Activity Report 2011

Section highlights of the Team
1. BYMOORE Exploratory Action ................................................................. 4

**ALGORITHMS, PROGRAMMING, SOFTWARE AND ARCHITECTURE**

2. COMETE Project-Team ................................................................. 5
3. GEOMETRICA Project-Team ......................................................... 6
4. MEXICO Project-Team ................................................................. 7
5. PARSIFAL Project-Team ............................................................... 8
6. PROVAL Project-Team ................................................................. 9
7. SECSI Project-Team ................................................................. 10
8. TANC Project-Team ................................................................. 11
9. TYPICAL Project-Team (section vide) ......................................... 12

**APPLIED MATHEMATICS, COMPUTATION AND SIMULATION**

10. COMMANDS Project-Team ......................................................... 13
11. DEFI Project-Team ................................................................. 14
12. DISCO Team ........................................................................... 15
13. GECO Team ........................................................................... 16
14. MAXPLUS Project-Team (section vide) ..................................... 17
15. REGULARITY Team (section vide) ........................................... 18
16. SELECT Project-Team (section vide) ...................................... 19
17. TAO Project-Team ................................................................... 20

**COMPUTATIONAL SCIENCES FOR BIOLOGY, MEDICINE AND THE ENVIRONMENT**

18. AMIB Project-Team ................................................................. 21
19. DIGIPLANTE Team ................................................................. 22
20. GALEN Team ........................................................................... 23
21. PARIETAL Project-Team (section vide) .................................. 24

**NETWORKS, SYSTEMS AND SERVICES, DISTRIBUTED COMPUTING**

22. GRAND-LARGE Project-Team ............................................... 25
23. HIPERCOM Project-Team ......................................................... 26

**PERCEPTION, COGNITION, INTERACTION**

24. AVIZ Project-Team ................................................................. 27
25. DAHU Project-Team (section vide) ....................................... 28
26. IN-SITU Project-Team ............................................................... 29
27. LEO Team ............................................................................. 30
BYMOORE Exploratory Action

2.2. Highlights

- Zheng Li has obtained the Chinese government award for excellence in research in 2011, selecting the best PhDs conducting abroad by Chinese PhDs; in 2010, 506 Chinese PhDs in 29 countries and across all scientific disciplines have received the award.
- Olivier Temam has received a Visiting Professorship for Senior International Scientists Award from the Chinese Academy of Sciences for the cooperation with ICT, in 2011.
COMETE Project-Team

2.2. Highlights

+ Catuscia Palamidessi has been keynote speaker at the 2011 edition of the conference ICALP (International Colloquium on Automata, Languages and Programming, http://icalp11.inf.ethz.ch/).
2.2. Highlights

We organized the 27th Annual Symposium on Computational Geometry (SoCG 2011) in Paris: http://socg2011.inria.fr/. This is the main conference in the field. We also organized a summer school entitled “Computational Geometric Learning” at the IHP in Paris, to foster connections between Computational Geometry and Machine Learning. About 70 persons attended.

Mariette Yvinec and Pierre Alliez, together with Jane Tournois and Laurent Rineau from the INRIA spin-off Geometry Factory, received the Meshing Maestro Award at the 20th International Meshing Roundtable for their poster “Meshing with CGAL”.

Bertrand Pellenard and Pierre Alliez, together with Jean-Marie Morvan from University Lyon1/CNRS and King Abdullah University of Science and Technology, received the Best Technical Poster Award at the 20th International Meshing Roundtable for their poster “Isotropic 2D Quadrangle Meshing with Size and Orientation Control”.

GEOMETRICA Project-Team
2.2. Highlights

The article "Synthesis and Analysis of Product-form Petri Nets" by Serge Haddad, Jean Mairesse and Hoang-Thach Nguyen received the Best Paper Award at the International Conference on Theory and Application of Petri Nets (ICATPN) 2011 in Newcastle, UK.

