Centre Universitaire d'Informatique

2012

Activity Report

UNIVERSITÉ DE GENÈVE

UNIVERSITY OF GENEVA
Centre Universitaire d'Informatique
Battelle - Bâtiment A
7, route de Drize
CH-1227 Carouge
cui.unige.ch

Foreword

Welcome to the CUI

The Centre Universitaire d'Informatique (CUI) is an interdisciplinary center devoted to computer science teaching and research. Its members belong to three of the eight faculties of the University of Geneva, the Faculty of Sciences, the Faculty of Humanities and the Faculty of Economic and Social Sciences. At the end of 2012, the CUI community counted 118 collaborators, including 20 at the professor level.

As over half of the CUI researchers are on «soft» money, the importance of external funding and subsidies cannot be overestimated. In this respect, 2012 has been a very good year since we obtained nearly 6m, with approximately 3,5m for Swiss-funded projects and a little over 2,5m for EU-funded projects. This is a clear sign of the excellence of the research conducted in our institution, as well as of its level of recognition. You will find the details of those projects in the following pages.

Last July, Prof. José Rolim ended his mandate as director of the CUI. In the name of all the collaborators I would like to thank him very sincerely for the splendid job he did over the last 5 years. Needless to say, the CUI would not function without the active collaboration of all, academic as well as administrative staff. Thanks to all of them and in particular to Elie Zagury, who among other things, put together this activity report.

One of the strong points of the CUI is the richness and the diversity of its research domains, which owes much to its interdisciplinary structure. This is an advantage that we will strive to further exploit and strengthen in the coming years.

Happy reading

Prof. Eric Wehrli
Director of the CUI
University of Geneva

CLCL

Computational Learning and Computational Linguistics

Commodore CBM 3016 (1979) - © CUI museum

Computational Learning and Computational Linguistics

Domain activities

The Computational Linguistics and Computational Learning (CLCL) Research Group (http://clcl.unige.ch/) is an inter-faculty group that brings together academic staff and PhD students based in the Department of Linguistics in the Faculty of Humanities and the Department of Computer Science in the Faculty of Sciences.

The group is concerned with interdisciplinary research combining linguistic modelling with machine learning techniques. The scope of research includes fundamental issues in the statistical nature of language, fundamental issues in machine learning for structured prediction problems, and empirical evaluations that cross these two themes.

Today, machine learning is everywhere, and is one of the most sought-after skill by information technology employers. We apply it to language problems using very large amounts of multi-lingual data. Our current research includes the development of adaptive data-driven systems for several parsing-based tasks, such as investigations of shallow levels of meaning representations and spoken-language understanding for dialogue systems, large-scale information extraction, and statistical machine translation. These systems span several languages (French, English, German, Italian, Spanish, Japanese, Arabic, Czech, Chinese, Catalan) and for some languages have reached state-of-the-art performance.
These systems are based on our linguistic work on cross-lingual syntactic and semantic parallelism and on machine learning methods based on latent variable models, neural networks and graph-based learning.

The CLCL group gets funding from several Swiss NSF and EU grants. For example,
The EU project PARLANCE is developing the next generation of spoken dialogue systems, using statistical modelling to make them more robust and natural. Our work in this project focuses on incrementally understanding users as they speak, allowing natural fluent interactions with a computer.
The Swiss NSF Sinergia grant COMTIS is extending the capabilities of machine translation technology to include inter-sentential phenomena, such as pronouns, verb tense, discourse connectives, and register. Our work in this project focuses on algorithms to efficiently model more linguistically motivated structures in statistical machine translation.

Directors
Paola Merlo
Associate professor

James Henderson
MER/CC

Senior researchers
Dr. Joël Lang

Assistants (PhD students)
Nikhil Garg
Andrea Gesmundo
Effi Georgala
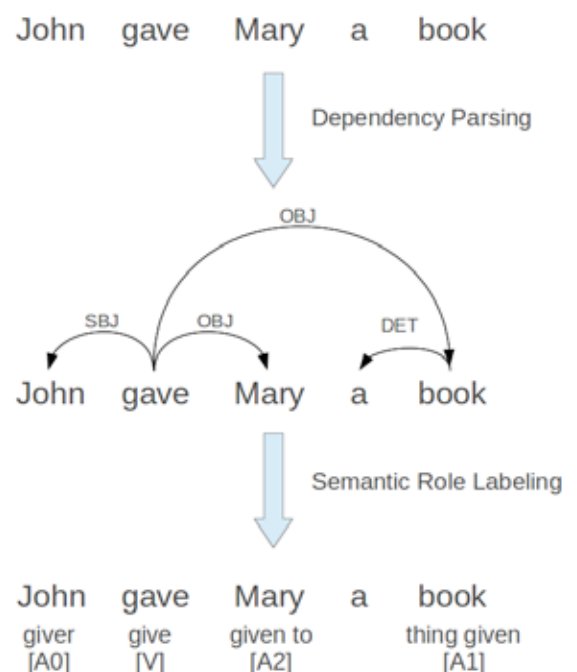Kristina Gulordava
Jivanthi Lyiana Pathirana
Tanja Samardzic

Figure 1: Data flow of syntactic-semantic parsing

List of publications
Refereed papers in international journals
[1] Tanja Samardzic, Paola Merlo, «The Meaning of Lexical Causatives in Cross-Linguistic Variation», Linguistic Issues in Language Technology 7/12, CSLI Publications, 1-14.

Full refereed papers in Conference Proceedings
[2] Andrea Gesmundo, Nadi Tomeh. «HadoopPerceptron: a Toolkit for Distributed Perceptron Training and Prediction with MapReduce», EACL 2012, 23-27 April 2012

[3] Andrea Gesmundo, Tanja Samardzic. «Lemmatisation as a Tagging Task», In Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers), Jeju Island, Korea, 368-372.

[4] Andrea Gesmundo, Tanja Samardzic. «Lemmatising Serbian as Category Tagging with Bidirectional Sequence Classification». In Proceedings of the Eight International Conference on Language Resources and Evaluation (LREC'12), Istanbul, Turkey.

[5] N. Garg, J. Henderson. «Unsupervised Semantic Role Induction with Global Role Ordering». In Proc. 50th Annual Meeting of the Association for Computational Linguistics (ACL 2012), Jeju Island, Korea.

[6] A. Gesmundo, G. Satta, J. Henderson. «Heuristic Cube Pruning in Linear Time». In Proc. 50th Annual Meeting of the Association for Computational Linguistics (ACL 2012), Jeju Island, Korea.

Books and book chapters
[7] J. Henderson, F. Jurcicek. «Data-Driven Methods for Spoken Language Understanding». In Oliver Lemon and Olivier Pietquin, editors, Data-Driven Methods for Adaptive Spoken Dialogue Systems, Springer.

Research and technical reports
[8] Kristina Gulordava. «Evaluating Recovery of Long-Distance Dependencies», Technical report, september 2012.

Editorial Activities
- Paola Merlo appointed editor-in-chief of Computational Linguistics, class A, peer-reviewed scientific journal edited by MIT Press. Candidates were nominated by peers and selected by an international committee, december 2012.

International and national advisory committees
- Paola Merlo, Elected Member of the Executive Board for the Association for Computational Linguistics (worlwide) , 2010 - 2012.

PhD Thesis committees
- Paola Merlo PhD thesis committee member, Yves Scherrer, «Generating Swiss German sentences from Standard German: a multi-dialectal approach», Linguistics Department, University of Geneva
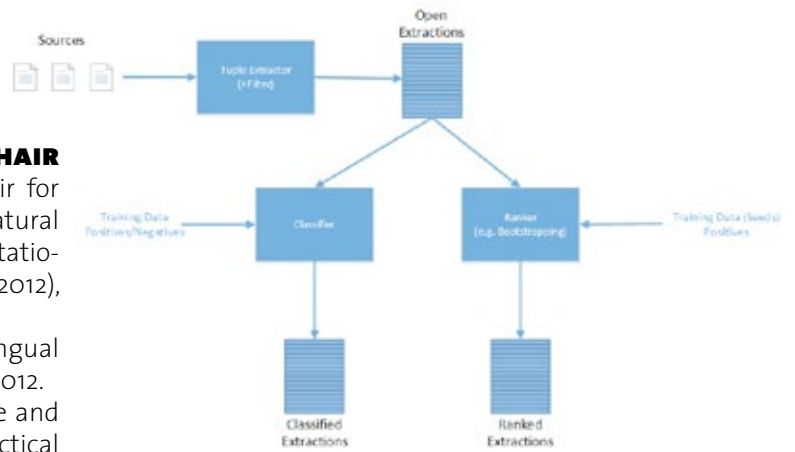
CLCL team in 2012.

Figure 2: A rchitecture of information extraction system

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- James Henderson, Scientific Programme Co-Chair for 2012 Joint Conference on Empirical Methods in Natural Language Processing and Conference on Computational Natural Language Learning (EMNLP-CoNLL 2012), Jeju, Korea.
- Tanja Samardzic, co-chair of the workshop: Multilingual corpora in cross-linguistic research, Bern, 22 June 2012.
- Tanja Samardzic, co-chair of the workshop: Create and consult your own specialised web corpus (a practical workshop), Belgrade, 14 October 2012, workshop collocated with the conference «Applied linguistics today 4»

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- COLING 2012 (24th Int. Conf. on Computational Linguistics), Mumbai, India.
- The 11th Conference on Natural Language Processing (KONVENS 2012), Vienna, 19-21 September, 2012
- Fiftieth Annual Meeting of the Association for Computational Linguistics (ACL 2012), Jeju Island, Korea.
- Thirteenth Meeting of the European Chapter of the Association for Computational Linguistics (EACL 2012), Avignon, France.

INVITED TALKS

- Joel Lang. «Weakly Supervised Information Extraction For Open Domain Knowledge Acquisition», Ecole centrale, Paris.
- Joel Lang. «Seed Set Expansion for Information Extraction Using Random Walk Hitting Times», ISOCO Madrid.

FUNDED RESEARCH PROJECTS
Participation to European projects

PARLANCE
Probabilistic Adaptive Real-Time Learning And Natural Conversational Engine
Period: November 2011 - October 2014.
Granted by EC FP7 area Information and Communication Technologies (ICT)
Partners: Heriot-Watt Univ., Cambridge Univ., Yahoo! Iberia, French CRSA, iSoco. PI for Univ. Geneva.
Web site: https://sites.google.com/site/parlanceprojectofficial/

Participation to National projects

Inducing Semantic Representations from Multiple Data Sources
James Henderson
Period: October 2011 - September 2013.
Granted by the Swiss National Science Foundation
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COMTIS
Improving the Coherence of Machine Translation Output by Modeling Intersentential Relations.
Swiss NSF project
Principal Investigator: Andrei Popescu-Belis (IDIAP/EPFL)
co-Principal Investigators: Prof. Jacques Moeschler, Prof. Paola Merlo, Dr. Sandrine Zufferey, Dr. James Henderson
Period: 2009 - 2012
Partners: University of Geneva (Lettres and Sciences), IDIAP
Web site: http://www.idiap.ch/project/comtis

OTHERS

- May 2012 - August 2012, Andrea Gesmundo hosted as Research Engineer Intern at Google Research Labs (Inc.) New York. The internship focused on developing and extending state of the art parsing techniques. Hosted by: Keith Hall.
- Paola Merlo director, January 2012, James Henderson, project leader (with also Eric Wehrli, work package leader), Submission of first round for NCCR in Language Sciences: Variation, Complexity and Frequency in Languages. Partners: Geneva, EPFL, IDIAP, Neuchatel, Università della Svizzera Italiana. Received grade A.
- Tanja Samardzic and Yves Scherrer, Linguistique informatique et sciences du langage, Tutorial at the meeting of Informal Research Group, Institut de plurilinguisme, University of Fribourg, Fribourg, 16 March 2012

TEACHING

- **Intelligence artificielle: principes et méthodes**, Computer Science, Bachelor, 4 ECTS, 56 hours, 23 students
- **Data Structures,** Computer Science, Bachelor, 7 ECTS, 56 hours, 20 students
- **Systèmes Informatiques**, Computer Science, Bachelor, 5 ECTS, 70 hours, 10 students
- **Empirical Methods in Natural Language Processing: Statistical Machine Translation,** Computer Science for the Humanities, Master, 12 ECTS, 56 hours, 6 students
- **Readings in Current Research**, Computer Science for the Humanities, Master, 12 ECTS, 28 hours + individual tutorials, 7 students
- **Empirical Methods and Scripting Languages**, Computer Science for the Humanities - Bachelor, 12 ECTS, 56 hours, 11 students

CVML

Computer Vision and Multimedia Laboratory

Promotion des filières, Annemasse (FR), January 31th 2013

Computer Vision and Multimedia Laboratory

Domain activities

The **Computer Vision and Multimedia Laboratory** (CVML, http://cvml.unige.ch), divided into three groups, carries out research in multimedia data processing, multimedia data management and security, as well as in multimodal human-machine interaction. Research applies to media such as text, audio tracks, sounds, images and videos, and to physiological signals.

Information Retrieval and Machine Learning group (Viper, Prof. S. Marchand-Maillet, http://viper.unige.ch): develops strategies for the efficient indexing retrieval and exploration of large-scale information sets. The group studies fundamental machine learning strategies to provide efficient and accurate access to large-scale collections of complex data. Research themes include information, retrieval, recommendation systems, data analytics and exploration. Applications are directed towards information management for multimedia, e-commerce and e-learning.

Stochastic Information Processing group (SIP, Prof. S. Voloshynovskiy, http://sip.unige.ch): studies various aspects of information theory and statistical (stochastic) information analysis and processing. The applications mostly cover object identification and authentication based on unclonable object features in large nonstructured databases originating from various imaging techniques, mass-spectrometry and bioinformatics. Current research also concerns privacy preserving search, indexing and multiclass classification.

Multimodal Interaction group (MMI, Prof. T. Pun, http://cvml.unige.ch/MMI): studies various forms of interaction between humans, computers, and environment. Some considered interaction modalities are haptic, auditory, and based on physiologal signals such as EEGs (electroencephalograms), EMG (electromyograms), blood pressure, galvanic skin resistance (GSR) and skin temperature, breathing rate. Current developments concern: affective state determination and emotion recognition and their use for affective computing, multimodal interaction, brain-computer interfaces, mobility aids for sight handicapped people and for the elderly. Member of the Swiss Center for Affective Sciences. Strong cooperation with faculties of psychology, literature, medicine.

The CVML has various specialized equipment and associated software:
- portable microscope with wireless communications for item identification and authentication;
- Computer cluster of 20 Dual Core 3GHz PCs each with 8 Gb RAM and 500Gb disk, inter-connected with GigaBit Ethernet.
- servers with high storage (overall 5Tb, Raid 5) and processing capabilities (1 Transtec Calleo (2 Xeon Dual Core, 12Gb RAM) and 2 SunFire X4150 (2 QuadCore, 32Gb RAM each), all 64bits architecture).
- Biosemi Active II EEG acquisition system (http://www.biosemi.com/) with 64+16 electrodes, with other sensors to record heart rate, GSR, skin temperature, breathing rate, blood pressure, and EMGs;
- Guger Technology gTec gMobilab+ mobile physiological signals recording system (http://www.gtec.at/);
- Eckel C14 audiometric research chamber (http://www.eckel.ca/) with electromagnetic insulation (Faraday cage), 2.16m x 1.80m x 2.37m;
- eye gaze-tracker QuickGlance 2 (EyeTech Digital Systems);
- head-mounted display Emagin z800;
- stereo cameras: Videre Design STH-MDCS2, Bumblebee CCD BB2-03S2C-60;
- 3D time-of-flight camera SR4000 3D;
- combined 3D time-of-flight + luminance camera PMD CamCube 3.0 200x200 pixels;
- combined 3D + color camera Microsoft Kinect, Lytro, etc.

Team

Directors
Thierry Pun
Full professor

Sviatoslav Voloshynovskiy
Associate professor

Stéphane
Marchand-Maillet
Associate professor

Senior researchers
Dr. Guido Bologna
Dr. Guillaume Chanel (also affiliated with the Swiss Center for Affective Science)
Dr. Oleksiy Koval (S-MER until June 2012)
Dr. Taras Holotyak (Postdoc since August 2012)
Dr. Fokko Beekhof (since Nov. 2012)

Assistants (PhD students)
Fokko Beekhof (defended PhD, Oct. 2012)
Séverine Cloix
Moritz Deephuis
Farzad Farhadzadeh
Juan Gomez
Taras Holotyak (defended PhD, July 2012)
Hisham Mohamed
Ke Sun
Viviana Weiss
Marc von Wyl (until March 2012)

Visiting academic guest
Dr. Mohammad Soleymani (Imperial College, London, UK)

Internship
Sophie Adama (until June 2012)

PhD thesis
- Taras Holotyak, «Information-theoretic Analysis of Privacy-preserving Identification», July 2012
- Fokko Beekhof, «Physical Object Protection based on Digital Micro-structure Fingerprinting», November 2012

List of publications
Refereed papers in international journals

[1] M. Soleymani, M. Larson, T. Pun, A. Hanjalic, «Corpus development for affective video indexing», Submitted Nov. 2012. Submitted paper available at http://arxiv.org/abs/1211.5492

[2] J. D. Gomez, G. Bologna, T. Pun, «Registering color and range images», Submitted, Nov. 2012.

[3] G. Chanel, J. M. Kivikangas, N. Ravaja, «Physiological compliance for social gaming analysis: Cooperative versus competitive play», Interacting with Computers, No. 4, Vol. 24, 2012, 306-316. This work was done while G. Chanel was at the CKIR, Helsinki School of Economics, Finland.

[4] M. Larson, M. Soleymani, M. Eskevich, P. Serdyukov, G.J.F. Jones, «The Community and the Crowd: Developing large-scale data collections for multimedia benchmarking», IEEE Multimedia, Special Issue on Large-Scale Multimedia Data Collections, to be published, 2012.

[5] M. Soleymani, M. Pantic, T. Pun, «Multi-modal emotion recognition in response to videos», IEEE Trans. on Affective Computing, Vol. 3, No. 2, April-June 2012, 211-223. Digital Object Identifier: 10.1109/T-AFFC.2011.37.

[6] M. Soleymani, J. Lichtenauer, T. Pun, M. Pantic, «A multimodal database for affect recognition and implicit tagging», IEEE Trans. on Affective Computing, Special Issue on Naturalistic Affect Resources for System Building and Evaluation, B. Schuller, L. Devillers, R. Cowie, E. Douglas-Cowie, A. Batliner, Guest Editors, Vol. 3, No. 1, Jan. - March 2012, 42-55.

[7] S. Koelstra, C. Mühl, M. Soleymani, Jong-Seok Lee, A. Yazdani, T. Ebrahimi, T. Pun, A. Nijholt, I. Patras, «DEAP: A database for emotion analysis using physiological signals», IEEE Trans. on Affective Computing, Special Issue on Naturalistic Affect Resources for System Building and Evaluation, B. Schuller, L. Devillers, R. Cowie, E. Douglas-Cowie, A. Batliner, Guest Editors, Vol. 3, No. 1, Jan. - March 2012, 8-31.

[8] G. Chanel, C. Rebetez, M. Betrancourt, T, Pun, «Emotion assessment from physiological signals for adaptation of games difficulty», IEEE Trans. on Systems, Man, and Cybernetics - Part A: Systems and Humans, Vol. 41, No. 6, November 2011, 1052-1063. DOI: 10.1109/TSM-CA.2011.2116000

[9] F. Farhadzadeh, S. Voloshynovskiy and O. Koval, «Performance Analysis of Content-Based Identification using Constrained List-Based Decoding», IEEE Transactions on Information Forensics & Security, Volume 7, Number 5, pp. 1652-1657, 2012.

[10] J.-M. Pignat, O. Koval, D. Van De Ville, S. Voloshynovskiy, C. Michel, T. Pun, «The impact of denoising on independent component analysis of functional magnetic resonance imaging data», Journal of neuroscience methods, December, 2012.

[11] Mohamed, H., & Marchand-Maillet, S. (2012). «Distributed media indexing based on MPI and MapReduce». Multimedia Tools and Applications, 1-25.

[12] Morrison, D., Tsikrika, T., Hollink, V., de Vries, A. P., Bruno, E., & Marchand-Maillet, S. (2012). «Topic Modelling of clickthrough data in image search». Multimedia Tools and Applications.

[13] Johan Oomen and Lora Aroyo and Stephane Marchand-Maillet and Jeremy Douglass. (2012). «Proceedings of the 2012 ACM Workshop on Personalized Access to Cultural Heritage», PATCH'12 (co-located with ACM Multimedia 2012), November 2, 2012, Nara, Japan. ACM.

