming, and cloud.

At the 2011 competition of the Ontology Alignment Evaluation Initiative (http://oaei.ontologymatching.org), our YAM++ ontology matching tool achieved excellent results: first position at the Conference track and second position at the Benchmark track.

The paper [46] on aggregate queries in uncertain databases was selected as one of the best papers at BDA 2011.
2.2. Highlights

We have demonstrated during one week in the downtown of Clermont Ferrand in real traffic conditions the performances and the robustness of the solutions of autonomous navigation and control developed in the context of the ANR project CityVIP. This experiment has been also presented in Sophia Antipolis during the open lab day organized for the European Robotics Week.
COPRIN Project-Team

2.2. Highlights

- experimental analysis of gait pattern with the instrumented walker ANG-light: 24 subjects from INRIA (age: from 25 to 61) were submitted to a one hour walking protocol. This experiment was a preliminary for the one that will take place at CHU with elderly people, for which the CPP has been finally granted.
- 275 visitors have attended a demonstration of the project this year during 14 visits (among which an open lab day organized for the European Robotics Week).
- simultaneous development of several innovative prototypes: two instrumented walkers, two wire-driven parallel robot, assistive devices.
E-MOTION Project-Team

2.2. Highlights

- Renewing of the long-term agreement with Toyota (4 years) for common R&D studies in the field of Advanced Driver Assistance Systems. In the scope of this agreement, Toyota has lend an experimental equipped Lexus vehicle. A new PhD thesis focusing on this topic was launched.
- C. Laugier is in charge, since January 2010, of the scientific relations with Asia-Oceania at the INRIA office of International Relations. He is also member of the several committees at the French Ministry of Research (MESR) and at the French Ministry of Foreign Affairs (MAEE).
- A patent with Toyota signed in 2010 was extended to the USA.
- C. Laugier has given an invited talk at the conference IV’11 and a workshop at IROS’11.
- Several Contracts were accepted: ict-asia PAMM, ict-asia PREDIMAP, ANR Blanc International...
- C. Laugier was Editor at IEEE ICRA conference Editorial Board (CEB).
- C. Laugier was co-chair for workshop and tutorial at the IEEE/RSJ IROS 2011 conference in San Francisco.
- C. Laugier will be program co-chair for the IEEE/RSJ IROS 2012 conference.
FLOWERS Project-Team

2.2. Highlights

An important scientific step was reached by proposing a first formal, as well as experimental, combination of two central families of exploration and learning algorithms, which were so far studied separately in the literature: intrinsically motivated learning of sensorimotor skills, and socially guided learning of motor skills. This was achieved through the SGIM (Socially Guided Intrinsic Motivation) algorithm. An article presenting this algorithm and associated results obtained the second best student paper award in the IEEE ICDL/Epirob conference, Frankfurt Germany [27].

The results of a major large-scale experiment on human-robot interfaces was published in one of the premier venue for human-robot interaction research, the ACM/IEEE HRI conference [29]. The goal of the experiment, which was very successful and performed out of the lab in Cap Sciences museum in Bordeaux, was to show that the design of adequate interfaces for having a non-engineer human teach new visually grounded words to a robot can improve the performances of learning significantly more than the standard improvement provided by using a sophisticated statistical inference or computer vision algorithms. This is explained by the fact that adequate interfaces allow the robot to collect training examples of a much higher quality.

The FLOWERS team, in collaboration with University Bordeaux I/Labri, has participated as a central actor of the exhibition “Mathematics: A Beautiful Elsewhere” at Fondation Cartier pour l’Art Contemporain in Paris, starting from 19th October 2011 and to be held until 18th March 2012. This installation, called “Ergo-Robots/FLOWERS Fields” was made in collaboration with artist David Lynch and mathematician Mikhail Gromov (IHES, France), and shows computational models of curiosity-driven learning, human-robot interaction as well as self-organization of linguistic conventions. This exhibition, at the crossroads of science and art, has the goal of showing to the general public (several hundred thousands visitors) the intellectual universe of some of the greatest mathematicians of our time as well as some experiments and techniques in other fields (e.g. physics, computer science, robotics) which are directly related to their scientific work. Through this exhibition, the work of the team was also widely disseminated to the general public through large audience radios, magazines and newspapers (France Inter, France Culture, RFI, Sciences et Avenir, Tangente, Financial Times, Daily Telegraph, Libération, ...). More information available at: http://flowers.inria.fr/ergo-robots.php and http://fondation.cartier.com/.