For a large Markovian model, a "product form" is an explicit description of the steady-state behaviour which is otherwise generally untractable. Being first introduced in queueing networks, it has been adapted to Markovian Petri nets. Here we address three relevant issues for product-form Petri nets which were left fully or partially open: (1) we provide a sound and complete set of rules for the synthesis; (2) we characterise the exact complexity of classical problems like reachability; (3) we introduce a new subclass for which the normalising constant (a crucial value for product-form expression) can be efficiently computed.
2.2. Highlights

- Josh Hodas and Dale Miller won the 2011 LICS Test of Time Award for their 1991 paper titled “Logic programming in a fragment of intuitionistic linear logic.”
- Dale Miller’s proposal titled “ProofCert: Broad Spectrum Proof Certificates” submitted to the ERC Advanced Investigator Grant in 2011 was accepted and will be funded for 2012-1016.
2.2. Highlights

A new trend emerging in 2010-2011 is the construction of international program verification benchmarks and program verification competitions. Benchmarks include the VACID0 challenges (http://vacid.codeplex.com/) and the VerifyThis collection (http://verifythis.cost-ic0701.org/). We took our part in these efforts by proposing our own gallery of verified programs (http://proval.lri.fr/gallery/index.en.html). Regarding competitions, we proposed our own solutions to the first (informal) VSTTE competition (http://proval.lri.fr/gallery/vscomp2010.en.html), we participated to the first FoVeOOS competition (Turin, Italy, Sep. 2011) and were ranked as first, ex-aequo with two other teams (http://proval.lri.fr/gallery/cost11comp.en.html) and last but not least, we indeed organized the first formal VSTTE program verification competition (November 2011, https://sites.google.com/site/vstte2012/compet).


**BEST PAPER AWARD:**

2.2. Highlights

- Jean Goubault-Larrecq was awarded the CNRS Silver Medal, 2011.
- SECSI organized the 24th IEEE Computer Security Foundations Symposium (CSF).
- SECSI organized a two-day colloquium centered around several invited talks and three defenses of habilitation theses by members of SECSI.
- Steve Kremer co-edited, with Véronique Cortier, the book *Formal Models and Techniques for Analyzing Security Protocols* [47].
2.3. Highlights

BEST PAPER AWARD:
TYPICAL Project-Team (section vide)
2.3. Highlights

1. The article “Deterministic state constrained optimal control problems without controllability assumptions”, by O. Bokanowski, N. Forcadel and H. Zidani, was “Highlight Paper” of the issue 17-04 (October 2011) of the ESAIM-COCV journal.


3. Commands team has been successful in the Marie Curie (EU) award on the project "SADCO-Sensitivity Analysis for Deterministic Controller Design", under the 7th Framework Programme “FP7-PEOPLE-2010-ITN” Grant agreement number 264735-SADCO. The project is funded 5.6MEuros over 4 years (January 2011-December 2014).
2.2. Highlights

- In 2011 Grégoire Allaire received the Grand Prix de la Fondation d’entreprise EADS (sciences and engineering) awarded by the Académie des Sciences de Paris.
DISCO Team

2.2. Highlights

- Silviu Iulian Niculescu obtained the Silver Medal from CNRS in December 2011.
- José Luis Avila Alonso won the Best Poster Price at the 4th DIGITEO Annual Forum.
- Benjamin Bradu won the Best PhD Price of the GDR MACS.
GECO Team

2.1. Highlights

- Starting from May 2011 the team has been created!
- Guilherme Afonso Mazanti, student at École Polytechnique, won the Grand prix de stage de recherche by École Polytechnique for his stage made in 2011 under the supervision of Yacine Chitour and Mario Sigalotti.
MAXPLUS Project-Team (section vide)
REGULARITY Team (section vide)
SELECT Project-Team (section vide)
2.3. Highlights

- DAeyaHSP Winner of the Seventh International Planning Competition (Deterministic Temporal Satisficing track) at ICAPS 2011.
- MoGo realized 20 wins out of 20 games in 7x7 Go against 10 different professional players. This is further documented in [24].
- Results in [5] (just accepted) prove that the Nash equilibrium of two-player zero-sum partially observable games is undecidable. This fundamental result notably contradicts published decidability results, which used as a decidability criterion a definition which is not equivalent to optimal play in the Nash sense.