Full refereed papers in Conference Proceedings

[14] G. Molinari, G. Chanel, M Bétrancourt, T. Pun, C. Bozelle, «Emotion feedback during computer-mediated collaboration: Effects on self-reported emotions and perceived interaction», CSCL 2013, 10th Int. Conf. on Computer Supported Collaborative Learning, June 15-19, 2013, University of Wisconsin - Madison, USA, subm. Nov. 2012.

[15] G. Chanel, K. Kalogianni, T. Pun, «GamEMO: How physiological signals show your emotions and enhance your game experience», ACM ICMI, 14th. Int. Conf. on Multimodal Interaction, October 22-26th, 2012, Santa Monica, CA, USA, 297-298. This demonstration won the Outsdanding Demo Runner-Up prize.

[16] J. Gomez, G. Bologna, T. Pun, «Real-time image registration of RGB webcams and colorless 3D time-of-flight cameras», Proc. ECCV 2012, 12th Europ. Conf. on Comp. Vision, 7-13 Oct. 2012, Firenze, Italy, A. Fusiello et al., Eds: ECCV 2012 Ws/Demos, Part III, Springer Lecture Notes in Computer Science, Vol. LNCS 7585, 589-592.

[17] J. Gomez, G. Bologna, T. Pun, «Non-visual-cueing-based sensing and understanding of nearby entities in aided navigation», ACM ASSETS 2012, 14th Int. ACM SIGACESS Conf. on Computers and Accessibility, 22-24 Oct. 2012, Boulder, CO, USA (poster, demonstration).

[18] M. Soleymani, «Expert Talk for Time Machine Session: Affective Multimedia Analysis: Introduction, Background and Perspectives», IEEE Conf. on Multimedia and Expo (ICME12), 9-13 July 2012, Melbourne, Australia.

[19] J. D. Gomez, G. Bologna, T. Pun, «Spatial awareness and intelligibility for the blind: Audio-touch interaction», ACM SIGCHI Conf. on Human Factors in Computing Systems, May 5-10, 2012, Austin, TX, USA.

[20] S. Voloshynovskiy, F. Farhadzadeh, O. Koval and T. Holotyak, «Active content fingerprinting: a marriage of digital watermarking and content fingerprinting», IEEE Workshop on Information Forensics and Security - WIFS'12, Tenerife, Spain, 2-5, December, 2012.

[21] S. Voloshynovskiy, T. Holotyak, O. Koval and F. Farhadzadeh, «Physical-layer Security based on Gaussian Wiretap Channel with Collaborative Wiretappers», IEEE Workshop on Information Forensics and Security - WIFS'12, Tenerife, Spain, 2-5, December, 2012 (presented as ongoing work).

[22] F. Beekhof, S. Voloshynovskiy and F. Farhadzadeh, «Content Authentication and Identification under Informed Attacks», IEEE Workshop on Information Forensics and Security - WIFS'12, Tenerife, Spain, 2-5, December, 2012.

[23] S. Voloshynovskiy, M. Diephuis, F. Beekhof, O. Koval and B. Keel, «Towards reproducible results in authentication based on physical non-cloneable functions: the forensic authentication microstructure optical set (FAMOS)», IEEE Workshop on Information Forensics and Security - WIFS'12, Tenerife, Spain, 2-5, December, 2012.

[24] M. Diephuis, S. Voloshynovskiy, O. Koval, and F. Beekhof, «DCT sign based Robust Privacy Preserving Image Copy Detection for Cloud-based Systems «, 10th Workshop on Content-Based Multimedia Indexing, CBMI 2012, Annecy France, June 27-29, 2012.

[25] T. Holotyak, S. Voloshynovskiy, I.Prudyus, «Identification with Privacy Protection based on Data Hiding», 11th IEEE International Conference Modern Problems of Radio Engineering, Telecommunications and Computer Science, TCSET'2012, February 21-24, 2012, Lviv-Slavske, Ukraine.

[26] T. Holotyak, S. Voloshynovskiy, J. Rolim, I. Prudyus, «Improved Solution of Cramer-Rao Lower Bound for TOA/RSS Localization», 11th IEEE International Conference Modern Problems of Radio Engineering, Telecommunications and Computer Science, TCSET'2012, February 21-24, 2012, Lviv-Slavske, Ukraine.

[27] S. Voloshynovskiy, T. Holotyak, I. Prudyus, «Gaussian Wiretap Channel with Collaborative Wiretappers», 11th IEEE International Conference Modern Problems of Radio Engineering, Telecommunications and Computer Science, TCSET'2012, February 21-24, 2012, Lviv-Slavske, Ukraine.

[28] H. Mohamed, S. Marchand-Maillet, «Enhancing MapReduce using MPI and an optimized data exchange policy». In ICPP 2012: The 41st International Conference on Parallel Processing, (P2S2 Workshop), Pittsburgh.

[29] H. Mohamed, S. Marchand-Maillet, «Distributed Media indexing based on MPI and MapReduce». In Content-based Multimedia Indexing (CBMI'2012), Annecy, FR.

[30] H. Mohamed, S. Marchand-Maillet, «Parallel Approaches to Permutation-Based Indexing using Inverted Files». In 5th International Conference on Similarity Search and Applications (SISAP), Toronto, CA.

[31] K. Sun, E. Bruno, S. Marchand-Maillet, «Unsupervised Skeleton Learning for Manifold Denoising and Outlier Detection». In International Conference on Pattern Recognition (ICPR'2012), Tsukuba, JP.

[32] K. Sun, E. Bruno, S. Marchand-Maillet, «Stochastic Unfolding». In IEEE Machine Learning for Signal Processing Workshop (MLSP'2012), Santander, Spain.

[33] M. von Wyl, B. Hofreiter, S. Marchand-Maillet, «Serendipitous Exploration of Large-scale Product Catalogs». In 14th IEEE International Conference on Commerce and Enterprise Computing (CEC 2012), Hangzhou, CN.

[34] M. von Wyl, S. Marchand-Maillet, «SwiftLink: Serendipitous Navigation Strategy for Large-scale Document Collections». In 2nd International Workshop on Recommender Systems meet Databases (DEXA2012 - RSmeetDB), Vienna, Austria.

Books ans book chapters

[35] C. Chênes, G. Chanel, M. Soleymani, T. Pun, «Highlights detection in movie scenes through inter-users physiological linkage», in: Social Media Retrieval, N. Ramzan, R. van Zwol, Jong-Seok Lee, K. Clüver, Xian-Sheng Hua, Eds., Springer, Computer Communications and Networks Series. To appear, 2012.

Research and technical reports

[36] S. Voloshynovskiy, «Method of active content fingerprinting», EP 12187627.0, October 8, 2012.

International and national advisory committees

- T. Pun: Member of the Steering Committee of the National center of competence in research NCCR-(IM)2 "Interactive Multimodal Information Management", headed by the IDIAP research institute, Martigny.
- S. Voloshynovskiy: Member of the IEEE Information Forensics and Security Technical Committee. http://www.signalprocessingsociety.org/technical-committees/list/ifs-tc/ifs-tc-members/
- S. Marchand-Maillet: Member of the Management Committee (deputy head of subproject IP1) of the National center of competence in research NCCR-(IM)2 "Interactive Multimodal Information Management", headed by the IDIAP research institute, Martigny.
- S. Marchand-Maillet, Member of the Steering Committe for the International ACM Conference on Multimedia Retrieval (ICMR)
- S. Marchand-Maillet, Member of the Editorial Borad of the International Journal of Multimedia Information Retrieval
- S. Marchand-Maillet Chair of the Technical Committee 12 on "Multimedia and Visual Information Systems" of the International Association for Pattern Recognition.
- S. Marchand-Maillet, Swiss representative at the Management Committee of the COST Action IC1002 MUMIA ("Multilingual and Multifaceted Interactive Information Access")

International and national Research Programs Committees

- T. Pun: evaluator for EU ERC - European Research Council (Starting & Advanced Investigators Grants); EU Commission COST program; Swiss SNF, Swiss HES-ISYS
- S. Marchand-Maillet is reviewer for projects submitted to the following funding agencies: SNF (CH), EPSRC (UK), ANR (FR), NWO (NL), FWF (A), COST (EU)

Conference organization as chair or co-chair

- T. Pun: ACII 2013 - Affective Computing and Intelligent Interaction (Geneva, Switzerland, co-general chair, general organization). (May 2012: won tender for the organisation of ACII 2013, started organization)
- S. Marchand-Maillet: General co-chair of the 5th International Workshop on Personalized Access to Cultural Heritage (PATCH 2012), at ACM Multimedia, Nara, Japan, Novembre 2012

Member of conference/workshop program committees

- T. Pun, International, scientific committee: Workshop Human Behavior Understanding, ACM Multimedia 2013 (Barcelona, Spain); EUVIP 2013 (steering comm.; Paris, FR); IEEE SSCI 2013 - Workshop WACI Affective Computational Intelligence (Singapose); IEEE SocialCom 2012 (Amsterdam, NL); CBAR - Context-based Affect Recognition Workshop (Amsterdam, NL);
- S. Voloshynovskiy: WIFS2012, IEEE Workshop on Information Forensics and Security 2012, Tenerife, Spain, (technical committee and chairman of Secure Communications Session); ACM2012, Multimedia and Security Workshop 2012, Warwick, The UK, (program committee), SPIE 2012, Electronic Imaging 2012, Multimedia security and watermarking XIII, San Jose, USA, 2012, (program committee).
- S. Marchand-Maillet: ACM IAR-SAC 2012, ICPRAM 2012, ACM SIGIR 2012, ACM ICMR2012, COLING 2012

Refereeing

- T. Pun: various conferences. IEEE Trans. Affective Computing. EURASIP Int. J. of Image and Video Processing (Springer); IEEE Transactions on Systems, Man and Cybernetics
- S. Voloshynovskiy: Signal Processing; IEEE Transactions on Signal Processing; IEEE Signal Processing Letters; IEEE Transactions on Image Processing; IEEE Transactions on Multimedia; Journal of Information Security; International Journal of Image and Graphics; IEEE Trans. on Information Forensics and Security.

- S. Marchand-Maillet: IEEE Transaction on PAMI, IEEE Transactions on Multimedia, IEEE Transactions on TKDE, IEEE Transaction on SMC-B, MTAP, Pattern Recognition, Pattern Recognition Letters, International journal of Multimedia Information Retrieval.

Editorial Responsabilities

Thierry Pun:
- 2009 - Editorial board: Advances in Multimedia (Hindawi).
- 2006 - Editorial board: EURASIP International Journal on Image & Video Processing (Springer).

Sviatoslav Voloshynovskiy:
- 2012 - Editorial board: IEEE Transactions on Information Forensics and Security
- 2006 - Editorial board: EURASIP Journal on Information Security (Eurasip IJS)
- 2005 - Editorial board: International Journal of Image and Graphics (IJIG)

S. Marchand-Maillet:
- Editorial board: International Journal of Multimedia Information Retrieval (Springer)

Figure 1: Similarity-based collection browser

Funded research projects

Participation to European projects

COST Action MUMIA
Multilingual and Multifaceted Interactive Information Access
Prof. S. Marchand-Maillet
Period: October 2011 - September 2014

Participation to National projects

FNRS-SNSF, Swiss National Science Foundation:

SeeColor II: Seing colours with an orchestra II
SNSF 200020-140392
Principal investigator: Dr. G. Bologna, Computer Science Dpt, Univ. of Geneva and HES-SO/HEPIA
Co-Principal investigator: Prof. T. Pun
Period: June 2012 – May 2014

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Information-theoric identification in large-scale databases
SNSF 200020-134595
Principal investigator: Prof. S. Voloshynovskiy
Period: April 2011 – March 2013

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Nano- and micro-structure identification based on controllable randomness
SNSF 200021-132337
Principal investigator: Prof. S. Voloshynovskiy
Period: April 2011 – March 2013

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SwiftLink: Machine Learning Strategies for Adaptive Multimedia Navigation
SNF project (200020-135038)
Principal Investigator: Prof. S. Marchand-Maillet
Period: April 2011 - March 2012

Hasler Foundation

EyeWalker: Ultralight lowcost clipable vision system for mobility aids
Nr. 11083
Principal investigator: Prof. T. Pun
Partners: CSEM Neûchatel (E. Franzi, D. Hasler), HEIG-VD Yverdon (M. Kocher).
Period: May 2012 – April 2014

———

Swiss National Center of Competence in Research (IM)² - Interactive Multimodal Information Management
Leading House: IDIAP Martigny
Principal investigator for Geneva: Prof. S. Marchand-Maillet
Period: January 2012 – December 2013 - Phase III
Website: http://www.im2.ch

Swiss National Center of Competence in Research «Affective Sciences» (NCCR)

Affective computing and emotion awareness in computer-mediated interaction
Leading House: University of Geneva, Prof. K. Sherer
Principal investigators: Prof. T. Pun and Prof. M. Betrancourt
Period: September 2011 - August 2013

———

Movie highlights' detection
Leading House: University of Geneva, Prof. K. Sherer
Principal investigators: Dr. Guillaume Chanel, Dr. Patrizia Lombardo and Prof. T. Pun
Period: September 2012 - August 2013

Industrial grant

CRADA «Physical object identification»
University of Geneva, U-nica Systems
Principal investigator: Prof. S. Voloshynovskiy
Period: May 2019 – April 2012

EU-related grant

Large-scale distributed multimedia information retrieval strategies
CC11.0043
Principal investigator: Prof. S. Marchand-Maillet
Period: October 2011 – September 2014

Polish-Swiss research programme

Research and development of verification system based on digital fingerprint of microstructure images
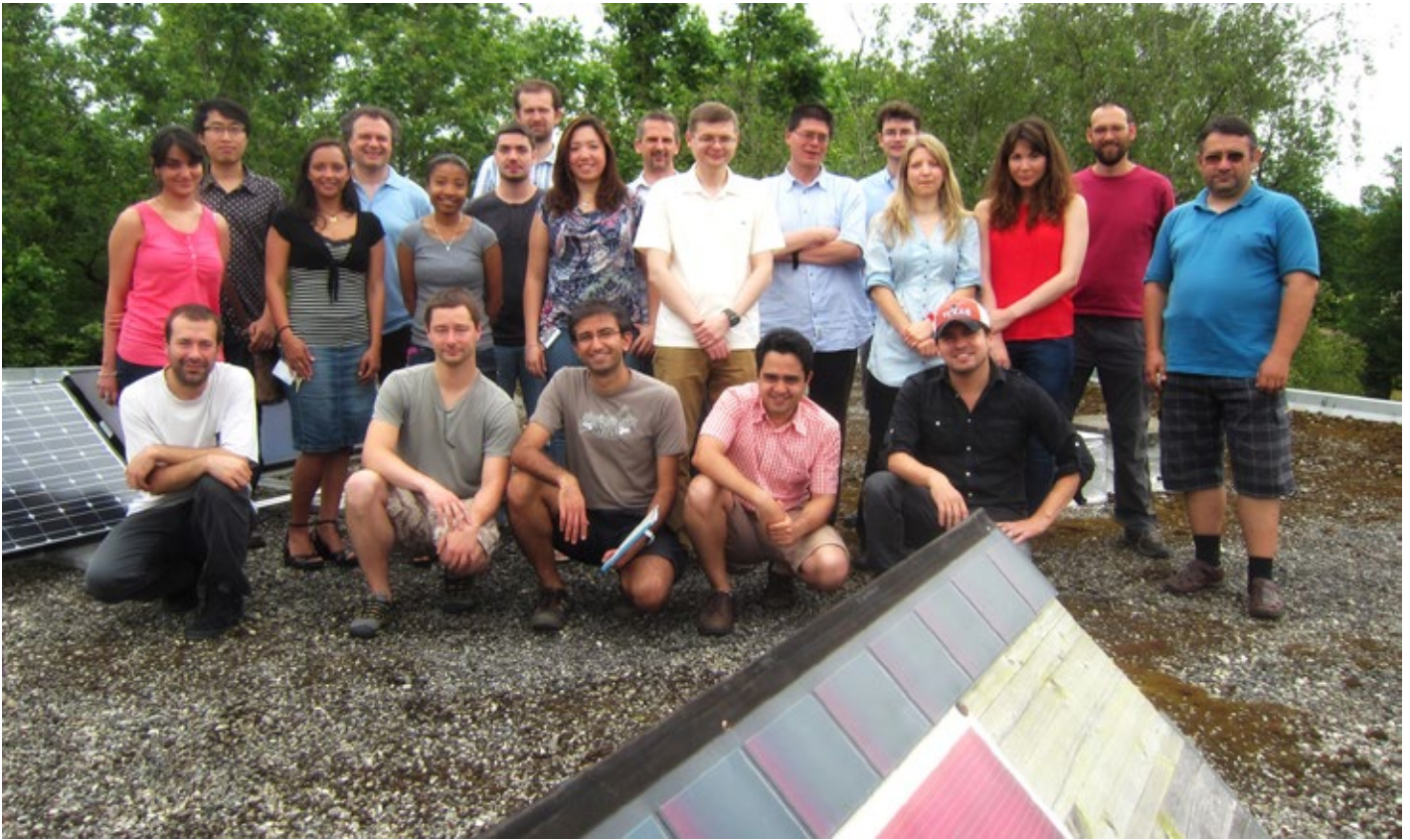Principal investigator: Prof. S. Voloshynovskiy
Period: October 2012 – September 2014

Cooperation programme with Russia

Information theoretical analysis of large scale multimedia security and digital forensic systems
Principal investigator: Prof. S. Voloshynovskiy
Period: July 2011 – March 2012

CVML team in 2012

Technology transfer

- **Spin-off: Anteleon Imaging S.A.R.L.** (founded August 2003, http://www.anteleon.com/), specialized in multimedia documents protection and management, watermarking, authentication and tamper proofing as well as brands protection.

- **U-nica Sytems**, AG (Malans) (http://www.u-nica.com) according to Collaborative and Research Agreement between the University of Geneva and U-nica Systems in the domain of physical object protections against counterfeiting based on the University of Geneva patented technology.

Others
Special issues

- G. Chanel, K. Kalogianni, T. Pun, "GamEMO: How physiological signals show your emotions and enhance your game experience", ACM ICMI, 14th. Int. Conf. on Multimodal Interaction, October 22-26th, 2012, Santa Monica, CA, USA, 297-298. **This demonstration won the Outsdanding Demo Runner-Up prize**.

Figure 2: Privacy-preserving multimedia identification/retrieval architecture

Teaching

- **Applied cybernetics**, Computer Science, Master, with T. Pun and S. Voloshynovskiy, 56h. course, 56h practical work, approx. 10 students. 8 ECTS.
- **Digital image processing and synthesis**, Computer Science, 3rd year Bachelor, T. Pun, optional for Master and postgraduate students, 56h course and 56h practical work, approx. 20 students. 8 ECTS.
- **Introduction to algorithms**, Computer Science, 1st year Bachelor, 56h course, 28h exercises and 56h lab work, approx. 30-40 students.
- **Avanced image processing**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 8 students.
- **Elements of information theory**, Computer Science, 2nd year Bachelor, Master, postgrades, 28h. course and 28h. practical work, approx. 25 students.
- **Multimedia security**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 8 students.
- **Information Retrieval**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 25 students.
- **Data Analysis and Pattern Recognition**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 10 students.

- **Elements of multiuser information theory and wireless communications**, Science, Master, postgrades, 28h. course and 28h. practical work, approx. 10 students.
- **Data Structures**, Computer Science, 1st year Bachelor, 56h. course and 56h. lab work, approx. 20 students.
- **Hands-on Programming (practical complement to Data Structures)**, 1st year Bachelor. 56h Practical work, 20 students.
- **Computer Science Project**, Computer Science, 3rd year Bachelor, 28h course and 56h. lab work, approx. 10 students.
- **Industrial Internships**, Summer Semester (3 months supervision), 5 students.
- **Weekly Computer Vision and Multimedia seminars**, graduate students and senior researchers, 1h. per week, about 15 PhD students, post-docs, seniors, visitors.

Figure 3: EEGs (electroencephalograms) recordings for affective computing

GAIL

Geneva Artificial Intelligence Laboratory

Olivetti M24 (1983) - © CUI museum

Geneva Artificial Intelligence Laboratory

Domain activities

The Geneva Artificial Intelligence Laboratory (GAIL) was established in 1980 to conduct research in both theoretical and applied artificial intelligence. Past research projects have dealt with the theory of knowledge representation and reasoning mechanisms, theoretical
aspects of hybrid neuro-symbolic systems, knowledge representation and interpretation for various artificial neural network (ANN) architectures, new learning algorithms, metalearning for algorithm and model selection, and text mining.

A team led by Melanie Hilario focuses on advanced machine learning and data mining techniques, including learning from complex representations, multiple kernel learning, semantic kernels, and the extensive use of prior knowledge in learning (e.g. development and use of data mining ontologies for workflow optimization and meta-mining). These techniques are applied to various problems in the life sciences (bioinformatics), such as the processing
and classification of mass spectra, disease biomarker discovery, pathway modelling, and biological text mining.