The Acroban humanoid robot, developed in collaboration with University Bordeaux I/Labri, and which features groundbreaking technologies in terms of flexible morphology (including vertebral column) and capacity for intuitive, safe and robust physical interaction with humans, was highly solicited for live demonstrations in international venues, both academic and targeted to a wider audience. In particular, on the academic side, Acroban was demonstrated live as a focus demonstration at IEEE IROS 2011 conference in San Francisco, FET 2011 European conference in Budapest, SAME conference in Nice Sophia Antipolis, Foundation of Digital Games 2011 conference in Bordeaux. On the general public side, Acroban was demonstrated at the INNOROBO International Robot Summit in Lyon, at the Laval Virtual salon in Laval, at Fête de la Science in Cité des Sciences et de l’Industrie, during the conference “Des robots et des hommes” at Cité des Sciences et de l’Industrie in Paris. A movie for scientific mediation, explaining the science and technology related to Acroban, was made with the INRIA movie department. Those technologies were also presented and explained on various large audience national and international tv programs (CNBC, TF1, BFM TV, Euronews), radios (France Info, RFI), newspapers and magazines (Le Monde, Le Point, Le Figaro, Le Figaro Magazine, Les Echos, 20 minutes). Finally, Acroban was selected by SmartPlanet.com as one of the best robots of the year 2001 (http://www.smartplanet.fr/smart-technology/compil-2011-un-defile-de-robots-9384/).

Best Paper Award:

IMARA Project-Team

2.2. Highlights

- Year 2011 was a particular year, where the emblematic leader of IMARA – Michel Parent – has retired but remained a close collaborator with the team. His successor Fawzi Nashashibi is the new team leader.

- 2011 also saw the retirement of André Ducrot, who has been working for many years on image processing and lately visual odometry. Among the colleagues who left Imara this year, we would like to mention in particular Philippe Deschamps, who passed away last October. Philippe has been a researcher in several teams of Inria for more than thirty years.

- 2011 was also the end of several European projects: HAVEit, Intersafe-2, CityMobil and CityNet-Mobil. CityMobil showcases and the involvement of INRIA in the final event constituted a true breakthrough from the scientific and team visibility points of view. Thanks to the Cybercars service at La Rochelle, IMARA proved its leadership by performing a unique on-demand urban transportation system based on automated electric vehicles called Cybus.
LAGADIC Project-Team

2.2. Highlights

Amaury Dame received a runner-up award from the GdR Robotique for the best 2010 Ph.D. thesis in robotics.
2.2. Highlights

- Ariana research team will be closed at the end of 2011 after 14 years of successful research work.
- Saima Ben Hadj got the second best young author prize (sponsored by the French Space Agency (CNES) and the French Geographical Institute (IGN)) from the French Society of Photogrammetry and Remote Sensing for her paper published in RFPT [8].
IMEDIA Project-Team

2.2. Highlights

We organized the Plant Identification task at ImageCLEF 2011 (cf. http://imageclef.org/2011/plants and [19]). We submitted two runs [20], which won respectively the Scans images and the Scan-like images tasks.
2.2. Highlights

- **Action recognition.** LEAR has developed several successful methods for action recognition [7], [11], [18]. Our approach for action recognition in still images automatically determines objects relevant for an action given a set of training images [7]. In the PASCAL visual object classes challenge 2011 it achieved best results on three out of ten action classes and the best result on average over all classes.