**BEST PAPER AWARD:**
2.2. Highlights

In 2011, the VARNA software was highlighted in both the scientific reports of CNRS (*Rapport Scientifique 2010*) and Digiteo foundation. VARNA is currently used by RNA scientists (Cited by 44 research articles since its presentation in Fall of 2009), web servers such as the BOULDEALE webserver (http://www.microbio.me/boulderale/), the TFOLD webserver (http://tfold.ibisc.univ-evry.fr/TFold/), the CYLOFOLD webserver (http://cylofold.abcc.ncifcrf.gov/), and by databases such as the IRESITE database (http://iresite.org/), sRNATAR-BASE (http://ccb.bmi.ac.cn/srnatarbase/) and the RFAM database (http://rfam.sanger.ac.uk/), the main source of sequence/structure data for RNA scientist, to display secondary structures. It is also used as an integrated component within JalView, arguably one of the leading sequence alignment editor (http://www.jalview.org/).
2.2. Highlights

- PhD defense of Wang Xiujuan, April 2011
- PhD defense of Cédric Loi, May 2011
2.2. Highlights

- **ICCV Participation:** GALEN has participated in the 2011 International Conference in Computer Vision (ICCV’11) conference, the most selective conference in the field of computer vision and medical image analysis with five papers (acceptance rate %20).

- **CVPR Participation:** GALEN has participated in the 2011 annual IEEE Conference in Computer Vision and Pattern Recognition (CVPR’11) conference, the leading event in the field of computer vision and medical image analysis with five papers (double blind full submissions, acceptance rate %25) including one oral presentation (out of a 60).

- **MICCAI Participation:** GALEN has participated in the 2011 annual Medical Image Computing and Computer Assisted Intervention (MICCAI’11) conference one of the leading events in the field of medical image analysis with four (double blind full submissions, acceptance rate %30).

- **ISBI Participation:** GALEN has participated in the 2011 International Symposium of Biomedical Imaging (ISBI’11) conference, one of the notable events in the field of medical image analysis with four papers (acceptance rate %40) including three oral presentations.

- **IEEE Fellow & BMVC Plenary Speaker:** N. Paragios was promoted to the IEEE Fellow grade and was one of the plenary speakers of the 22nd edition of the British Machine Vision Conference.
PARIETAL Project-Team (section vide)
GRAND-LARGE Project-Team

2.2. Highlights

Best Paper Award:
2.2. Highlights

1. **Organization of MobiHoc 2011**, the Twelfth ACM International Symposium on Mobile Ad Hoc Networking. The HIPERCOM project contributed to the great success of this international conference held in Paris in May 2011. Philippe Jacquet served as General Chair, Christine Anocq as Local Arrangement Co-chair, Thomas Clausen as Finance Co-chair, Paul Muhlethaler, Anis Laouiti and Pascale Minet as Workshop Co-chairs, Emmanuel Baccelli as Registration Chair, Cédric Adjih as Web Chair.

2. **Contribution to the OCARI shows.** Pascale Minet, Cédric Adjih, Ichra Amdouni and Ridha Soua were active contributors as well as LIMOS, TELIT and EDF to the two OCARI shows organized by EDF. The first one in September was given for EDF executives. The second one in December was larger. Invited people came from government agencies and industries. The goal was to prove the feasibility of an OCARI wireless sensor network in industrial environments, focusing on time constrained traffic and energy efficiency.

3. **Habilitation à Diriger des recherches.** Aline carneiro Viana got her HDR entitled *Putting data delivery into context: Design and evaluation of adaptive networking support for successful communication in wireless self-organizing networks* from UPMC-Sorbonne University on the 14th December 2011.
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.
DAHU Project-Team (section vide)
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.
2.1. 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.