A team led by James Henderson investigates techniques such as learning for structures and latent variable models, and applies them to tasks in natural language processing, including syntactic parsing, joint syntactic-semantic parsing, spoken language understanding, and dialogue system architectures. The latter team collaborates closely with the Laboratoire d'Analyse et de Technologie du Langage (LATL) via the interdisciplinary sub-group Computational Learning and ComputationalLinguistics (CLCL) (http://clcl.unige.ch).

Team

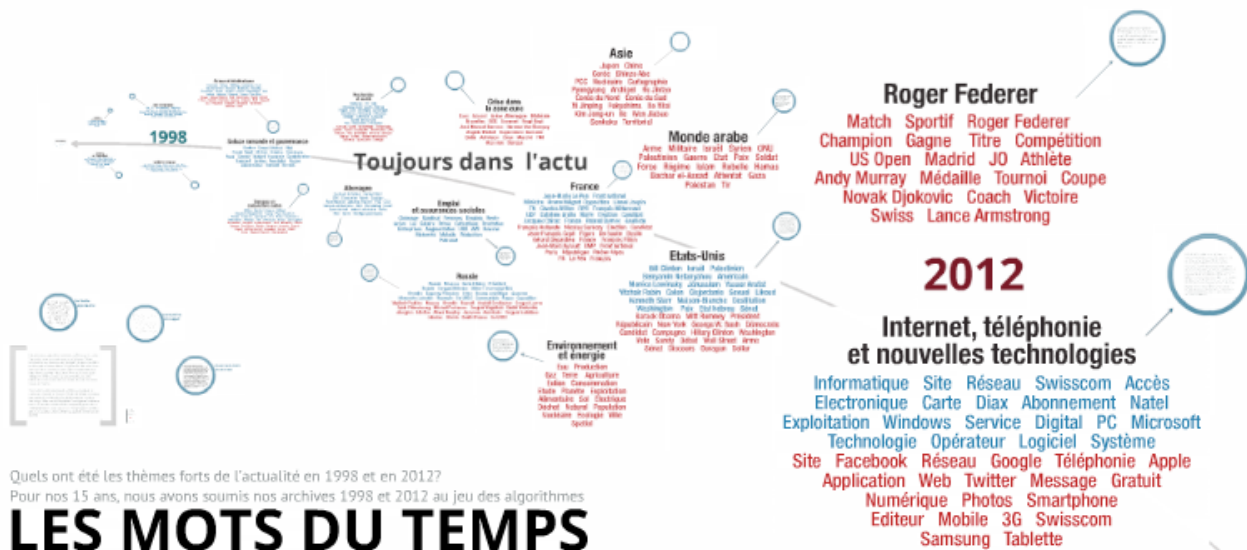### Director
Christian Pellegrini
Honorary professor

Members
Dr. Mélanie Hilario (MER)
Dr. Alexandros Kalousis, Research Associate
Dr. Adam Woznica, Post doctoral fellow

PhD students
Huyen Do (defended October 2012)
Phong Nguyen
Jun Wang

Figure 1: screenshot from a small data analysis for «Le Temps».

List of publications
Full refereed papers in Conference Proceedings

[1] Huyen Do and Alexandros Kalousis and Jun Wang and Adam Woznica. «A metric learning perspective of SVM: on the relation of SVM and LMNN», AISTATS 2012, Canaria, Spain, 2012

[2] Phong Nguyen, Jun Wang and Melanie Hilario and Alexandros Kalousis. «Learning heterogeneous similarity measures for hybrid-recommendations in meta-mining», ICDM 2012, Brussels, Belgium, 2012.

[3] Jun Wang and Adam Woznica and Alexandros Kalousis. «Parametric Local Metric Learning for Nearest Neighbor Classification». NIPS 2012, Lake Tahoa, USA, 2012.

[4] Jun Wang and Adam Woznica and Alexandros Kalousis. «Learning Neighborhoods for Metric Learning», ECML/PKDD 2012, Bristol, UK, 2012.

[5] Adam Woznica and Phong Nguyen and Alexandros Kalousis. «Model Mining for Robust Feature Selection», KDD 2012, Beijing, China, 2012.

Member of conference program committees

- Alexandros Kalousis, European Conference on Machine Learning/Principles and Practice of Knowledge Discovery in Data (ECML/PKDD-2012), September 2012, Bristol.
- Alexandros Kalousis, SIAM Data Mining Conference, California, USA, 2012

Funded research projects
Participation to European projects

e-LICO
An e-Laboratory for Interdisciplinary Collaborative Research in Data Mining and Data-Intensive Sciences
EU FP7 ICT-INFSO STREP: Intelligent content and semantics. Partners: University of Geneva (Switzerland, Coordinator: Melanie Hilario), Institut national de la santé et de la recherche médicale (France), Medicel Oy (Finland), National Hellenic Research Foundation (Greece), Rapid-I GmbH (Germany), University of Manchester (United Kingdom), University of Zurich (Switzerland), Jozef Stefan Institute (Slovenia), Rudjer Boskovic Institute (Croatia), Poznan University of Technology (Poland).
Period: February 2009 – January 2012
Website: http://www.e-LICO.eu/

Participation to National projects

Combining Metric and Kernel Learning
FNRS Project
Period: October 2011 – August 2013

Teaching
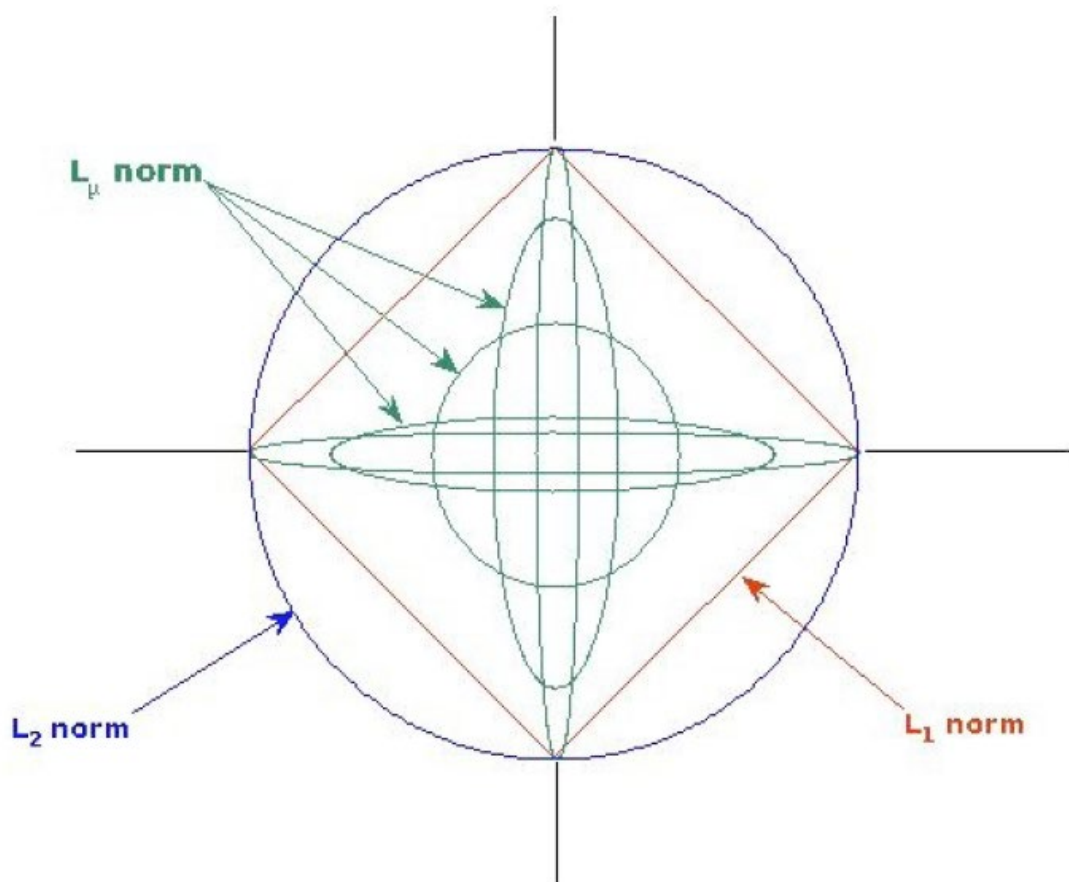- **Data Mining**, Computer Science, Master, 4 ECTS, 52 hours

Figure 2: The effect of different types of norm regularizers (source PhD, Huyen Do)

ICLE

Knowledge Engineering and Space Logics

Knowledge Engineering and Space Logics

Domain activities

The main research themes of the Knowledge engineering group are knowledge representation, from formal logical representations to natural language representations, and knowledge access through various kinds of interfaces such as 3D scenes, hyperbooks, spatial hypertexts, natural language queries, etc. In addition to basic research, the group is involved in applied multidisciplinary research projects related to architecture, archaeology, and sustainable urban development.

Current research directions of the group include:
- the modelling and management of knowledge resources
- spatial and temporal knowledge modelling
- the semantic and rhetoric indexing of scientific documents for precise information retrieval
- the design of semantic digital libraries and their interactive user interfaces
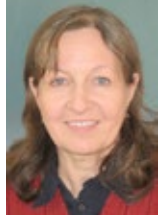- information visualization in 3D virtual environments

Team

Directors
Gilles Falquet
Associate professor

Claudine Métral
MER

Laurent Moccozet
MER

Senior researchers
Dr. Jacques Guyot
Dr. Vitor Silva

Assistants (PhD students)
Hélène De Ribaupierre
Meghdad Farahmand
Nizar Ghoula
Camille Tardy
Mathieu Vonlanthen
Georges Bediang

Visiting Academic Guests
Anne-Françoise Cutting-Decelle
Jean-Pierre Hurni
Alain Junger

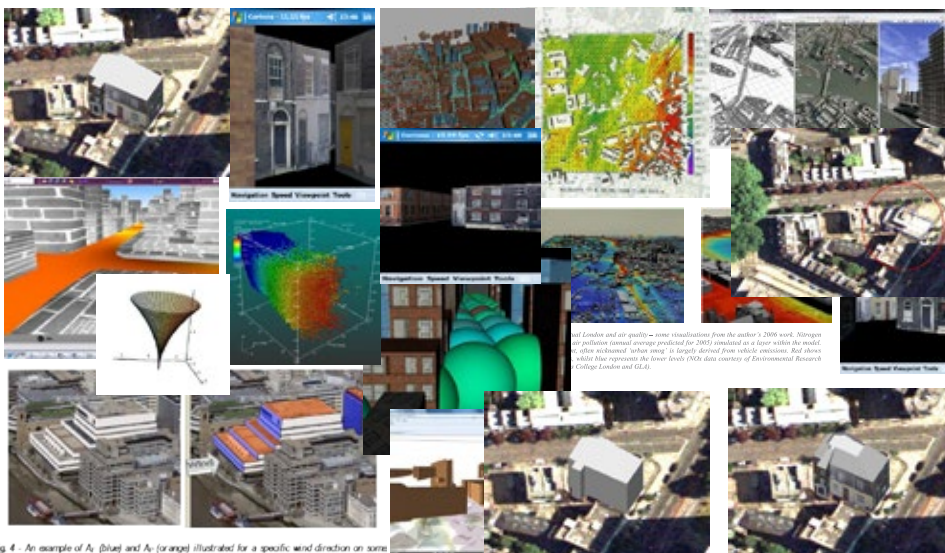## Visualization of enrichment information in enriched 3D city models

Fig. 4 - An example of A₁ (blue) and A₂ (orange) illustrated for a specific wind direction on some London buildings, showing how an urban area can be much more complex to work with in reality.

10/30/2012   University of Geneva, Nizar Ghoula, TU0801 Workshop   6

Figure 1: Data and knowledge visualization techniques in urban models

PhD Thesis
- Mathieu Vonlanthen, «Bases de Connaissance Spatiales pour les Outils d'Aide à la Conception Architecturale», March 2012

List of publications
Full refereed papers in international journals

[1] A.-F. Cutting-Decelle, J.-L. Barraud, B. Veenendaal, R.-J. Young. «Production information interoperability over the Internet: A standardised data acquisition tool developed for industrial enterprises». Computers in Industry, Elsevier, 63 (2012), 824-834.

Full refereed papers in Conference Proceedings

[2] C. Métral, N. Ghoula, G. Falquet. «An ontology of 3D visualization techniques for enriched 3D city models». In Proceedings of 3u3d2012: Usage, Usability, and Utility of 3D City models - Final conference of the European COST Action TU0801 Semantic enrichment of 3D city models for sustainable development, T. Leduc, G. Moreau and R. Billen (Eds.), EDP Sciences, 02005:1-15, 2012

[3] B. Bucher, G. Falquet, E. Clementini, M. Sester. «Towards a typology of spatial relations and properties for urban applications», Conf. 3u3d2012: Usage, Usability, and Utility of 3D City models, 29-31 October 2012, Nantes, France.

[4] C. Tardy, L. Moccozet, G. Falquet. «Contextualisation and alignment of documents and 3D city models in an urban semantic digital library», Conf. 3u3d2012: Usage, Usability, and Utility of 3D City models, 29-31 October 2012, Nantes, France.

[5] H. De Ribaupierre. «Precise information retrieval in semantic scientific digital libraries». In CEUR doctoral symposium proceedings, EKAW2012, Galway, 12 October 2012

[6] N. Ghoula. «An ontology based repository for managing heterogeneous Knowledge resources». In CEUR doctoral symposium proceedings, EKAW2012, Galway, 12 October 2012

[7] K. Bazargan. «Rapid Prototyping of 3D Information Visualization Techniques for Usability Evaluation: The Case of Enriched Virtual 3D City Models». In Proceedings of International Conference on Interfaces and Human Computer Interaction IHCI'2012 (Lisbon, Portugal 21 - 23 July 2012).

[8] N. Ghoula. «Towards an ontology based large repository for managing heterogeneous knowledge resources». E-LKR and ATSF 2012 proceedings, available online as Volume 882 of CEUR-WS.org, E-LKR2012, Castellón de la Plana, Spain, 2012.

[9] O. Ajmi, N. Ghoula and G. Falquet. «Méthodologie de construction d'outil d'aide à la décision pour le choix de techniques d'alignement à travers les évaluations». poster, IC2012, Paris, 2012.

[10] N. Ghoula. «Processing resources alignment in a large knowledge repository». poster, EKAW2012, Galway, 2012.

[11] H. de Ribaupierre, «Inferring scientific knowledge from background fragments». poster, EKAW2012, Galway, 2012

Full refereed papers in Workshops Proceedings

[12] C. Métral, N. Ghoula, G. Falquet. «Towards an Integrated Visualization of Semantically Enriched 3D City Models: an Ontology of 3D Visualization Techniques». In Proceedings of 3D Issues in Urban and Environmental Systems, R. Billen, M. Caglioni, O. Marina, G. Rabino, R. San José (Eds.), Società Editrice Esculapio, Bologna, http://cui.unige.ch/isi/reports/2008/AirQuality-and-3DCM.pdf35-42, 2012. http://arxiv.org/pdf/1202.6609v2.pdf

[13] B. Bucher, G. Falquet, E. Clementini, M. Sester. «Spatial relations and properties for semantically enhanced 3D city models Workshop 3D issues in urban and environmental systems», 12-13 April 2012, Madrid, Spain

Books and book chapters

[14] G. Touya, B. Bucher, G. Falquet, J. Kusay, S. Steiniger. «Modelling geographic relationships in automated environments». To appear in the Handbook of Generalization Techniques in GIS

PhD Thesis committees
- Samaneh Chagheri, Rapporteur, INSA Lyon

Member of conference/workshop progam committees
Gilles Falquet:
- BooksOnline 2012
- Extraction et Gestion des Connaissances (EGC 2012)
- Ingénierie des Connaissances (IC 2012)
- 6th International Workshop on Semantic and Conceptual Issues in GIS (SeCoGIS 2012)

Claudine Métral:
- 3D GeoInfo Conference, Quebec City, Canada, 16-17 May 2012
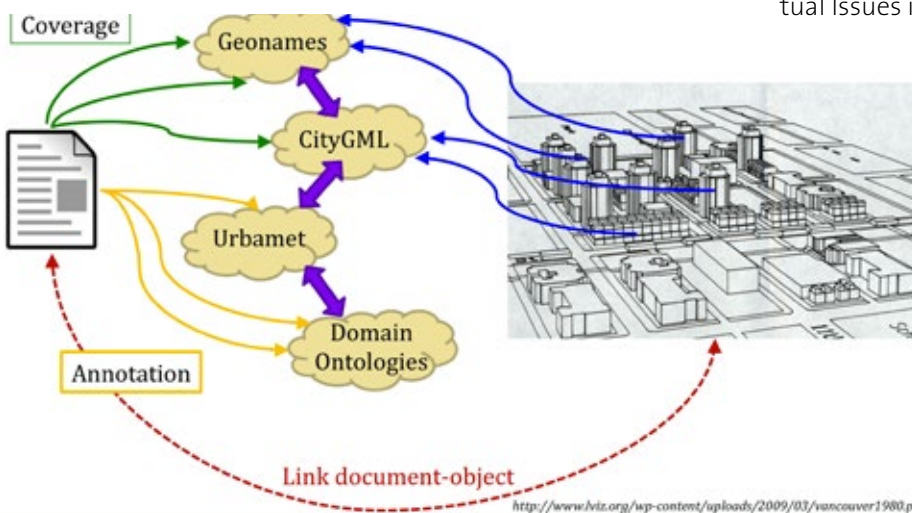- 3u3d2012: Usage, Usability, and Utility of 3D City models, Nantes, France, 29-31 October 2012

Figure 2: Connecting documents and city objects through ontologies

REFEREEING

- DKE, Data and Knowledge Engineering
- TSI, Technique et Science Informatique
- Transactions in Geographic Information Systems
- Advances in Knowledge Discovery and Management Vol. 4 (Book)

FUNDED RESEARCH PROJECTS

Participation to National projects

Ontology-Based Precise Multilingual Information Retrieval
FNS
Period: 2011 - 2013

——

Designing and evaluating 3D knowledge visualization techniques for urban planning
SER No. C10.0150
Period: 2011 - 2013

——

A Semantic Digital Library of Urban Models and Resources
SER-COST
Period: 2009 - 2012

——

LACE HPC – Language acquisition from comparable corpora using high performance computing (CADMOS)
Partners: B. Chopard and G. Falquet (UNIGE), M. Rajman (EPFL), T. Della Senta (UNDL Foundation)
Period: 2011 - 2014

TEACHING

- **Fondements formels des systèmes d'information**, ICLE, Bachelor course, 6 ECTS, 56 hours, 18 students
- **Algorithme appliquée**, ICLE, Bachelor, 6 ECTS, 56 hours, 12 students
- **Interfaces des systèmes d'information**, ICLE, Bachelor SES & Master Sciences course, 6 ECTS, 56 hours, 15 students
- **Knowledge representation in the semantic web**, ICLE, Master course, 6 ECTS, 56 hours, 14 students
- **Knowledge organisation systems**, ICLE, Master course, 6 ECTS, 56 hours, 6 students
- **Systèmes d'information de l'environnement**, Master en sciences de l'environnement (MUSE) course, 6 ECTS, 10 hours, 52 students
- **Modélisation des bases de données spatiales,** Certificat complémentaire de mathématiques, Service course, 3 ECTS, 28 hours, 44 students
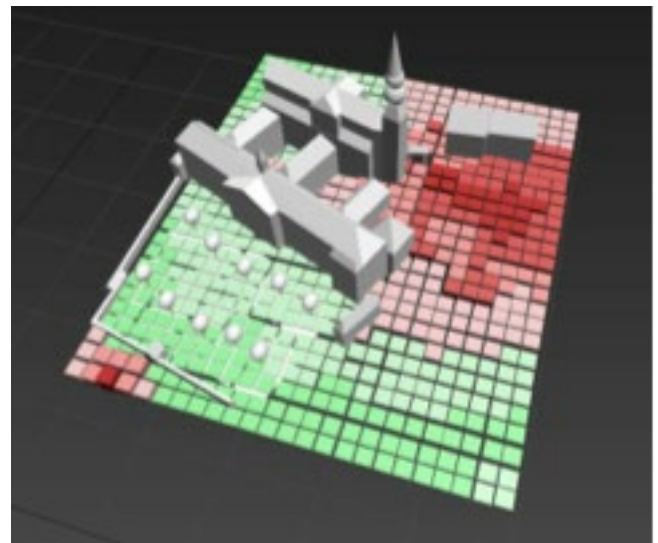- **Space-City: Modèles urbains 3D,** ICLE, Master, Service course, 3 ECTS, 28 hours, 6 students

Figure 3: A visualization technique for air quality in a 3D city model

Figure 4: Formal representation of the visualization technique shown in figure 3

ISS

Institute of Services Science

Institute of Services Science

Senior Researchers
Dr. Laurent Moccozet
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Dr. Jean-Marc Seigneur
Dr. Mehdi Snene
Dr. David Hausheer
Dr. Katarzyna Wac
Dr. Verena Kantere
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Dr. Jose Luis Fernandez-Marquez
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Matthias Becker
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Andra Cincisan
Guillaume Ehinger
Mattia Gustarini
Bart Kevelham
Michael Mesfin
Dejan Munjin
Niels Nijdam
Wanda Opprecht
Aikaterini Stamou
Camille Tardy
Akla-Esso Tchao
Yvain Tisserand
Georgia Ionescu
Mauricio Togneri
Javier Martin de Valmaseda
Jérôme Marchanoff
Quentin Flamant
Mathieu Vonlanthen

Director
Giovanna Di Marzo Serugendo
Full professor

Jean-Henry Morin
Associate professor

Dimitri Konstantas
Full professor

Michel Léonard
Full professor

Nadia Magnenat-Thalmann
Honorary professor

Developpers / Designers (PAT)
Sokratis Barmpounakis
Hélène Burton
Dr. Michel Deriaz
Jody Hausmann
Julien Pession
Kevin Salvi

Fellowships
Thi Nhu Anh Nguyen

Internship fellows
Karolina Zawieska
Hélène Preynat-Sauve

Visiting Academic Guests
Prof. Christopher Joslin
Prof. WonSook Lee

Administration
Marie-France Culebras
Lara Broi

Services represent the most growing sector of the economy in industrialized nations. Services science is arising from the rapid development of services across the industrial world and the need to analyze and study the organization, deployment, maintenance and operation of those related IT based and IT supported services. Services Science represents an interdisciplinary approach to the systematic innovation in service systems, integrating management, social, legal and engineering aspects.