  The approaches [11], [18] model the dynamics of actions in videos. In [18] dense trajectory descriptors are extracted and shown to outperform existing video descriptors. In [11] an “actom sequence model” is introduced, which decomposes actions into sequences of (overlapping) action-units called “actoms”. Each actom gathers temporally localized discriminative visual features of the action. This actom sequence model outperformed state-of-the-art approaches on the “Coffee and cigarettes” dataset.

- **Large-scale classification.** LEAR has designed an efficient and scalable approach for large-scale image classification. The approach [10] allows to gracefully scale up to large number of categories and examples while learning the underlying taxonomy of the categories at the same time, by using a trace-norm regularization penalty. Promising experimental results on subsets of the ImageNet dataset were obtained, where our method outperforms state-of-the-art approaches using 16-Gaussian Fisher vectors. A spatial extension of Fisher vectors [15] allows dimensionality reduction, as does the compression technique presented in [5].

- **INRIA Visual Recognition and Machine Learning Summer School.** This year we co-organized the second edition of the ENS-INRIA Visual Recognition and Machine Learning Summer School in Paris. It attracted a total of 175 participants (31% from France, 50% from Europe and 20% from America and Asia). Next year the summer school will again be organized in Grenoble.
MAGRIT Project-Team (section vide)
Morpheo Team

2.2. Highlights

2.2.1. Creation

The Morpheo team was created in March 2011.

2.2.2. Morpho – Analysis of Human Shapes and Motions

The ANR project Morpho is coordinated by Morpheo. This project is aimed at designing new technologies for the measure and for the analysis of dynamic surface evolutions using visual data. 3 academic partners will collaborate on this project: the INRIA Grenoble Rhône-Alpes with the Morpheo team, the GIPSA-lab Grenoble and the INRIA-Lorraine with the Alice team.

2.2.3. Collaboration with Technicolor

A collaboration between Morpheo and Technicolor has been initiated in 2011. The objective is to develop new gesture interfaces using visual inputs such as color and depth cameras. A co-supervised PhD started in May 2011 and technicolor and Morpheo are also collaborating on this subject within the Quaero project.
PERCEPTION Project-Team

2.2. Highlights

2.2.1. The European project Humavips – Humanoids with Auditory and Visual Abilities in Populated Spaces

HUMAVIPS (http://humavips.inrialpes.fr) is a 36 months FP7 STREP project coordinated by Radu Horaud and which started in 2010. The project addresses multimodal perception and cognitive issues associated with the computational development of a social robot. The ambition is to endow humanoid robots with audiovisual (AV) abilities: exploration, recognition, and interaction, such that they exhibit adequate behavior when dealing with a group of people. Proposed research and technological developments will emphasize the role played by multimodal perception within principled models of human-robot interaction and of humanoid behavior.

2.2.2. Collaboration with SAMSUNG – 3D Capturing and Modeling from Scalable Camera Configurations

In 2010 started a 30 months collaboration with the Samsung Advanced Institute of Technology (SAIT), Seoul, Korea. Within this project we develop a methodology able to combine data from several types of visual sensors (2D high-definition color cameras and 3D range cameras) in order to reconstruct, in real-time, an indoor scene without any constraints in terms of background, illumination conditions, etc.

2.2.3. Outstanding paper award at ICMI’11

Our article "Finding Audio-Visual Events in Informal Social Gatherings" [29] received the "Outstanding Paper Award" (best paper) at the IEEE/ACM 13th International Conference on Multimodal Interaction (ICMI), Alicante, Spain, November 2011. The paper is co-authored by members of both PERCEPTION and MISTIS, Xavi Alameda-Pineda, Vasil Khalidov, Radu Horaud and Florence Forbes. The paper addresses the problem of detecting and localizing audio-visual events (such as people) in a complex/cluttered scenario such as a cocktail party. The work is carried out within the collaborative European project HUMAVIPS.
2.2. Highlights

- In January 2010, the research laboratories of the Grenoble Universities were evaluated by the French AERES evaluation agency. Within this context, each of the 24 research groups of the Laboratoire Informatique de Grenoble (LIG) were individually evaluated with respect to 4 criteria: Scientific Quality, Visibility, Governance, and Scientific Project, as well as overall activity. The results were labeled with a grade (A+, A, B, C). The PRIMA research group received an overall score of A+, and was one of only two research groups in Grenoble to receive a score of A+ in all four areas: Scientific Quality, Visibility, Governance, and Scientific Project.