The Institute of Services Science is a research institute of the Faculty of Economic and Social Sciences of the University of Geneva. Our mission is to engage with industry, public administration and the public in order to lead and shape the international landscape of research in the domain of Services Science.

As a team of 60 staff members, we are active in **research, technology watch, creativity** and **teaching**. We are currently participating in 19 research projects (EU/Cost/Swiss funding). Our major areas of research cover e-Health, pervasive computing, indoor positioning and indoor navigation, object localisation, mapping, GIS, mobile sensors analysis, security and privacy, risk and compliance, service level agreements, cloud computing, Internet of Things, service innovation, formal methods and design, systems evolution, quality and interoperability, autonomous and self-adaptive systems, trust-based systems and data science and predictive analysis.

Application domains include transdisciplinary business services, Ambient Assisted Living, services for mobile users, travelling and mobility, gaming, data protection, intelligent documents, digital rights and policy management, e-governement services and smart society, finance and banking services.

Our strong involvement in interdisciplinary think groups places us at the forefront of the technology watch in Services Science in Switzerland. We regularly contribute to creativity and innovation hands-on experiments targeted at industry. In collaboration with the HEC Business of School of the Faculty, we also participate to a full range of academic programs in Services Science (BSc, Msc, Executive MSc and PhD).

Our international network includes many academic institutions, public administrations, creativity and innovation consultants, think tanks and services providers across Europe, Asia, North America.

Jean-Henry Morin - Digital Rights & Policy
As our society and economy is increasingly interwoven with digital services and systems, our research activities continue to investigate some of the complex challenges and issues towards a more sustainable and responsible digital society. The area of Digital Rights & Policy Management at large focuses on the study and design of new approaches, services and methods to help solve wicked and messy problems in this digital society. Specific projects and activities cover topics in :
- Exception management in DRM environments (Enterprise and Media sectors)
- Governance, risk and compliance (GRC)
- Legal awareness services and interfaces
- Socialization of Things and Empowerment in Internet of Things (IoT)
- Cloud Computing and Service Level Agreements (SLA)
- Service Innovation and Design
- Service tangibilization, compliance and governance
- Rights and Policy interface design
- Data protection and transparency
- Information security and assurance

Giovanna Di Marzo Serugendo - Autonomous Adaptive Systems
The research activity around Autonomous Adaptive Systems focuses on the engineering of autonomous systems and services, in particular spontaneous composition of services, self-organising, self-adaptive and large-scale services. We are exploring reliability and controllability issues (how to build a reliable and trustworthy adaptive services that is controllable); properties and formal methods issues (how formal methods can help for proving properties of adaptive systems); and developing decentralised algorithms. Considered applications areas are: autonomous displays, industrial assembly systems, services for mobile users and dynamically resilient systems, privacy embedded into the design.

Figure 1: Fasoo Usage Tracer dashboard (Exception Management)

Dimitri Konstantas - Mobile services

Mobile services and applications are today an indispensable part of our daily life. We are using our mobile phones and PDAs to access our mail, chat with friends and colleagues, take and store photographs and videos, obtain guidance and route information, play games and even access the internet. However, the fact that mobile services and applications are part of our daily life does not mean that all problems and issues are resolved. From one side, existing mobile services and applications operate under a "best effort" model, handling issues like Quality of Service, trust and security in a case to case basis employing ad-hoc solutions, while from the other side we are desperately lacking applications and services for several groups of users, like for example the elderly.

Since 2009 we have been applying the results of our fundamental research in QoS, trust, mobile devices' interoperability (mobile server cloud) in the study and development of services for the aging society. In this context we have succeeded acquiring 7 European projects in the Ambient Assisted Living (AAL) program and 2 technology transfer projects (CTI) in the domain of geolocalised services. Our work in this domain concentrates in the study of lifestyle of senior persons (age 65 and more) and the creation of mobile location aware services for monitoring the activities of the users and providing them proactive information regarding activities to do (realising the basic directive for senior persons : do not stay inactive), putting them in contact with other users with similar interests (socialisation), providing them the means for getting help from formal and informal care givers, and even advising them on diet and exercise. In these projects we collaborate with local (Geneva based) industrial partners that are offering services for seniors.

Michel Léonard - MATIS (Management and Technology of Information Services)

The Society/Company seems to become fully servitized. This trend induces huge fields of services to be immersed, and discovered. Consequently, a lot of human and collective activities will be interwoven with artificial activities, and one major concern about such a Society/Enterprise development depends on the quality of these interwoven activities. So, following our research approach in information systems, we centre our research on information – and not on software, like Web services – to explore activities emerging or transformed in enterprises or e-government, and to discover actionable knowledge, relevant to these servitized situations. Thus, we explore appropriate:

- Company organisations taking into account initiatives, responsibility,
- Design methods taking into account adaptability, agility, composition, compliance with   rules,
- Information base management systems (Ksterix),
- Transdisciplinary environments,
- Company evolution through IS evolution by means of services.

Thus, we work on the creation of a Living Lab for a business department, which can be viewed as an example of emerging activities. Indeed, a Living Lab is the meeting point between immersion methods, real market needs and academic curriculum. It is an interconnected grid of activities, platforms and methods aiming at accelerating prototyping, development and market validation of new services. It enables students and researchers to express, model and experiment their specific requirements in a service mode.

Nadia Magnenat-Thalmann - MIRALab

MIRALab was founded in 1989 by Professor Nadia Magnenat-Thalmann and brings together about 25 researchers from different fields, such as computer science, mathematics, medical field, design, architecture, fashion design, cognitive science, etc. This truly interdisciplinary group works in the field of computer graphics, computer animation and virtual worlds.

Since 1992, MIRALab has participated in more than 47 European Projects and contributes to the management of two International Conferences, CASA and CGI. Moreover, MIRALab produces 3D showcases for museums, galleries, such as fashion shows or cyberdances with virtual models and clothes. In 2012, MIRALab was working on the following projects: 3D LIFE, AERIAL CROWD, FNRS Real and MULTISCALE-HUMAN a Marie Curie Research Training Network. MIRALab has organized various International conferences and workshops.

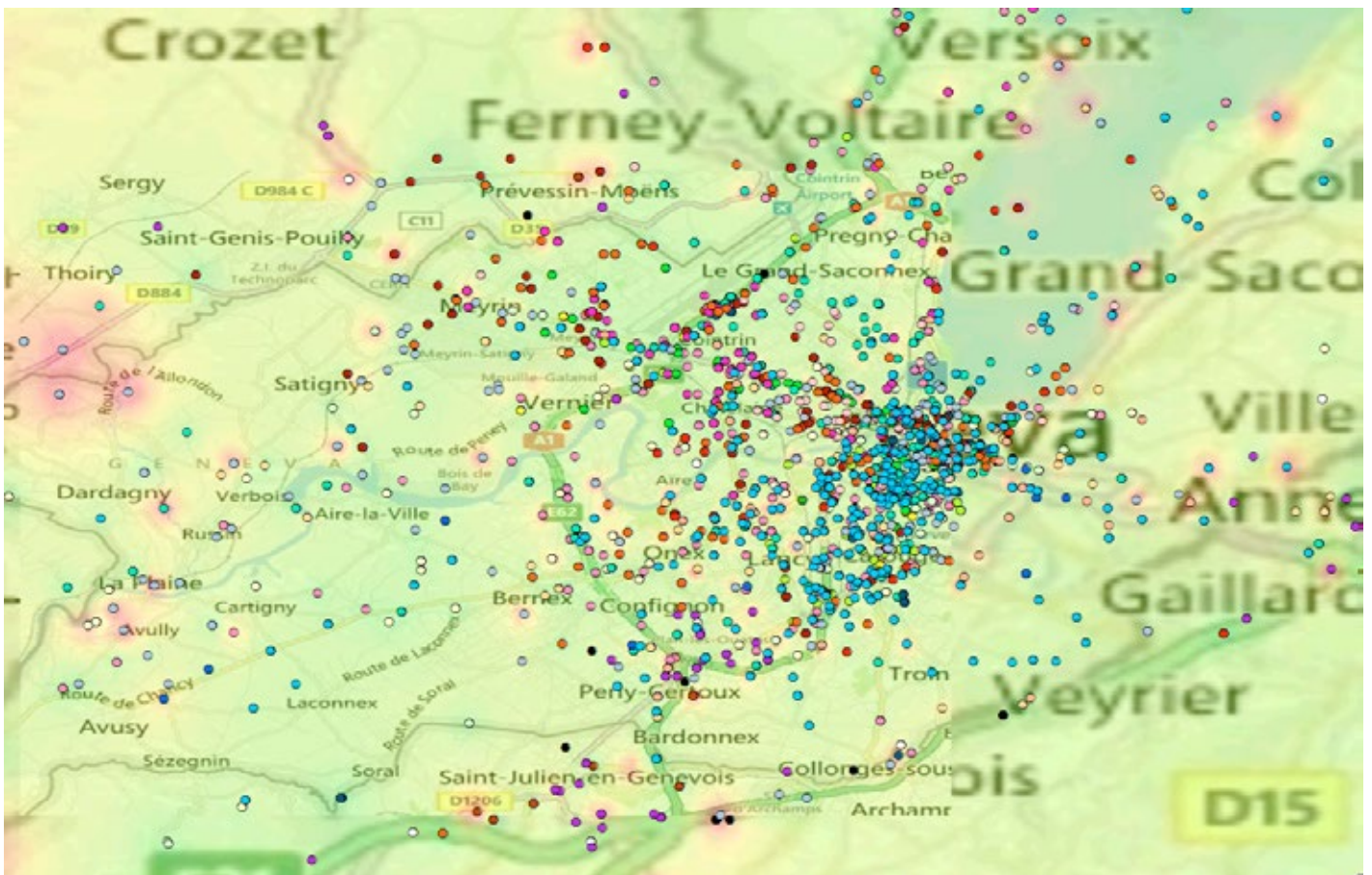

Figure 2: EU AAL MyGuardian project

Figure 3: Quality of operator networks in Geneva Area
(Dec. 2012, qosis.net project)

List of publications

Refereed papers in international journals

[1] Jose Luis Fernandez-Marquez, Josep Lluis Arcos and Giovanna Di Marzo Serugendo. «A Decentralized Approach for Detecing Dynamically Changing Diffuse Event Sources in Noisy WSN environments». Applied Artificial Intelligence, 26(4), 376-397, 2012.

[2] Sara Montagna, Mirko Viroli, Jose Luis Fernandez-Marquez, Giovanna Di Marzo Serugendo, Franco Zambonelli. «Injecting Self-Organisation into Pervasive Service Ecosystems». Mobile Network Applications, Springer, September 2012.

[3] R. Frei and G. Di Marzo Serugendo. «The Future of Complexity Engineering». Central European Journal of Engineering, 2(2), pages 164–188.

[4] R. Frei, T.F. Serbanuta and G. Di Marzo Serugendo. «Self-Organising Assembly Systems formally specified in Maude». Journal of Ambient Intelligence and Humanized Computing.

[5] Jose Luis Fernandez-Marquez, Giovanna Di Marzo Serugendo, Sara Montagna, Mirko Viroli and Josep Lluis Arcos. «Description and composition of bio-inspired design patterns: a complete overview». Natural Computing, Springer Netherlands, 1-25, 2012.

[6] Markus Fiedler, Katarzyna Wac, Richard Bults, Patrick Arlos, «Estimating Performance of Mobile Services from Comparative Output-Input Analysis of End-to-End Throughput», IEEE Transactions on Mobile Computing, (forthcoming, online access first)

[7] Pawel Prociow, Katarzyna Wac, John A. Crowe, «Mobile Psychiatry: Towards Improving the Care for Bipolar Disorder». International Journal of Mental Health Systems, 6(1): p. 5, May 2012.

[8] Selim Ickin, Katarzyna Wac, Markus Fiedler, Lucjan Janowski, Jin-Huyk Hong, Anind K. Dey, «Factors Influencing Quality of Experience of Commonly-Used Mobile Applications». IEEE Communications Magazine (IEEE COMMAG), Special Issue on QoE Management in Emerging Multimedia Services, 50(4): 48-56, IEEE Press, April 2012.

[9] R. Rawassizadeh, K. Wac, and M. Tomitsch, «Theme Issue on Electronic Memories and Life Logging (Editorial)», Journal on Personal and Ubiquitous Computing, Springer, 2012, p. 1-2.

[10] Abdelaziz Khadraoui, Christophe Feltus, «Service specification and service compliance: How to consider the responsibility dimension?» Journal of Service Science Research, Volume 4 JoSSR 4(1): 123-142 (2012).

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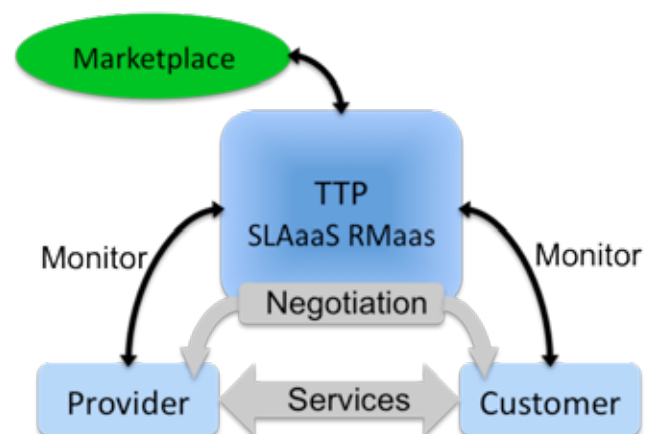
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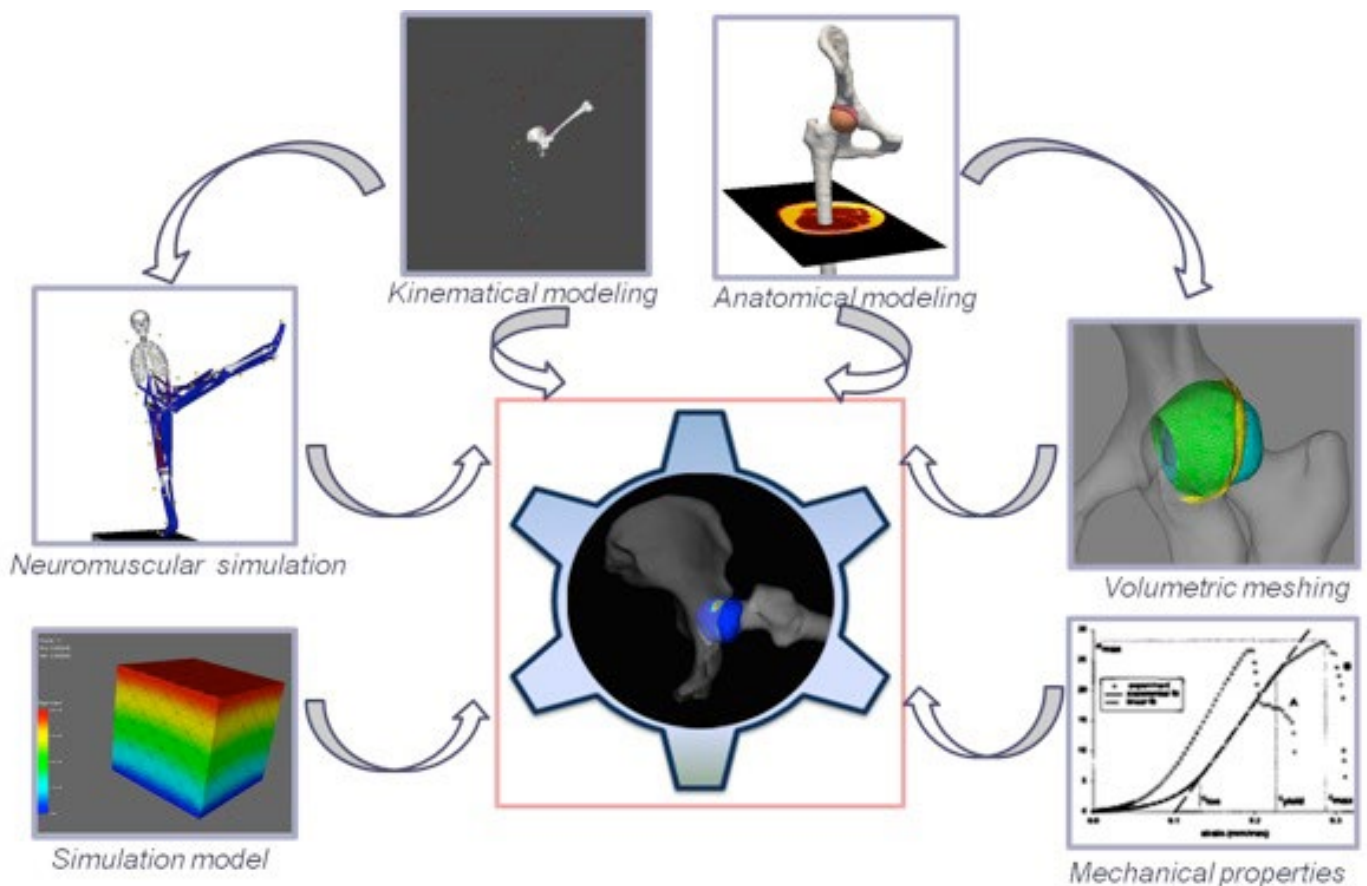
Figure 5: 3D medical application - MIRALab
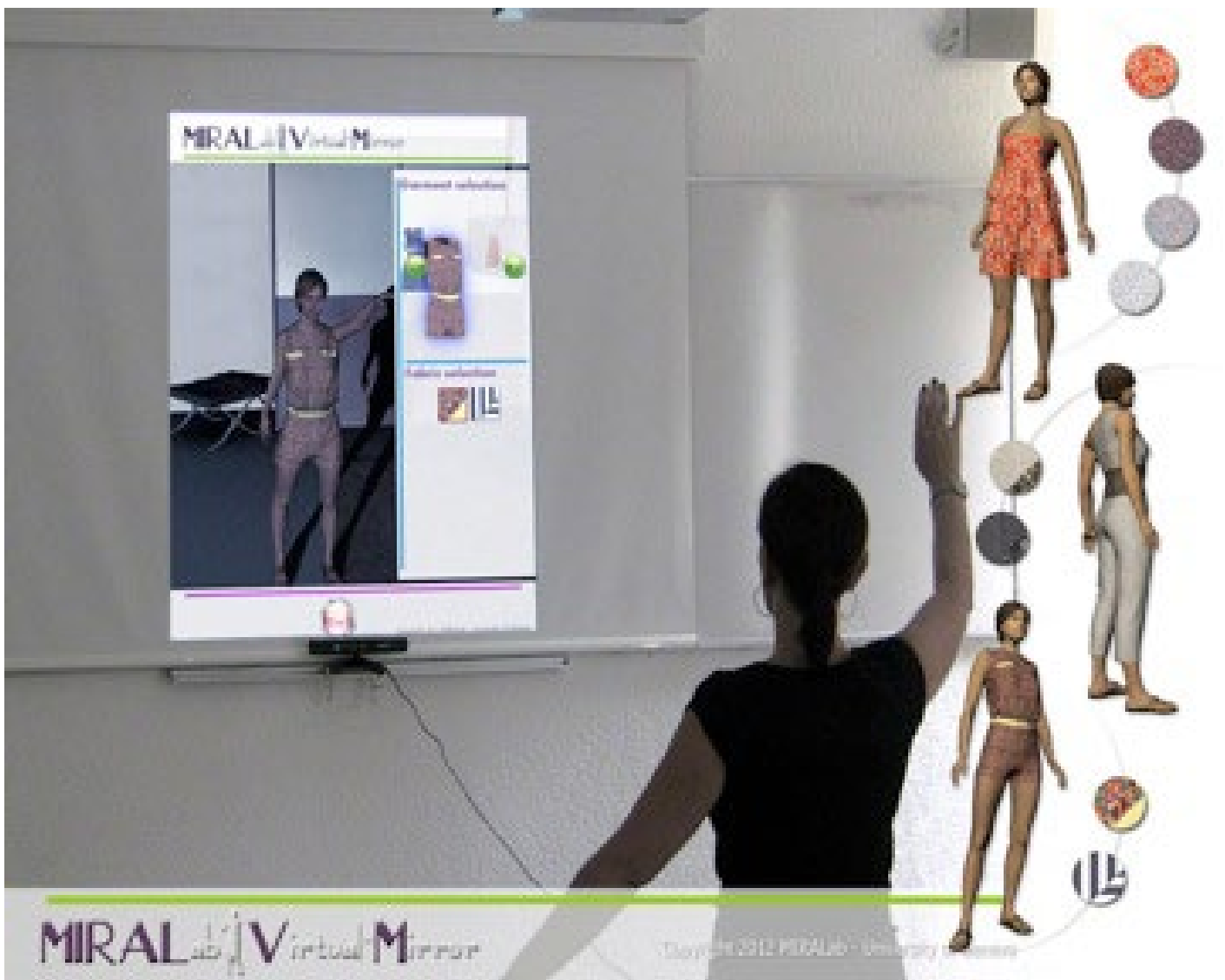
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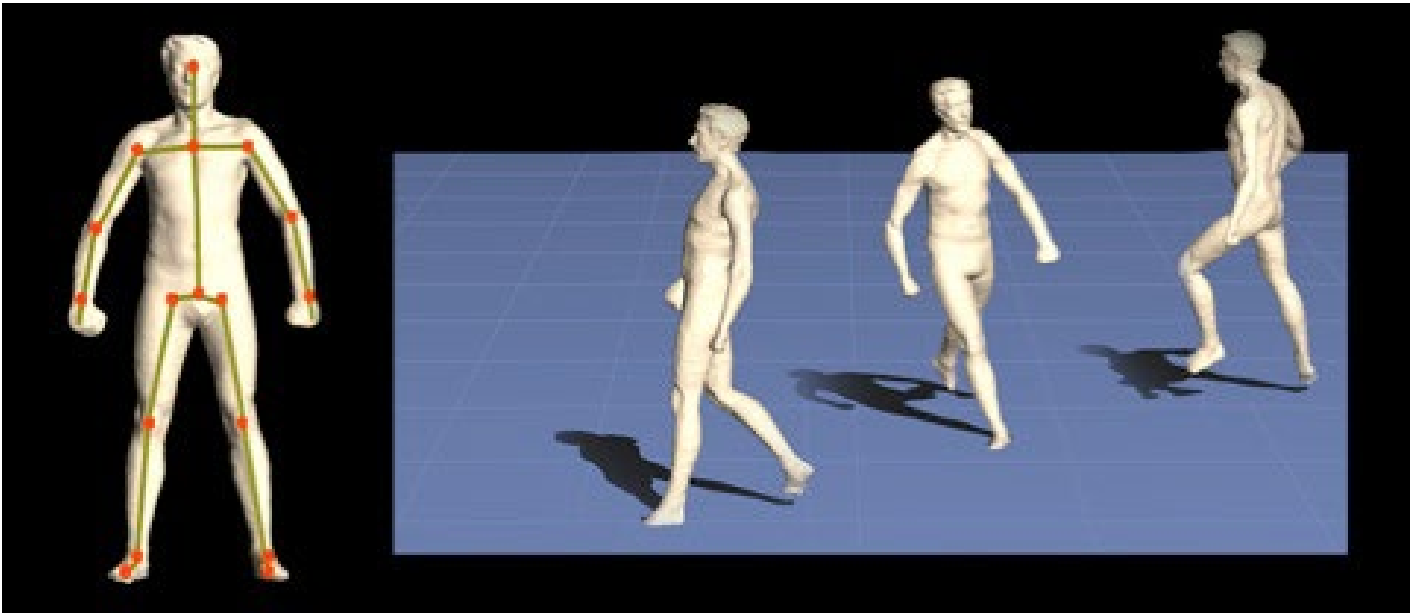
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INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES
Nadia Magnenat-Thalmann:
- 2012: Participation in the Canada Excellence Research Chairs Review Panel, Ottawa, Canada
- 2012: Member of External Advisory Committee, Graduate School of Computer Technology, GSCT KAIST, Korea
- 2007-2012: Expert and reviewer of the Seventh Framework Programme FP7, European Commission
- Since 2002: Member of the Strategic Advisory Board Committee, City University, Hong Kong, China
- Since 1994: President of the Computer Graphics Association (CGS)

INTERNATIONAL AND NATIONAL RESEARCH PROGRAMS COMMITTEES
Giovanna Di Marzo Serugendo:
- 2012: Expert evaluator for Lecturership positions, University of Stockholm
- 2012: Audit evaluator for Luxembourg ministry of education
-

Dimitri Konstantas:
- Since 2004 : Expert Evaluator for the Commission of the European Union
- Since 2005 : Expert evaluator for the Canadian National research foundation
- Since 2009: Expert evaluator for the Greek Ministry of Education
- Since 2002: Expert evaluator for the Dutch National research foundation
- Since 2002: Member of the eMobility ETP
- Since 2005: Founding member and associate director of the ERCIM eMobility WG
- Since 2005 : Founding member of IICREST (Sofia, Bulgaria)

Jean-Marc Seigneur:
- Expert Evaluator for the Commission of the European Union

Jean-Henry Morin:
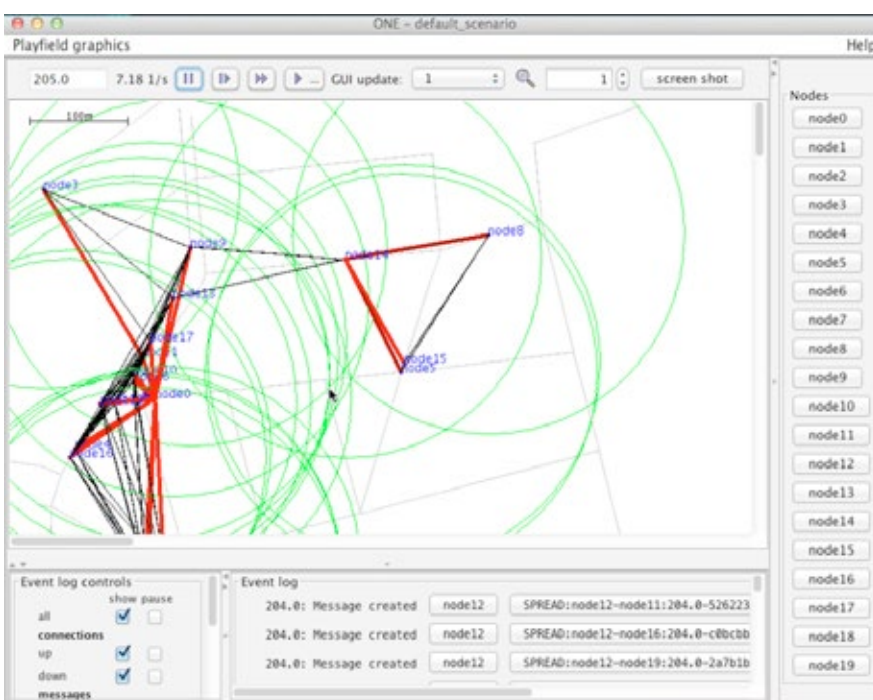- Evaluator for the Vienna Science and Technology Fund

Figure 9: Dynamic Gradient in Wireless Environment

PhD Thesis committees
Giovanna Di Marzo Serugendo:
- External examiner: Quang-Anh Nguyen Vu. Cohérence et robustesse dans un système multi-agents perturbé: application à un système décentralisé de collecte d'information distribué. University Claude Bernard Lyon 1, December 2012.
- External examiner: Pavlos Antoniou. Natural Inspired Congestion Control and Avoidance in Wireless Sensor Networks. University of Cyprus, Cyprus, May 2012.
- External examiner: Richard Payne. Verifiable Resilience in Architectural Reconfiguration. University of Newcastle Upon Tyne. March 2012.

Jolita Ralyté:
- Opponent: Adiran Iacovelli. Approche orientée services pour la configuration de méthodes outillées. Supervisor Prof. Carine Souveyet, University of Paris 1 – Sorbonne, Paris, France, September 2012.
- Opponent: Julio Hurtado. A Meta-process for Defining Adaptable Software Processes. Supervisor Prof. Cecilia Bastarrica, University of Santiago de Chile, Santiago, Chile, September 2012.
- External examiner: Ansem Ben Cheikh, PhD Thesis in Computer Science "E-CARe: A Method for Engineering Ubiquitous Information Systems" (original title "E-CARe : une methode d'ingénierie des Systèmes d'Information ubiquitaires"), Supervisor Prof. Jean-Pierre Giraudin, University of Grenoble, France, June 2012.

Abdelaziz Khadraoui:
- External examiner: Imache R.. PhD Thesis in Computer Science, "Un modèle d'évaluation et de contrôle de l'agilité des systèmes d'information d'entreprise". University of Boumerdes, April 2012.

Jean-Marc Seigneur:
- External examiner: Ricardo Neisse. PhD Thesis in Computer Science, "Trust and Privacy Management Support for Context-Aware Service Platforms". University of Twente, March 2012.

Figure 10: Responsibility Aspects in Service engineering

Michel Léonard:
- External examiner: Ali Khaleghi. "Les Risques des Projets d'Implémentation des Systèmes d'Information dans les Pays en Voie de Développement : le Cas de l'Iran", Université de Grenoble et Université de Téhéran, Spécialité : Sciences de gestion, April 2012.
- External examiner: Annette Casagrande. "Proposition d'une mesure de voisinage entre textes : application à la veille stratégique", Université de Grenoble, Spécialité : Mathématiques Appliquées, July 2012.

Conference organization as chair or co-chair
Giovanna Di Marzo Serugendo:
- Steering committee chair: IEEE International Conference on Self-Adaptive and Self-Organizing Systems, Lyon, France, September 2012 (SASO'11-12)
- Co-chair: programme doctoral roman d'informatique - CUSO winter school, Ovronnaz, January 2012

Jose Luis Fernandez Marquez:
- Co-Chair ASCENSIS workshop at IEEE International Conference on Self-Adaptive and Self-Organizing Systems, Lyon, France, September 2012 (SASO12)
- Publicity Chair: IEEE International Conference on Self-Adaptive and Self-Organizing Systems, Lyon, France, September 2012
- Co-Chair CM2012. Special Track of the 27th ACM Symposium on Applied Computing (SAC'12), Italy, Trento, March 2012.

Jean-Marc Seigneur:
- Chair of the Trust, Reputation, Evidence and other Collaboration Know-how track, SAC, ACM, Trento, Italy, March 2012.
- General chair and organiser of the Third Augmented Human International Conference, ACM, Megève, France, March 2012.
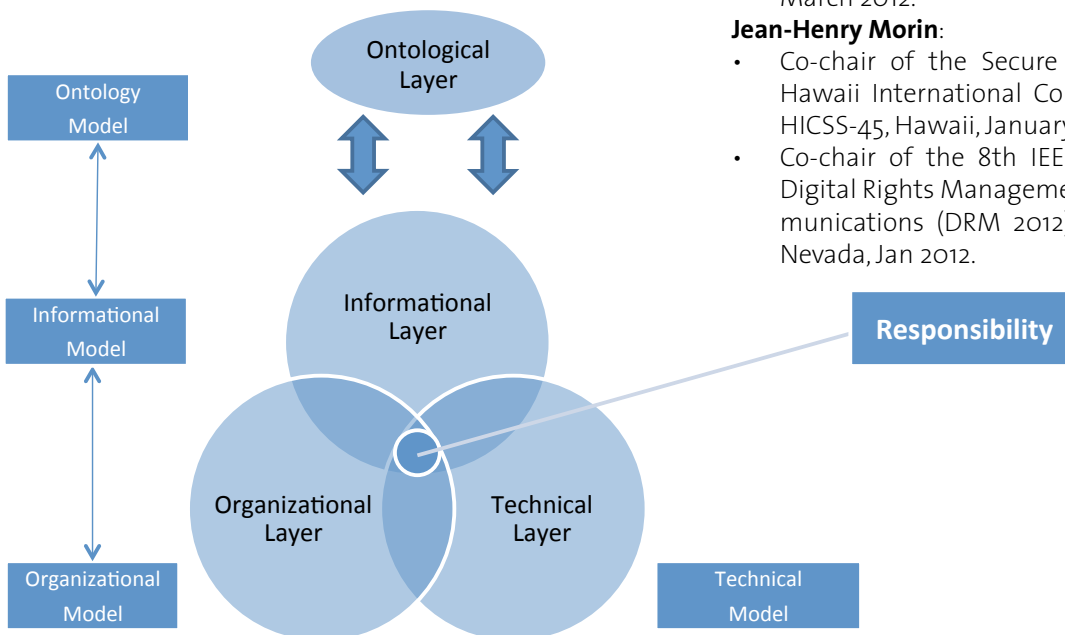
Abdelaziz Khadraoui:
- Program chair: International Conference on Software Engineering and New technologies (ICSENT'2012), Hammamet, Tunisia, December 2012.
- Co-Chair (ICIST'2012) : 2nd International Conference on Information Systems and Technologies, Sousse, Tunisia, March 2012.

Jean-Henry Morin:
- Co-chair of the Secure Cloud Computing minitrack, Hawaii International Conference on System Sciences, HICSS-45, Hawaii, January, 2012.
- Co-chair of the 8th IEEE International Workshop on Digital Rights Management Impact on Consumer Communications (DRM 2012), IEEE CCNC 2012, Las Vegas, Nevada, Jan 2012.

Jolita Ralyté:
- Program chair: 24th International Conference on Advanced Information Systems Engineering, Gdansk, Poland, June 2012 (CAiSE'12)
- Track chair: 30ème Congrès Informatique des Organisations et Systèmes d'Information et de Décision, Montpellier, France, May 29-31, 2012. Track on Method Engineering (INFORSID 2012)
- Mentor for Doctoral Consortium: 30ème Congrès Informatique des Organisations et Systèmes d'Information et de Décision, Montpellier, France, May 29-31, 2012 (INFORSID 2012)

Michel Léonard:
- Steering chair: International Conference on Exploring Services Science

Katarzyna Wac
- Co-organizer of the «Future Internet for eHealth» Dagstuhl Seminar 12231, Jun 2012

Nadia Magnenat-Thalmann:
- Computer Animation Festival Chair, 5th ACM SIGGRAPH Conference and Exhibition on Computer Graphics and Interactive Techniques in Asia, Singapore http://www.siggraph.org/asia2012/submitters-computer-animation-festival, Nov.-Dec. 2012
- Award Chair, 18th International Conference on Virtual Systems and Multimedia, VSMM 2012, Italy, Sept. 2012
- Program Co-chair, 11th ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry, ACM VRCAI 2012, Singapore, Dec. 2012
- Jury Review Chair, 5th ACM SIGGRAPH Conference and Exhibition on Computer Graphics and Interactive Techniques in Asia, Singapore, July 2012
- Program and Conference Chair, 25th Annual Conference on Computer Animation and Social Agents, CASA 2012, Singapore, May 2012

Figure 11: ThinkData home page (http://thinkdata.ch)

MEMBER OF CONFERENCE PROGRAM COMMITTEES
Giovanna Di Marzo Serugendo:
- IEEE International Conference on Self-Adaptive and Self-Organising Systems, Lyon, France, 2012 (SASO'12)
- Awareness Workshop at IEEE International Conference on Self-Adaptive and Self-Organising Systems, 2012 Lyon, France, September 2012
- ASCENSIS Workshop at IEEE International Conference on Self-Adaptive and Self-Organising Systems, 2012 Lyon, France, September 2012
- ERCIM Workshop on Software Engineering for Resilient Systems, Pisa, Italy, September 2012 (SERENE'12)
- Hawaii International Conference on System Sciences (HICSS'12)

Jose Luis Fernandez-Marquez:
- IEEE International Conference on Self-Adaptive and Self-Organising Systems, Lyon, France, 2012 (SASO'12)

Dimitri Konstantas:
- 2nd International Conference on Cloud Computing and Services Science, (CLOSER 2012)
- The 4th Conference on Smart Spaces, ruSMART 2011

Katarzyna Wac:
- International Workshop on Ubiquitous Mobile Instrumentation (UbiMI) collocated with the 14th International ACM Conference on Ubiquitous Computing (UbiComp 2012)
- International Workshop on Recommender Technologies for Lifestyle Change (Lifestyle12) collocated with the 6th ACM Conference on Recommender Systems (RecSys 2012)
- International Conference on Future Internet and Communications (BCFIC 2012)
- International Workshop on Quality of Multimedia Experience (QoMEX 2012)
- 9th International Conference on Mobile Web Information Systems (MobiWIS 2012)

- International Workshop on Wireless Body Area Networks for mHealth (WiBAN 2012), collocated with The International Conference on Computing, Networking and Communications (ICNC 2012)
- 3rd International Conference on Serious Gaming (GameDays 2012)
- ACM SIGHIT International Health Informatics Symposium (IHI2012)

Jean-Marc Seigneur:
- ACM Augmented Human International Conference, Megève, France, March 2012
- ACM Symposium of Applied Computing, Trust and Reputation Track, Trento, March 2012
- IFIP Trust Management International Conference, Surat, India, May 2012
- IEEE Trustcom, Liverpool, United Kingdom, June 2012

Jean-Henry Morin:
- 3rd International Conference on Exploring Service Science, IESS 1.3, Feb. 2013, Porto, Portugal
- Seventh International Conference on Internet Monitoring and Protection, (ICIMP 2012), May 27 - June 1, 2012, Stuttgart, Germany

Abdelaziz Khadraoui:
- International Conference on Computer Medical Application (ICCMA'2013).
- International Conference on Computing, Networking and Digital Technologies, Nov 2012.
- International Conference on Software Engineering and New Technologies (ICSENT'2012), December, 2012.
- International Conference on Information Systems and Technologies (ICIST'2013).
- 4th International Conference on Web and Information Technologies, (ICWIT 2012), April 2012.
- ICIST 2012, International Conference on Information Systems and Technologies, March 2012.
- Second International Conference on Exploring Services Sciences (IESS 2012), February 2012.
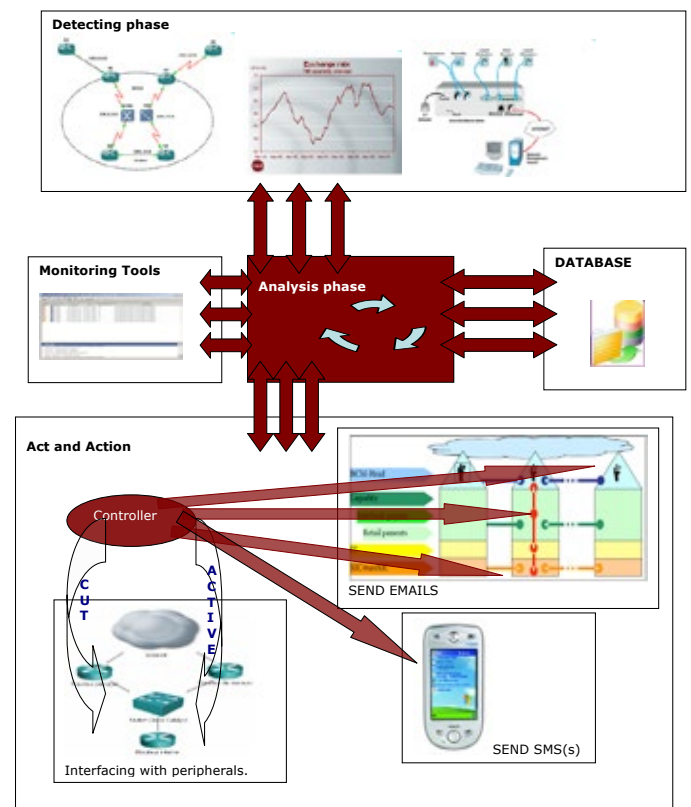
Jolita Ralyté:
- 31st International Conference on Conceptual Modeling, Florence, Italy, October 15-18, 2012 (ER 2012)
- 18th Working Conference on Requirements Engineering: Foundation for Software Quality, Essen, Germany, March 19-22, 2012 (REFSQ 2012)
- International Conference on on Exploring Modeling Methods in Systems Analysis and Design, Gdansk, Poland, June 25-26, 2012 (EMMSAD 2012)
- 6th IEEE International Conference on Research Challenges in Information Science, Valencia, Spain, May 16-18, 2012 (RCIS 2012)
- 3rd International Conference on Exploring Services Science, Geneva, Switzerland, February 15-17, 2012 (IESS 2012)
- 5th IFIP WG8.1 Working Conference on The Practice of Enterprise Modeling, Rostock, Germany, November 7-8, 2012 (PoEM 2012)
- International Baltic Conference on Databases and Information Systems, Vilnius, Lithuania, July 9-11 2012 (BalticDB&IS 2012)
- 7th International Conference on Software and Data