- Members of the PRIMA group have coordinated the submission of the proposal AMIQUAL4HOME to the second round of funding for Equipment for Scientific Excellence (EQUIPEX) of the programme Investissement d’Avenir. AMIQUAL4HOME has been ranked 45 of the 270 proposals submitted and is listed among the Laureat of the 2011 Equipex programme.

- PRIMA director James Crowley has been named as a senior member of the Institut Universitaire de France (IUF) with a research programme entitled "Perception for Social Interaction".

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**PRIMA Project-Team**
2.2. Highlights

Pulsar is a Project team which designs cognitive vision systems for activity recognition based on sound software engineering paradigms. We have an operational platform, named SUP, for detecting and tracking mobile objects, which can be either humans or vehicles, and for recognizing their behaviours. This SUP platform is the backbone of the team experiments to implement the new algorithms proposed by the team in perception, understanding and learning. We have studied a meta-modeling approach to support the development (e.g. specification) of video understanding applications based on SUP.

This year, we have designed an efficient algorithm for detecting people in a static image based on a cascade of classifiers. We have also proposed a new algorithm for re-identification of people through a camera network. We have realized a new algorithm for the recognition of short actions and tested its performance on several benchmarking databases. We have improved a generic event recognition algorithm by handling event uncertainty at several processing levels. We have also continued original work on learning techniques such as data mining in large multimedia databases based on offline trajectory clustering. For instance, we have been able to learn frequent activities at the apartment of an elderly, in a subway station and on an airport tarmac.

We have also started two clinical trials to characterize the behaviour profile of Alzheimer patients compared to healthy older people.

Monique Thonnat was general chair of the International Conference on Computer Vision Systems (ICVS 2011).
2.5. Highlights

The paper “Online dictionaries for image prediction” [41] by Mehmet Turkan and Christine Guillemot has been among the 8 nominated for the best student paper award at IEEE-ICIP, Sept. 2011. The paper “Lossy compression of distributed sparse sources: a practical scheme” by G. Coluccia, E. Magli, A. Roumy and V. Toto-Zarasoa [26] has received the Best Paper Award “Francesco Carassa” 2011 awarded by GTTI (Gruppo Italiano Telecomunicazioni e Teoria dell’Informazione).
2.2. Highlights

- **TEXMEX** has co-organized the MediaEval 2011 evaluation campaign tasks on Violent Scenes Detection and on Spoken Web Search.
- **TEXMEX** has successfully participated in two tasks of Trecvid 2011, the main benchmark in automatic video analysis and retrieval organized by the National Institute of Technology.
  1. In the Semantic Indexing task, we have contributed to the submission of the Quaero consortium, jointly with LIG and Karlsruhe Institute of Technology. This submission was ranked 3rd out of 19 participants.
  2. In the Copy Detection task, our joint submission with the LEAR project-team was ranked approximately 3rd out of 21 participants, with respect to search quality.
- Gwénolé Lecorvé was awarded the best Ph.D. award of the French Speech Communication Association.
2.2. Highlights

+ Julien Mairal, a former PhD student of J. Ponce and F. Bach won several prizes for his PhD thesis about “Sparse coding for machine learning, image processing and computer vision”. See details in section 9.1.
+ Jean Ponce was awarded an Advanced ERC Grant, starting Jan 2011.
+ Andrew Zisserman was awarded the Rank Prize for his “Outstanding contributions to modern computer vision” http://www.rankprize.org/.
+ The updated 2nd edition of the textbook “Computer Vision: A Modern Approach” by David Forsyth and Jean Ponce has been published by Pearson Education in November 2011.
+ The group has split into two on January 1st 2011 to create a new INRIA project-team called SIERRA. The new group and its interactions with WILLOW is described in section 6.5.