Technologies, Rome, Italy, July 24-27, 2012 (ICSOFT 2012)
- 30ème Congrès Informatique des Organisations et Systèmes d'Information et de Décision, Montpelier, France, May 29-31, 2012 (INFORSID 2012)
- International Workshop on on BUSinness/IT ALignment and Interoperability. In conjunction with CAiSE 2012, Gdansk, Poland, June 25, 2012 (BUSITAL 2012)
- 14th IEEE Conference on Commerce and Enterprise Computing, Hangzhou, China, September 9-11, 2012 (CEC 2012)
- 2nd International Symposium on Business Modeling and Software Design, Geneva, Switzerland, July 4-6, 2012 (BMSD 2012)
- 4th International Workshop on Requirements, Intentions and Goals in Conceptual Modeling. In conjunction with ER 2012, Italy, October 15-18, 2012 (RIGIM 2012)
- 6th International Workshop on Requirements Engineering for Services, with COMPSAC 2012, Izmir, Turkey, July 16-20, 2012 (REFS 2012)

Michel Léonard:
- IESS *13, CAISE*2013, INFORSID 2012, RCIS 2012, ICEIS 2013, POEM 2012, SOEA4EE2012

Figure 12: X-risk for Finma BCP Implementation (Financial Activities)

INVITED TALKS

Jean-Henry Morin:

- Keynote of the 5ème Journée suisse du droit de la protection des données, L'utilisation de moyens techniques en vue d'une amélioration de la protection des données, Bern, June 14, 2012.
- Talk at OSEC event on South Korea ICT Industry. Transfert de technologie: expérience réussie d'une innovation en Corée du Sud, Lausanne, May 2, 2012
- Panelist at the Copyright and Technology London 2012 Conference on the Policing Piracy panel, London, June 19, 2012.
- Panelist at the Digital Trust 2012 PWC event on protecting your organization against evolving threats, Geneva, March 13, 2012.
- Invited talk, Des Réseaux Sociaux au Réseau Social, First Rezonance on Social Networks, Lausanne, April 26, 2012.
- Presentation of ThinkData.ch awareness service at Korean National Information Society Agency (NIA), Seoul, South Korea, Nov 5, 2012.
- Guest lecture on Digital Responsibility in Management Information Systems class at Korea University Business School, Seoul, South Korea, Nov. 6, 2012.

Nadia Magnenat-Thalmann:

- 11th ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry VRCAI 2012, tutorial given in "Social Robots and Virtual Humans in 3D TelePresence", Nanyang Executive Centre, Singapore, December 2-4, 2012 http://conference.ntu.edu.sg/vrcai2012/Pages/Tutorials.aspx
- Invited talk at International Conference on Wireless Algorithms, Systems, and Applications WASA2012, "Modelling Multiscale Human: A Marie Curie European Project", Singapore, November 27, 2012
- Keynote speech at iKNOW: Advancement in Innovation and Technology, "Virtual Humans & Social Robots", Manila, Philippines, November 24, 2012 (http://stepupinternationalinc.com/2012/11/18/iknow-advancement-in-innovation-and-technology/)
- Invited talk at Computational Visual Media Conference, Tsinghua University, "Visualization of 3D Garments : Problems and Solutions", Beijing, China, November 8-10, 2012 http://cg.cs.tsinghua.edu.cn/cvm2012/?page_id=503
- Computational Visual Media Conference, tutorial given in "Modelling Awareness for Social Robots and Virtual Humans", Tsinghua University, Beijing, China, November 8-10, 2012
- Invited talk at Workshop on 3D Virtual Patients, Nanyang Technological University, "The 3D Patient: A Study of the Lower Leg", Singapore, November 5, 2012 http://imi.ntu.edu.sg/IMISeminars/Documents/Workshop/3D_Virtual_Patients.pdf
- Keynote speech at International Conference on Cultural Heritage, EUROMED2012, "Cultural Heritage in Fashion: Preserving Ancient Dresses through 3D Simulation", Lemesos, Cyprus, 29 October – 3 November 2012 (http://www.euromed2012.eu/index.php/programme/)
- Invited talk at Graduate School of Computer Technology, KAIST, "The 3D Virtual Patient", Korea, November 1, 2012
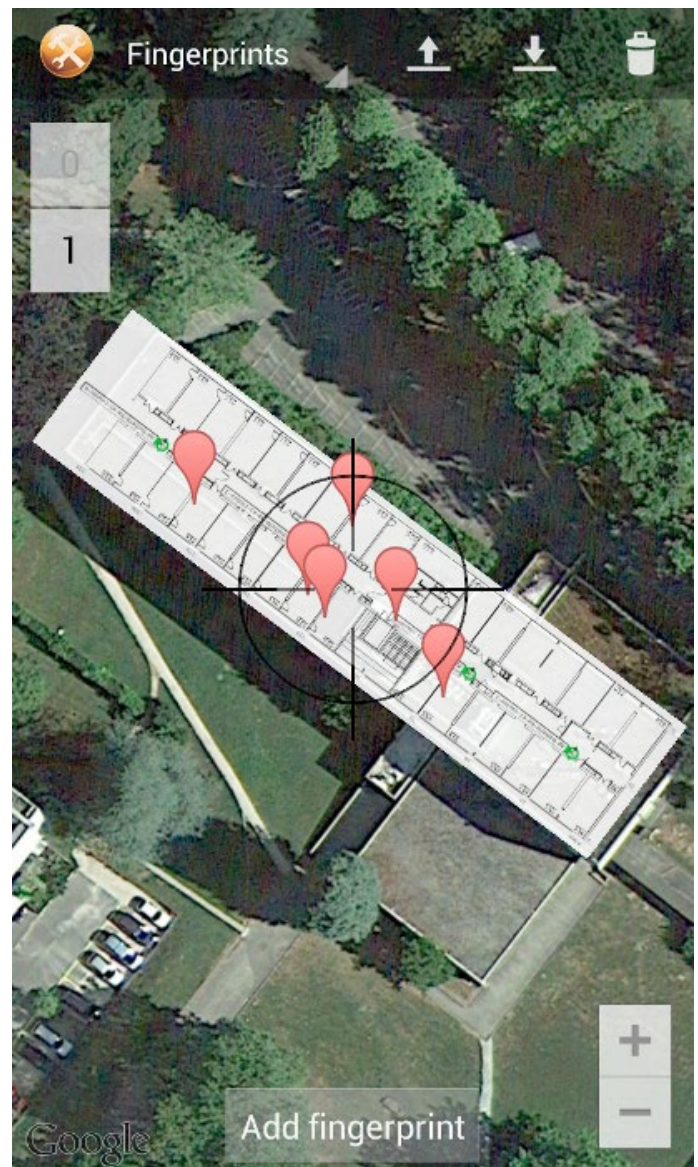

Figure 13: Indoor geopositionning

- Invited talk at Festival Della Scienza Bellezza, "Digital Atlases of The Human Body", Genova, Italy, October 26, 2012 http://translate.google.com.sg/translate?hl=en&sl=it&tl=en&u=http%3A%2F%2Fwww.festivalscienza.it%2Fsite%2Fhome.html
- Invited talk at Marie Curie Actions shaping the European Research and Innovation Landscape, "Should I Stay or Should I Go?", http://ec.europa.eu/research/conferences/2012/marie-curie-brussels/index.cfm?pg=speaker&name=magnenat-thalmann
- Keynote speech at Graphics Interface 2012, "The Physiological Virtual Human", Toronto, Ontario, Canada, May 28-30, 2012 http://web.cs.dal.ca/~sbrooks/gi2012/program.html
- Invited speaker at CoE Seminar Series on New Media, Nanyang Technological University, "Defining Personality, Mood and Emotions for Social Robots", Singapore, May 22, 2012.
- Keynote speaker at ATIP/A*CRC Workshop on Accelerator Technologies for High Performance Computing: Does Asia Lead the Way?, "Virtual Try On: An Application that Needs GPU Acceleration", Singapore, May 7-10, 2012. http://www.acrc.astar.edu.sg/astaratipreg_2012/speakers.html

- Invited speaker at Workshop on Interactive Digital Media "The Physiological Human: A Challenge for the 21st Century", Singapore, March 12-13, 2012. http://www3.ntu.edu.sg/imi/3d-idm/speakers.html
- Keynote speaker at the International Conference on Human Body Motion Analysis with Motion Capture, "Videocapturing for medical applications", Japan, January 21, 2012. (http://www.img.is.ritsumei.ac.jp/web_data/meetings/mocap/20120121/MoCapHP.pdf)

Refereeing

Giovanna Di Marzo Serugendo:
- Computing (2012)
- Mobile Networks and Applications, Springer (2012)

Jose Luis Fernandez-Marquez:
- Computer Communications, Elsevire (2012)
- IEEE Transactions on Systems, Man, and Cybernetics – Part C, IEEE (2012)

Katarzyna Wac:
- Behavior Research Methods (Springer)
- Journal of Medical Internet Research
- IEEE Pervasive Computing
- IEEE Communications Magazine
- International Journal of Medical Informatics (Elsevier)
- Institution of Engineering and Technology (IET) Communications Journal (tele-medicine and tele-health)
- IEEE Transactions on Information Technology in Biomedicine

Jolita Ralyté:
- IJISMD – International Journal of Information Systems Modeling and Design, IGI Global (2012)
- IJISSS – International Journal of Information Systems in the Service Sector, IGI Global (2012)
- INFSOF – Information and Software Technology, Elsevier (2012)
- RE - Requirements Engineering, Springer (2012)
- Journal of Software: Evolution and Process, Wiley (2012)

Verena Kantere:
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- Data & Knowledge Engineering - Journal - Elsevier (DKE)
- Concurrency and Computation: Practice and Experience

Abdelaziz Khadraoui:
- International Journal on Information Systems and Technologies (IJIST).

Nadia Magnenat-Thalmann:
- Jury of Ph.D. thesis for New Zealand, France, Sweden, Switzerland and Germany.
- European Union, FP7 Projects, Brussels.
- Research Grants Council of Singapore.
- Natural Sciences and Engineering Research Council of Canada.
- National Science Foundation USA.
- Swiss National Research Foundation.
- Austrian Research Foundation.
- ACM SIGGRAPH, IEEE Transactions on Visualization and Computer Graphics, IEEE Computer Graphics and Applications, IEEE Computer, Communications of ACM, The Visual Computer, Computer Graphics Forum, Computer Vision, Graphics and Image Processing, Presence, International Journal of Human-Computer Studies, Computers and Graphics, cyberworlds conference, ICAART (International Conference on Agents and Artificial Intelligence), Enactive conference, Multimedia Modelling conference, International Conference on Entertainment Computing (ICEC), International Conference on Signal Processing, Image Processing and Pattern Recognition; GRAPP ("International Conference on Computer Graphics Theory and Applications), Conference on Affective Computing and Intelligent Interaction (ACII 2010), EG Workshop on 3D Object Retrieval, IEEE Virtual Reality Conference 2010, Computer Graphics International, CASA conference, SIGGRAPH/EUROGRAPHICS Symposium on Computer Animation, etc

Editorial responsabilities

Giovanna Di Marzo Serugendo:
- Editorial Board Member (2011-2012): ACM Transactions on Autonomous Adaptive Systems (TAAS)
- Editorial Board Member: Multiagent and Grid Systems - An International Journal. ISSN: 1574-1702.
- Editorial Board Member: International Journal of Intelligent Information and Database Systems. Inder-Science.

Figure 14: Collaborative telemedicine system - MIRALab

Laurent Moccozet:
- Editorial board member (2009-) revue Technique et Science Informatiques publié par les éditions Hermès-Lavoisier
- Editorial board member (2011-) International Scholarly Research Network Computer Graphics
- Editorial board member of the ISRN Computer Graphics Journal
- Editorial board member of the TSI Journal (Revue des Sciences et Technologies de l'Information)

Jean-Henry Morin:
- Editorial Board Member (2008-) of the Journal of Service Science Research (JoSS), ISSN: 2093-0720, Springer, Journal no. 12927.
- Editorial Board Member (2009-) of the International Journal On Advances in Systems and Measurements, ISSN: 1942-261x, IARIA

Jolita Ralyté:
- Editorial Board Member (2010-): International Journal of Information Systems Modeling and Design, IGI Global (IJISMD)
- Editorial Board Member (2010-): International Journal of Information Systems in the Service Sector, IGI Global (IJISSS)
- Guest Editor (2012): Special Issue on New Trends in Situational Method Engineering (Eds. Isabelle Mirbel, Jolita Ralyté and Rébecca Deneckère). International Journal of Information Systems Modeling and Design, 3(4), IGI Global
- Guest Editor (2012): Special Issue on Service Quality (Eds. Natalia Kryvinska, Jolita Ralyté and Jean-Henry Morin). Journal of Service Science Research, 4(1): 1-6, 2012, Springer

Abdelaziz Khadraoui:
- Associate Editor, International Journal on Information Systems and Technologies (IJIST), 2012.

Nadia Magnenat-Thalmann:
- Since 2007: Associate Editor-in-chief of the "International Journal of Virtual Reality", IPI Press, USA.
- Since 2007: Regional Editor of the Journal "Intelligent Decision Technologies", IOS Press, Netherlands.
- Since 2000: Editor-in-chief of the Journal "The Visual Computer" published by Springer Verlag, Germany.
- Since 1995: Editor, Computational Geometry Journal, North Holland.
- Since August 1994: Member of Editorial Board, Journal of Universal Computer Science, Electronic Journal.
- Since 1993: Member of Editorial Board, Journal of Computer Graphics, Russia.
- Since 1990: Co-founder and Co-editor-in-chief, "Journal of Visualization and Computer Animation", John Wiley and Sons.
- Since 1987: Associate Editor-in-chief, "The Visual Computer", Springer Verlag, Heidelberg.

Working groups / Standard Bodies participation

Giovanna Di Marzo Serugendo:
- ThinkServices, ThinkTank on Services Science and Innovation, Member, Since 2010.
- Since 2011: Member for Comité de Direction, CADMOS

Figure 15: General view of SPiN-X system with its different components

- Since 2011: Member for Programme Doctoral Romand d'Informatique (CUSO)
- Since 2012: Member for Commission de renouvellement HEC, Faculty of Economic and Social Sciences, University of Geneva
- Since 2011: Programme Director for MSc in Management - Option Information Systems and Management
- Since 2011: Programme Director for PhD Programme in Information Systems and Management
- IEEE CIS Task Force on Terminology and Taxonomy – Member
- IEEE ETTC Organic Computing Task Force – Member
- ERCIM SERENE Working Group – Member

Katarzyna Wac:
- ITU European Regional Initiative for mHealth – Associate Expert

Jean-Henry Morin:
- ThinkServices, ThinkTank on Services Science and Innovation, President, Since 2010.
- Chair of the Data, Society and Transparency ThinkGroup within ThinkServices, since 2011.
- Member of the steering committee of the University of Geneva Web portal project, since 2011.
- Member of University of Geneva commission du personnel, since 2012.
- Co-director with Laurent Moccozet of the bachelor program in Information Systems and Services Science, SES Faculty, University of Geneva, since 2011.
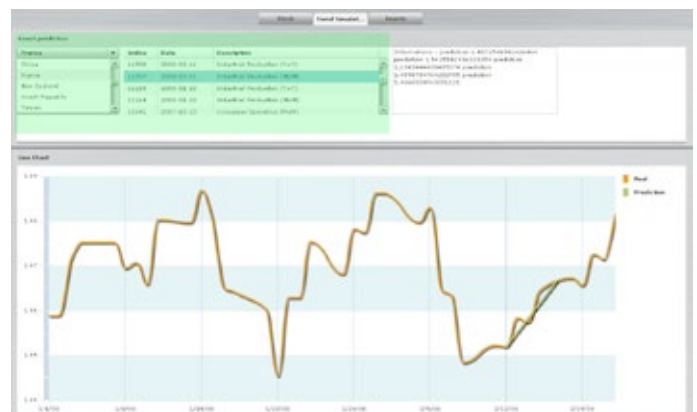

Figure 16: Prediction calculation with the result
(S: Semantic Prediction based on Interconnected News)

Events

Giovanna Di Marzo Serugendo:
- Programme doctoral roman d'informatique - CUSO winter school, Ovronnaz, January 2012

Jean-Henry Morin:
- In the context of the Internet Freedom Fellows 2012 program organized by the US mission in Geneva, Jean-Henry Morin organized on June 22, 2012 a co-creative workshop with the fellows on "imagining a free, open and fair Internet in 2025".

Jose Luis Fernandez-Marquez:
- Big Data Seminar - CUSO Phd Student Seminar - September 2012

Michel Léonard:
- 2nd International Conference on Exploring Service Science, IESS 1.2, Feb. 2012, Geneva, Switzerland

Participation in TV and radio programs

Giovanna Di Marzo Serugendo:
- EU Project AWARE Interview, September 13th, 2012
- http://www.aware-project.eu/category/research-agenda-2/video-opinions/
- RSR, Les Temps Modernes, January 16th 2012, http://www.rsr.ch/#/la-1ere/programmes/les-temps-modernes/?date=16-01-2012

Jean-Marc Seigneur:
- Interview about the organisation of the Third ACM Augmented Human International Conference, France 3 national TV, France.
- Interview about the organisation of the Third ACM Augmented Human International Conference, regional radio Mont-Blanc, France.
- Interview about the organisation of the Third ACM Augmented Human International Conference, BBC national radio, United Kingdom.

Press release

Michel Deriaz:
- February 2012: Bilan, «La géolocalisation, une alternative à l'EMS ?», http://www.michelderiaz.com/press/20120229_Bilan.pdf
- March 2012: Entreprise Romande, «Les promesses et les dangers des outils de géolocalisation», http://www.michelderiaz.com/press/20120316_EntrepriseRomande.pdf
- April 2012: Tribune de Genève, «Des SMS du XXIe siècle se développent à Genève», http://www.michelderiaz.com/press/20120423_TdG.pdf
- June 2012: Géomatique Expert, «FoxyTag, l'avertisseur de radar 100% autogéré», http://www.michelderiaz.com/press/20120601_GeomatiqueExpert.pdf
- October 2012: Tribune de Genève, «La cartographie s'ouvre à l'intérieur des bâtiments», http://www.michelderiaz.com/press/20121013_TdG.pdf

Public exhibitions and performances

Katarzyna Wac:
- QuantifiedSelf - public meetups (seminars) on the theme of quantifying and understanding own behaviours for health (3 meetups organized in 2012, 15 participants)

Jolita Ralyté:
- Situational Method Engineering: Achievements, Trends & Challenges. Research seminar, University of Chile, Santiago, Chile, September 2012.
- Requirements Engineering for Service Adaptation and Evolution. Panellist at the International Workshop REFS 2012, IEEE 36th Computer Software and Applications Conference – COMPSAC, Izmir, Turkey, 16-20 July 2012.

Jean-Henry Morin:
- Workshop on "Imagining the Past: ICT Innovations in 2015 (ITU)" in the Interactive Sessions of the the WSIS FORUM 2012, Geneva, May 15, 2012.
- Workshop for the senior staff members of the Swiss Federal Department of the Environment, Transport, Energy and Communications (DETEC) on the "Value of Social Networks for institutional communication", Yverdon, August 24, 2012.

Honours and scientific awards

Nadia Magnenat-Thalmann:
- Professor Nadia Magnenat-Thalmann received the **prestigious Humboldt Research Award in Germany** in recognition of her outstanding achievements and fundamental discoveries, June 2012, Alexander von Humboldt Foundation, Germany. This award is granted in recognition of a researcher's entire achievements to date to academics whose fundamental discoveries, new theories, or insights have had a significant impact on their own discipline and who are expected to continue producing cutting-edge achievements in the future. Many Nobel Prize Winners have also received this award: http://www.humboldt-foundation.de/pls/web/docs/F13971/nobelpreistraeger.pdf
- The Canadian Human Computer Communications Society **Achievement award**. http://www.cs.ubc.ca/~ksbooth/gi/archive/achvmnt2012-en.html

Verena Kantere:
- Recepient of Boursière d'Excellence 2012, Rectorat, University of Geneva

Other achievements

Jean-Henry Morin:
- In the context of a third year Design Science course lab work of the bachelor program in information systems and service science, Jean-Henry Morin and his students created the CUI Open Innovation Lounge (CUI-OIL) in an open space available on the ground floor of the CUI building. This space is expected to host open design and innovation events, hackathons, as well as provide faculty and students with an open space for work and creativity.

Technology transfer

Laurent Moccozet:

- Worldwide community of resettled refugees, Main partners: UNHCR
- L'image pour entendre, Main partners: Teenergy SA

Jean-Henry Morin:

- Continuation of the academic partnership cooperation with Fasoo.com in South Korea on Exception Management in Enterprise DRM (Provisional Licensing). Deployment of the model within 16 companies, with a total of over 13'000 users.
- Transfer of the ThinkData.ch service innovation to the Swiss Federal Data Protection and Information Commissioner (FDPIC), December 2012.
- Start of cooperation with South Korean National Information Society Agency (NIA) to deploy ThinkData in South Korea in 2013.

Funded research projects
Participation to European projects

VIRGILIUS
AAL project
Partners: Telespazio (Italy), Azienda Ospedaliera di Perugia (Italy), University of Geneva (Switzerland), arx iT SA (Switzerland), RARTEL (Romania), National Philatelic Museum (Romania)
Period: June 2012 - May 2014
Website: http://www.virgilius.eu

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Geosop
CTI project
Partners: EverdreamSoft SA
Period: June 2012 - December 2013
Website: http://www.moonga.com

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SAPERE
Self-Aware Pervasive Service Ecosystems
EU funded project, FET Proactive, FP7- ICT-2009.8.5
Partners: University of Modena e Reggio Emilia (Italy), University of Bolpgna (Italy), University of Geneva (Switzerland), University of Linz (Austria), University of St-Andrews (UK)
Period: October 2010 – September 2013
Website: http://www.sapere-project.eu

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Figure 18: Spatial Computing

Figure 17: Self-Protecting Document Exploiting its Context of Usage

MyGuardian
A Pervasive Guardian for Elderly with Mild Cognitive Impairments
EU project, AAL-2011-4-27
Partners: HI-Iberia Ingenieria y Proyectos SL (SME) and CIETEX (end-user) (both from Spain), University of Geneva (University) and VigiSense (SME) (both from Switzerland), ConnectedCare (SME) and Careyn (end-user) (both from the Netherlands) and CNRS Ageing, Imaging, Modeling lab (end-user) (France)
Period: May 2012 – April 2015
Web site: http://myguardian-project.eu/

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WayFiS
Way Finding Seniors
EU project, AAL programm
Partners : user organisation : CETIEX and Hársfalevél Pension , Research centers : UniGe and BZF, and SMEs : HI-Iberia (coordinator) and arx iT SA
Period: April 2011 – October 2013
Web site: http://www.wayfis.eu/

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Trainutri
TRAINing and NUTRItion senior social platform
EU project, AAL
Partners: Planet Media (Spain), KMOP, CAOS-UC3M, UPM-CTB, University of Geneva (Switzerland), Mobihealth, Arx iT SA (Switzerland), Vigisense
Period: 2009-2012
Website: http://www.trainutri.com

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ULOOP
User-centric Wireless Local Loop
EU FP7 project
Partners: Alcatel Lucent BellLabs (ALBLF), France, University Lusófona/COFAC crl, Portugal, Huawei Technologies Duesseldorf GmBH (HWDU), Germany, Aria S.p.A. (ARIA), Italy, Caixa Mágica Software Lda, Portugal, FON Wireless Ltd, United Kingdom, Technische Universitaet Berlin (TUB), Germany, University of Kent (UniK), United Kingdom, Level7 (LEVEL7), Italy, University of Geneva (UNIGE), Switzerland, University of Urbino (UniUrb), Italy
Period: September 2010 – August 2013
Web site: http://www.uloop.eu

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TEFIS
TEstbed for Future Internet Services
EU FP7 project
Partners: THALES Services SAS, Engineering Ingegneria Informatica S.p.A., Institut National de Recherche en Informatique et Automatique, IT Innovation, Fundação de Apoio à Universidade de São Paulo, THALES Communications, ActiveEon, Lulea University of Technology – Centre for Distance-spanning Technology, Software Quality System S.A, Fraunhofer Institute FOKUS, Poznan Supercomputing and Networking Center, University of Geneva, Universitat Politecnica de Catalunya, Technische Universitaet Braunschweig, Institute of Communication and Computer systems, VELTI, Lumiplan, Megève Tourisme
Period: December 2011 - February 2013
Web site: http://www.tefisproject.eu

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MUSES
Multiplatform Usable EndpointSecurity
EU FP7 project
Partners: S2 Grupo de Innovación en Procesos Organizativos SL, Universidad de Granad, ITEC e.V., University of Hamburg, Université de Genève, CURE Center for Usability Research and Engineering, WIND Telecomunicazioni SpA, TXT e-solutions SpA, Katholieke Universiteit Leuven, Sweden Connectivity AB
Period : October 2012 – September 2015
Web site: http://www.musesproject.eu

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3D Life
«Bringing the Media Internet to Life»
Partners: 7 partners (Queen Mary and Westfield College, University of London – United Kingdom, Dublin City University – Ireland, Institut Telecom – France, Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V. – Germany, MIRALab, University of Geneva - Switzerland, Centre for Research and Technology Hellas – Greece, Korea University – Republic of Korea)
Period : January 2010 – June 2013
Website : http://www.3dlife-noe.eu/

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SOCIONICAL
Complex socio-technical system in ambient intelligence
EU FP7 project
Partners: University of Passau (Coordinator), Beacon Tech Ltd., London School of Economics, ETH Zurich, University of Amsterdam, AGH UST, University of Würzburg, Fraunhofer FIT, SICE, SmartCare Srl, TU München, University of Halle-Wittenberg, CPD, University of Geneva
Period: July 2012 - January 2013
Website: http://socionical.eu/

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EMC2
EU FP7 project
Partners: Queen Mary and Westfield College, University of London (England), Dublin City University (Ireland), Institut Mines-Telecom (France), Fraunhofer-Gesellschaft Zur Foerderung Der Angewandten Forschung E.V (Germany), Université de Genève, Centre for Research and Technology Hellas (Greece)
Period: 2011 - 2014
Web site: http://www.emc-square.org/

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MULTISCALEHUMAN
Multi-scale Biological Modalities for Physiological Human Articulation
EU Project
Partners: MIRALab, University of Geneva - Switzerland, Les Hôpitaux Universitaires de Genève – Switzerland, Universidade do Minho – Portugal, Medizinische Hochschule Hannover – Germany, Consiglio Nazionale Delle Ricerche - Italy, Softeco Sismat Srl – Italy, Gottfried Wilhelm Leibniz Universitaet Hannover – Germany
Period: October 2010 - September 2015
Website: http://multiscalehuman.miralab.ch/

Participation to National projects

PLE
Personal Learning Environment
SWITCH funded project
Partners: EPFL, University of Fribourg, University of Geneva
Period: August 2011 - December 2012, extended to April 2013
Website:
http://www.switch.ch/aaa/projects/detail/UNIGE.9

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Identité académique numérique
SWITCH funded project
Partners: SWITCH, EPFL, University of Fribourg, University of Geneva
Website:
http://www.switch.ch/aaa/projects/detail/UNIGE.11

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CLOVIS

Cloud Computing Improvement through Risk and SLA Management

FNS project 136316

Partners: CRP Henry Tudor, ISS (University of Geneva)

Period: October 2011 – September 2013

Website: http://p3.snf.ch/project-136316

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eGov.STICS

Service Tangibilization Interactive Compliance System

Fonds privé, CTI project, Etat de Genève

Period: January 2012 – December 2012

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Aerial Crowd

«Swiss National Research Foundation Project: Aerial Crowd: Populating Mixed Reality Cities»

Partners: 4 partners (Ecole Polytechnique Féderale de Lausanne, Computer Vision Laboratory (CVLab) – Switzerland, Ecole Polytechnique Féderale de Lausanne, Virtual Reality Laboratory (VRLab) – Switzerland, ETHZ Computer Vision Laboratory – Switzerland, MIRALab, University of Geneva – Switzerland)

Period: February 2011 - January 2013

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FNRS-REAL

«Swiss National Research Foundation Project: Realistic Computer Human Animation using Medical Modelling»

Type: Swiss Research

Partner: 4 partners (Ecole Polytechnique Féderale de Lausanne, Computer Vision Laboratory (CVLab) – Switzerland, Ecole Polytechnique Féderale de Lausanne, Virtual Reality Laboratory (VRLab) – Switzerland, ETHZ Computer Vision Laboratory – Switzerland, MIRALab, University of Geneva – Switzerland)

Period : October 2010 - September 2012

TEACHING

Giovanna Di Marzo Serugendo:
- **Introduction à la pensée informatique**, ISS, Bachelor course, 3 ECTS, 42 hours, 30 students
- **Assessment of Information Systems**, ISS, Master course, 3 ECTS, 42 hours, 55 students
- **Bases de données**, ISS, Bachelor course, 6 ECTS, 21 hours, 25 students
- **Services foundation**, ISS, Master course, 3 ECTS, 42 hours, 6 students
- **Contextualisation et Qualité des Services**, ISS, Bachelor course, 6 ECTS, 84 hours, 20 students
- **Social and Legal Issues in Informatics**, ISS, Master course, 3 ECTS, 42 hours, 55 students
- **Design Science Research**, ISS, Master course, 3 ECTS, 42 hours, 4 students
- **From Self-Organising Mechanisms to Design Patterns (Tutorial)**, Awareness Week, June 2012, Edinburgh (3h)

Laurent Moccozet:
- **Service Innovation Lab**, ISS, Master course, 3 ECTS, 28 hours, 8 students
- **Introduction à la programmation**, ISS, Bachelor course, 6 ECTS, 56 hours, 30 students
- **Services et technologies multimédia**, ISS, Bachelor course, 6 ECTS, 56 hours, 150 students
- **Introduction à la sience des services**, ISS, Bachelor course, 6 ECTS, 56 hours, 300 students
- **Services interfaces**, ISS, Master course, 6 ECTS, 56 hours, 4 students

Dimitri Konstantas:
- **Réseaux de communication**, ISS, Bachelor course, 48 hours, 12 students
- **Mobile Systems and Services**, ISS, Master course, 48 hours, 10 students
- **Design of Multimedia Services**, ISS, Master course, 48 hours, 12 students
- **Technologies for Services**, ISS, Master course, 48 hours, 11 students
- **Veille technologique, InfoSec (program director)**, ISS, Formation continue, 24 hours, 30 students
- **Systèmes d'information et sciences des services**, ISS, Master 2 Gestion d'entreprise / Formation continue, 24 hours, 30 students

Jean-Marc Seigneur:
- **Services Internet**, ISS, Bachelor course, 6 ECTS, 56 hours, 23 students
- **Intégration et Déploiement de Services Informatisés**, ISS, Bachelor course, 6 ECTS, 56 hours, 13 students
- **e-Réputation**, ISS, Formation continue InfoSec, 2 hours, 30 students
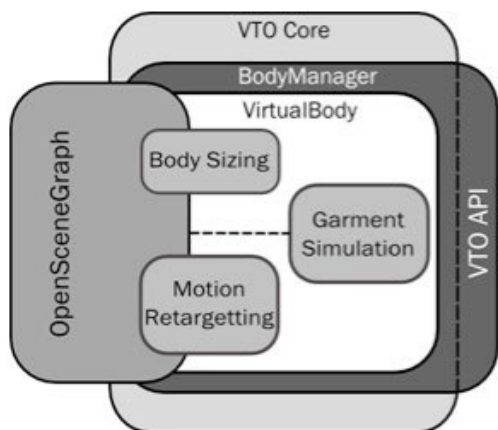

Figure 19: Framework for Adaptive Distributed Simulation and 3D Rendering Services - MIRALab

Jean-Henry Morin:
- **Systèmes d'Information et Applications**, ISS, Bachelor course, 3 ECTS, 28 hours, 153 students
- **Introduction à la Sécurité, Ethique et Règlementation des Services**, ISS, Bachelor course, 3 ECTS, 28 hours, 6 students
- **Design Science**, ISS, Bachelor course, 6 ECTS, 56 hours, 7 students
- **Systèmes d'Information d'Entreprise**, ISS, Bachelor course, 6 ECTS, 56 hours, 7 students
- **Informatique et Systèmes d'Information I, Public Management**, ISS, Master course, 3 ECTS, 28 hours, 21 students
- **Selected Topics, Advanced Seminar on Industrial & Emerging issues**, ISS, Master course, 3 ECTS, 28 hours, 7 students
- **Service Innovation Lab**, ISS (shared with Laurent Moccozet), 3 ECTS, 28 hours, 7 students
- **DRM Technologies**, ISS, Formation continue InfoSec, 2 hours, 30 students
- **Evolution et Perspectives en Technologies de l'Information et de la Communication**, Bachelor en lettres et sciences humaines, pilier sciences de l'information et de la communication, chargé d'enseignement à la Faculté lettres et sciences humaines, Université de Neuchâtel, 5 ECTS, 28 hours, 73 students
- **Design Science & Design Thinking**, CUSO Doctoral Program in Computer Science, in cooperation with Prof. Yves Pigneur, University of Lausanne, 5 days program, 35 hours, 12 students

Jolita Ralyté:
- **Project Management**, ISS, Bachelor course, 3 ECTS, 28 hours, 15 students
- **Requirements Analysis**, ISS, Bachelor course, 3 ECTS, 28 hours, 200 students
- **CAS MATIS GPSI - Gestion de projets des systèmes d'information et des services (Continuous education)**, 10 ECTS, 96h, 6 students
- **CAS MATIS DSI - Direction des systèmes d'information et des services (Continuous education)**, 10 ECTS, 96h, 6 students

Mehdi Snene:
- **Bases d'information**, ISS, Bachelor course, 6 ECTS, 56 hours, 15 students
- **Services Mashup**, ISS, Bachelor course, 6 ECTS, 56 hours, 15 students

Abdelaziz Khadraoui:
- **Service Institutional Strategies**, ISS, Master course, 6 ECTS, 56 hours, 8 students
- **Rétro-ingénierie des services et des systèmes d'information**, Certificat de Formation Continue MATIS, October 2012, University of Geneva (5h)
- **Conformité des services, Certificat de Formation Continue MATIS**, October 2012, University of Geneva (5h)
- **Gouvernance des systèmes d'information d'e-gouvernement (Tutorial)**, February 2012, University of Boumerdes.

Michel Léonard:
- **Models and Design**, ISS, Master course, 56 hours, 7 students
- **Introduction to Service Science**, ISS, Bachelor course, 6 ECTS, 56 hours, 300 students
- **Méthode et Réalisation de service**, ISS, Bachelor course, 6 ECTS, 56 hours, 8 students
- **Principes et modélisation des services**, ISS, Bachelor course, 6 ECTS, 56 hours, 25 students
- **Bases de données**, ISS, Bachelor course, 6 ECTS, 56 hours, 25 students
- **Business Development with Services**, ISS, Master course, 6 ECTS, 56 hours, 8 students

Jose Luis Fernandez-Marquez:
- **Crowd steering in a music festival (Tutorial)**, Case Study, Awareness Week, June 2012, Edinburgh (10h)

Nadia Magnenat-Thalmann:
MIRALab proposes several Internship Students and Master Thesis for motivated students that are finishing their studies and would like to do a project with us. MIRALab's theses are especially focused towards the fields of Computer Animation, Informatics and Multimedia.

Figure 20: ThingVibe, Internet of Things (IoT) social network and application store

LATL

Laboratory for the Analysis and Technology of Language

Amstrad CPC6128 (1985) - © CUI museum

Laboratory for the Analysis and Technology of Language

Domain activities

The LATL (http://www.latl.unige.ch/) develops research, proto-types, and open source software for several facets of natural language processing. The main areas of research are automatic analysis of sentence structure (parsing), and the development of lexicons and dictionaries. Parsing is at the core of several applications: text-to-speech synthesis, terminological extraction, computer-assisted language learning, and machine translation. This goal is pursued through the development of large-scale and robust grammar-based systems.

The systems developed at LATL span several languages: French, English, German, Italian, and other languages are underway (Greek, Spanish, Japanese, Arabic, Czech, Chinese, and Catalan). The LATL group collaborates with the cross-faculty CLCL group in computational linguistics and computational learning (http://clcl.unige.ch). It is also involved in speech processing, specifically, in automatic segmentation, prosody and speaking style modelling.

Team

Director
Eric Wehrli
Full professor

Senior researchers
Luka Nerima
Jean-Philippe Goldman

Assistants (PhD students)
Asheesh Gulati
Sharid Loaiciga
Alexis Kauffmann
Kamel Nehbi
Lorenza Russo
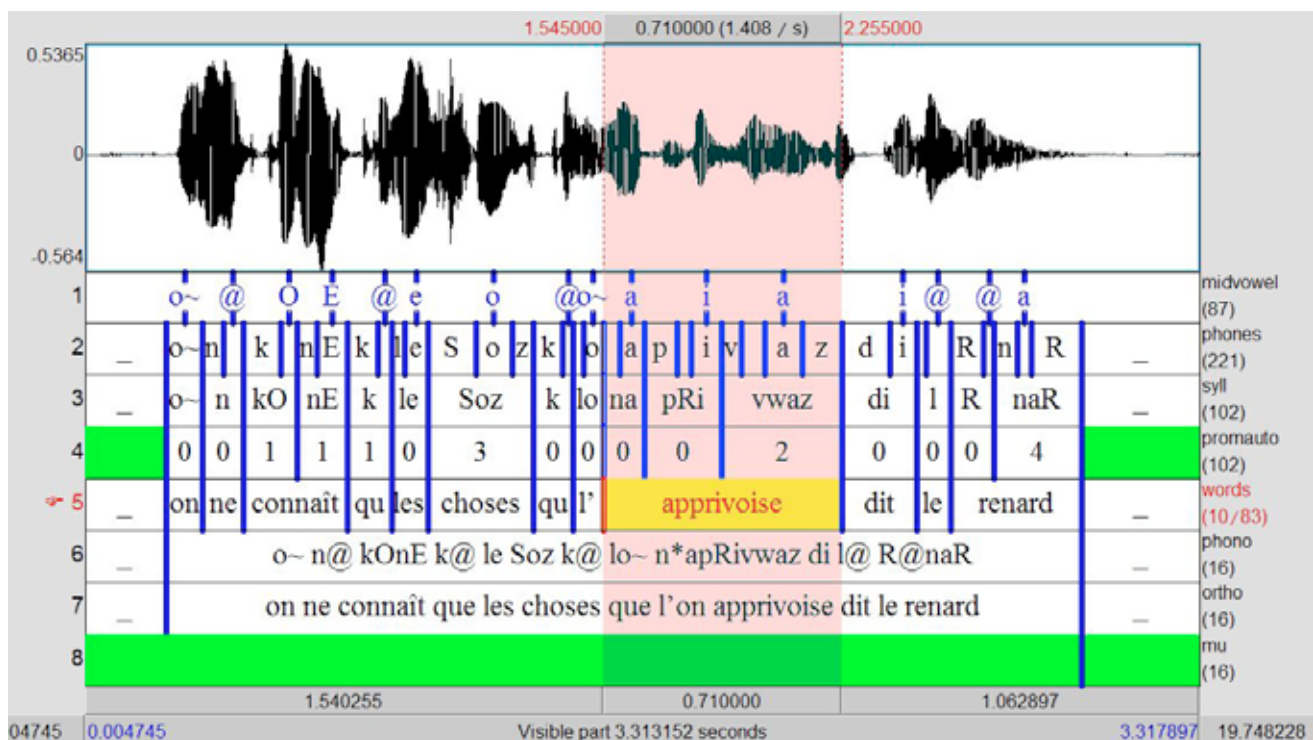Yves Scherrer

Administration
Eva Capitao

Figure 1: Large speech corpora are automatically segmented at several levels (syllables, words, sentences) for many acoustic analyses

PhD Thesis

- Yves Scherrer, «Generating Swiss German sentences from Standard German: a multi-dialectal approach», December 2012

List of publications

Refereed papers in international journals

[1] Jean-Philippe Goldman and Yves Scherrer, «Création automatique de dictionnaires bilingues d'entités nommées grâce à Wikipédia». Nouveaux cahiers de linguistique française (CLF) 30, Université de Genève.

Full refereed papers in Conference Proceedings

[2] Yves Scherrer and Bruno Cartoni. «The Trilingual ALLEGRA Corpus: Presentation and Possible Use for Lexicon Induction». LREC 2012, Istanbul.

[3] Lorenza Russo, Sharid Loáiciga, Asheesh Gulati. «Italian and Spanish Null Subjects. A Case Study Evaluation in an MT Perspective», Proceedings of LREC 2012, Istanbul.

[4] Lorenza Russo, Sharid Loáiciga, Asheesh Gulati. «Improving Machine Translation for Italian and Spanish Null Subjects», Proceedins of the Student Rsearch workshop, EACL 2012, Avignon, France.

[5] K. Nebhi, L. Nerima, and E. Wehrli, «A ReSTful Web Service for Accessing a Multilingual and Multi-format Syntactic Parser», in 4ème édition du colloque Infol@ngues: NTICS, Langues et Humanités : Réalités et Perspectives, Béja, Tunisie, 2012.

[6] Kamel Nebhi, «Ontology-Based Information Extraction for French Newspaper Articles», in KI 2012 35th German Conference on Artificial Intelligence, Saarbrücken, Germany, 2012.

[7] J.-P. Goldman, M. Avanzi, A. Auchlin, A.-C. Simon. «A Continuous Prominence Score Based on Acoustic Features». In INTERSPEECH 2012, 13th Annual Conference of the International Speech Communication Association.

[8] S. Schwab, M. Avanzi, J.-P. Goldman, P. Montchaud, I. Racine. «An Acoustic Study of Penultimate Accentuation in Three Varieties of French». In Tongji University Press (Ed.)Proceedings of the 6th International Conference on Speech Prosody 2012 (p. 266-269).

[9] J.-P. Goldman. «ProsoDyn: a graphical representation of macroprosody for phonostylistic ambiance change detection». In Tongji University Press (Ed.) Proceedings of the 6th International Conference on Speech Prosody 2012 (p. 75-78).

[10] S. Audrit, T. Prsir, A. Auchlin, J.-P. Goldman. «Sport in the media: a contrasted study of three sport live media reports with semi-automatic tools». In Tongji University Press (Ed.) Proceedings of the 6th International Conference on Speech Prosody 2012 (p. 127-130).

Full refereed papers in Workshops Proceedings

[11] Yves Scherrer. «Recovering dialect geography from an unaligned comparable corpus». EACL 2012 Workshop on Visualization of Language Patters and Uncovering Language History from Multilingual Resources (LINGVIS & UNCLH), Avignon.

[12] Kamel Nebhi. «Ontology-Based Information Extraction from Twitter», in Proceedings of the COLING 2012 IEEASM Workshop , Mumbai, India, 2012.

Books and book chapters

[13] Alice Bardiaux, Anne-Catherine Simon, Jean-Philippe Goldman. «La prosodie de quelques variétés de français parlées en Belgique», in «La variation prosodique régionale en français» , Anne-Catherine Simon (eds),pp 65-88, de Boeck, 2012

[14] Mathieu Avanzi, Sandra Schwab, Pauline Dubosson, Jean-Philippe Goldman. «La prosodie de quelques variétés de français parlées en Suisse romande», in «La variation prosodique régionale en français» , Anne-Catherine Simon (eds),pp 89-118, de Boeck»», 2012

International and national advisory committees

- Eric Wehrli, External member of hiring committee, professor of computer science, Grenoble Stendhal University, March 2012.

International and national Research Programs committees

- Yves Scherrer, Area Chair: KONVENS 2012 (11th Conference on Natural Language Processing), Vienna.

PhD Thesis committees

- Eric Wehrli, committee member, Habilitation à Diriger de Recherches Matthieu Lafourcade, Université de Montpelier, January 2012

Member of conference program committees

- Luka Nerima, Program Committee member of TALN 2012 - 19e Conférence sur le Traitement Automatique des Langues Naturelles, Grenoble, France, June 2012

Invited talks

Yves Scherrer

- Einführung in die Dialektometrie. Informal Research Group/Rencontre jeunes chercheurs, Fribourg (Suisse).
- Yves Scherrer, Adrian Leemann, Marie-José Kolly and Iwar Werlen: Dialäkt Äpp - A smartphone application for Swiss German dialects with great scientific potential. 7th SIDG Congress - Dialect 2.0, Vienna.
- Machine translation into multiple dialects - The example of Swiss German. 7th SIDG Congress - Dialect 2.0, Vienna.
- « Annotation automatique de documents pour les besoins du Web Sémantique : une approche linguistique » Journée AFIA-ATALA, Inalco, Paris, Mars 2012.

Eric Wehrli

- DFKI, Université de la Sarre (janv. 2012) «On-line and off-line Terminological Aid for non-native Readers»
- Google, Zurich, janvier 2012 «NLP Research in Geneva»
- Université de Melbourne, mai 2012 «The Relevance of Linguistics for NLP: The Case of Collocations»
- UNL workshop, Mumbai, décembre 2012 «Words and Lexical Units»

Jean-Philippe Goldman
- Praat tools for macro-prosody analysis ‚Prosody Workshop at University of Zurich, April 27th, 2012
- Analyse outillée de variables prosodiques et des variations macro-prosodiques - séminaire de recherche en linguistique de l'Université de Neuchâtel, March 28th, 2012
- Analyse outillée de variables macro-prosodiques JEFP Journées d'études de Formation sur la Parole «Perception de la parole et traitement automatique», June 18th, 2012
- Sandra Schwab, Mathieu Avanzi, Jean-Philippe Goldman, Pauline Dubosson, Alice Bardiaux. "Une étude de la variation régionale de la vitesse d'articulation en français" Journées PFC (Phonologie du Français Contemporain), Paris , December 2012
- Alice Bardiaux, Anne-Catherine Simon, Jean-Philippe Goldman. "Variation intonative de quelques variétés de français parlé en Belgique" Journées PFC (Phonologie du Français Contemporain), Paris, December 2012
- J.-Ph. Goldman. Praat tools for automatic macro-prosodic analysis of large speech corpora for speaking style modeling, 6es Journées de linguistique suisse, organisées par la Société Suisse de linguistique, 9-10.09.2012, Lugano
- Jean-Philippe Goldman, Maíra Avelar Miranda, Cirineu Cecote Stein, Antoine Auchlin, EASYALIGN FOR BRAZILIAN PORTUGUESE: a (semi) automatic segmentation tool under Praat, Conférence GSCP organisée par le Gruppo di Studi sulla Comunicazione Parlata, de la Società di Linguistica Italiana, Feb 29, Mar 3, 2012
- Antoine Auchlin, Jean-Philippe Goldman, Anne Catherine Simon «Philippe Martin, tel qu'en lui-même enfin la prosodie le révèle» Colloque en l'honneur de Philippe Martin «Approches prosodiques : Du signal à la modélisation linguistique» Paris, Chicago Center, 28-29 June 2012

Funded research projects
Participation to National projects

SINERGIA SIWIS: Spoken Interaction with Interpretation in Switzerland
Swiss NSF project
Principal Investigator: Ph. Garner and H. Bourlard (IDIAP)
Partners: B. Pfister (ETHZ), E. Wehrli (UNIGE), J. Yamagishi and R. Clark (Univ. of Edinburgh)
Period: December 2012 - December 2015
Website: http://www.idiap.ch/project/siwis/

Technology transfer
LATL.ch is a technology start-up specialized in the development of linguistic software components. Closely associated with LATL laboratory, LATL.ch develops and commercializes products based on fundamental research conducted in the university lab. Two companies involved in Speech synthesis use its phonetiser: Acapela Group, a European group, and SVOX, a start-up specialized in embedded text-to-speech located in Zürich.

Others
- Luka Nerima, Invited participant at the World Knowledge Dialogue 2012 «Medicine, Literature and the Web», Interdisciplinary forum around medicine, literature and the digital humanities, Villars-sur-Ollon, October, 2012.
- Luka Nerima, BarCamp Ciel on Educational Technologies, presentation «Boosting teaching with Wikis», University of Geneva, December 2012.
- Luka Nerima, COINF project, CHF 10'000.- funding, (Co-Applicants: Gilles Falquet, Claire Forel and Jacques Moeschler), «Semantic hyperbook prototype of primary sources of lectures by Ferdinand de Saussure», September - December, 2012.
- Luka Nerima - (with Massimo Brero and Gilles Falquet) «Système de visualisation et d'annotation des documents numérisés du Fonds Saussure» in Seminario Internationale «Per un'edizione digitale dei manoscritti di Ferdinand de Saussure», Istituto di linguistica computazione CNR-Pisa, Firenze ,21-22 september 2012.

Teaching
- **Databases**, Computer Science for the Humanities, Bachelor, 12 ECTS, 112 hours, 12 students
- **Informatics II - Data Structures and Object Oriented Programming**, Computer Science for the Humanities, Bachelor, 4 ECTS, 56 hours, 8 students
- **Informatics II - Java seminar**, Computer Science for the Humanities, Bachelor, 2 ECTS, 28 hours, 8 students
- **Informatics II - Object Oriented Project**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 8 students
- **Information and Communication Technology**, Computer Science for the Humanities, Bachelor, 12 ECTS, 112 hours, 26 students
- **Empirical Methods and Scripting Languages (MELS)**, Computer Science for the Humanities - Bachelor, Computer Science - Master, 6 ECTS, 56 hours, 15 students

SMV

Software Modeling and Verification

Macintosh Portable (1989) - © CUI museum

Software Modeling and Verification

Domain activities

Developing complex and reliable software systems requires rigorous methods for modelling, designing and verifying them. The SMV lab is involved in designing dedicated formalisms that are semantically well described in order to make analysis of system properties possible, to automatically produce code and to select pertinent test cases. A coherent set of tools has been developed in order to apply our methods to software-intensive systems.

We are currently studying :
1. development of techniques for distributed object-oriented and reconfigurable system modelling
2. test selection techniques and model checking based on decision diagrams
3. software prototyping and GUI generation
4. model engineering (MDA,UML, model transformation)

Team

Director
Didier Buchs
Associate professor

Senior researchers
Dr. Alban Linard
Dr. Steve Hostettler
Dr. Matteo Risoldi

PhD students
Edmundo Lopez
Alexis Marechal

Administration
Anne-Isabelle Giuntini

SMV team in 2010: Alban Linard, Steve Hostettler, Edmundo Lopez, Matteo Risoldi, Didier Buchs, Alexis Marechal, Tita (team's mascotte, Petri net expert)

LIST OF PUBLICATIONS
Refereed papers in international journals

[1] Nicolas Sedlmajer, Didier Buchs, Steve Hostettler, Alban Linard, Edmundo López Bóbeda, Alexis Marechal: «A Domain Specific Language Approach for Genetic Regulatory Mechanisms Analysis». T. Petri Nets and Other Models of Concurrency 6: 123-145 (2012)

[2] Fabrice Kordon, Alban Linard, Didier Buchs, Maximilien Colange, Sami Evangelista, Kai Lampka, Niels Lohmann, Emmanuel Paviot-Adet, Yann Thierry-Mieg, Harro Wimmel: «Report on the Model Checking Contest at Petri Nets 2011». T. Petri Nets and Other Models of Concurrency 6: 169-196 (2012)

[3] Fabrice Kordon, Alban Linard, Didier Buchs, Maximilien Colange, Sami Evangelista, Lukasz Fronc, Lom-Messan Hillah, N. Lohmann, Emmanuel Paviot-Adet, Franck Pommereau, C. Rohr, Yann Thierry-Mieg, Harro Wimmel, Karsten Wolf: «Raw Report on the Model Checking Contest at Petri Nets 2012». CoRR abs/1209.2382 (2012)

Technical reports

[4] E. López Bóbeda, S. Hostettler, A. Marechal, and D. Buchs (2012). «SigmaDD built-in formalization», University of Geneva, Technical Report.

[5] A. Marechal, D. Buchs (2012). «Modular extensions of Petri Nets: a generic template metamodel», University of Geneva, TechReport(220), SMV group.

[6] A. Marechal, D. Buchs (2012). «Modular extensions of Petri Nets: a survey», University of Geneva, TechReport(218), SMV group.

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- Comité de standardisation ISO-IEC 15909, contribution sur la modularité des réseaux de Petri: http://www.iso.org/iso/catalogue_detail.htm?csnumber=43538
- Comité de planification du ministère de la recherche (France) « Ingénierie numérique & sécurité » 2011 (INS 2011) de l'ANR http://www.agence-nationale-recherche.fr/programmes-de-recherche/appel-detail/ingenierie-numerique-et-securite-ins-2011/
- Duy-Tung Nguyen, «Vérification symbolique de modèles à l'aide de systèmes de ré-écritures dédiés», University of Orléans, France, 2011

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- General Chair of the model Checking Contest @Petri

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- MPM'12
- PNSE'12
- PNSE'13
- QUATIC 2012
- RSP'2012

FUNDED RESEARCH PROJECTS
Participation to European projects

Movere
Period: 2010 - 2013

Participation to National projects

BRINTA
Fundamental issues in symbolic model checking techniques for Hierarchical high level modes
FNS Project
Period: October 2010 - December 2012

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Comedia
Development of symbolic model checking techniques and tools for high level formalisms
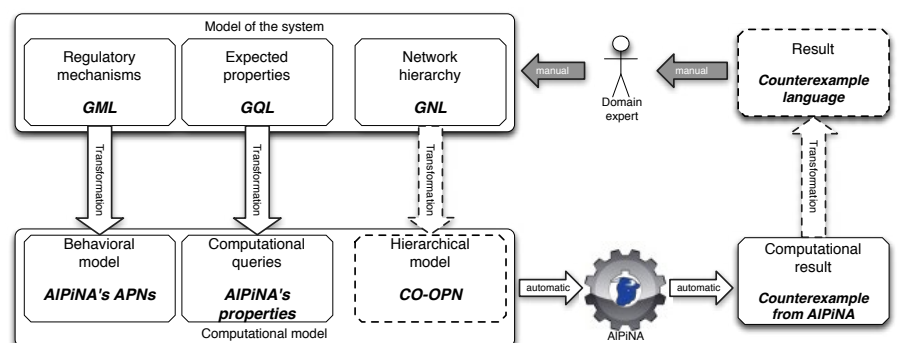Hasler Project
Period: July 2007 – December 2012

OTHERS
Editorial responsabilities

- TOPNOC Editorial Board: http://www.springer.com/computer/lncs?SGWID=0-164-6-417809-0

Special issues

- Various public demonstrations in open days: «Programmez un robot», Nicolas Sedlmajer

Figure 1: Computational process of GReg, a domain specific language for the verification of genetic regulatory mechanisms

Teaching

- **Software Engineering Course**, Computer Science, Bachelor, 4 ECTS, 56 hours, 12 students
- **Formal Tools for Modelling Systems**, Computer Science, Bachelor, 4 ECTS, 56 hours, 20 students
- **Semantics of Programming Languages**, Computer Science, Bachelor, 4 ECTS, 56 hours, 20 students
- **Modeling and Verification**, Computer Science, Bachelor, 4 ECTS, 56 hours, 12 students
- **Advanced Formal Tools** (Optional), Computer Science, Master, 4 ECTS, 56 hours, 9 students
- **Concurrency and Distribution** (Optional), Computer Science, Master, 4 ECTS, 56 hours, 11 students
- **Computer Science Project**, Computer Science, 3rd year Bachelor, 28h course and 56h. lab work, approx. 10 students. In collaboration with Dr. Stéphane Marchand-Maillet
- **Option complementaire en informatique**, course for high-school teachers. (D. Buchs, module informatique théorique)   http://www.oci-romandie.ch/
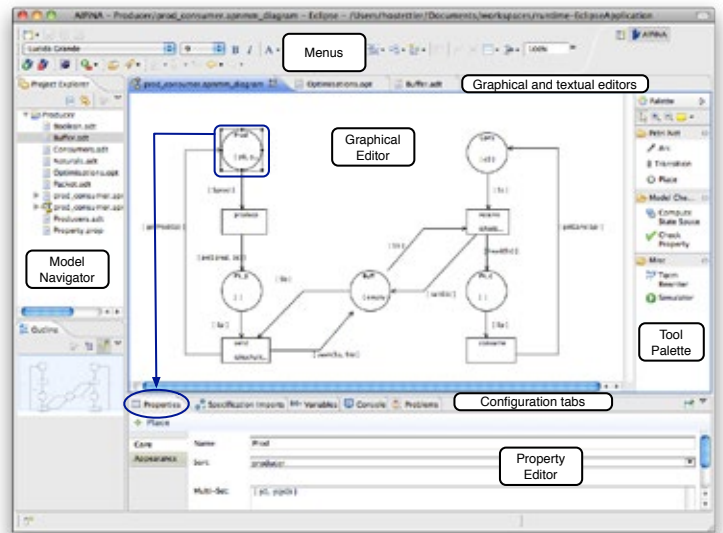

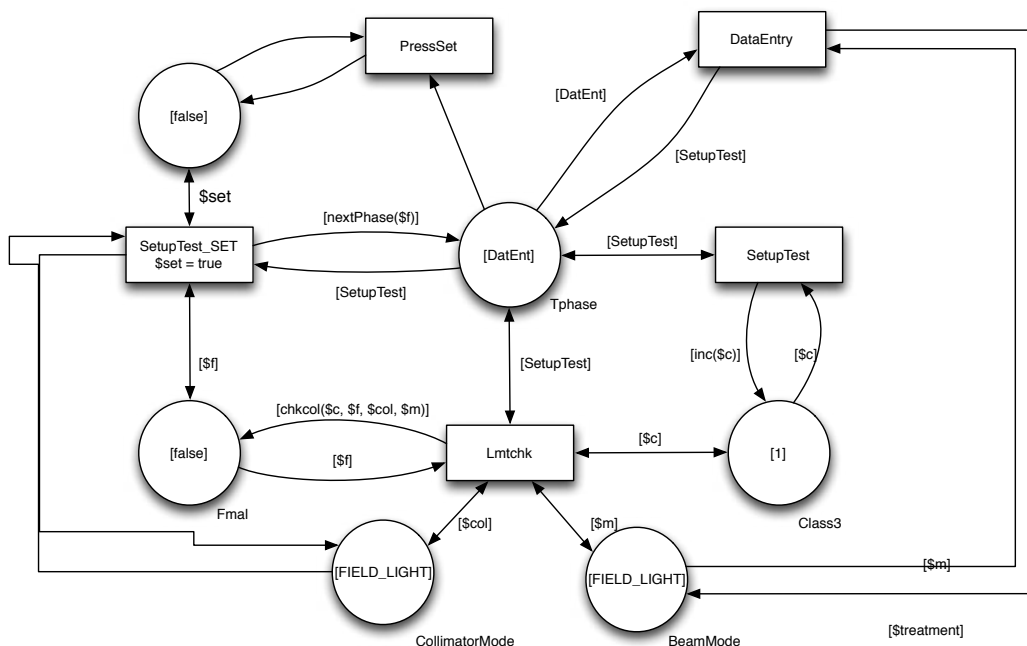Figure 2: Graphical interface of AlPiNA, a model checker for algebraic Petri nets

Figure 3: Algebraic Petri net describing the critical module of the famous case of the Therac-25, a radiation therapy machine that caused at least 3 fatal accidents between 1985 and 1987

spc.unige.ch

SPC

Scientific and Parallel Computing

Scientific and Parallel Computing

Team

Director
Bastien Chopard
Full professor

Domain activities

A main research activity concerns the study of complex systems, in particular the development of new numerical methods to model and simulate phenomena in natural sciences, economics, social systems and bio-medical applications. Cellular automata, Lattice Boltzmann and multi-agent techniques are central tools to address theses questions. Parallel programs and algorithms are developed to implement the simulation on large PC clusters, supercomputers or GPUs to discover, explain or reproduce new phenomena.

Recent activities have focused on developing a new methodology and a new software infrastructure to solve challenging multiscale applications, in particular in biomedical problems such as ear modeling (HP2C project) and thrombosis in cerebral aneurysms (THROMBUS project). In the MAPPER project, we develop MML, a multiscale modeling language that willallow the implementation of distributed multiscale application on the European computing infrastruture. As a demonstrator, we develop a multiscale simulation of the Rhône river, in collaboration with SIG.

Another domain of activity is bioinformatics, in collaboration with Swiss Institute of Bioinformatics. New classification methods and algorithm techniques are developed to analyse various biological problems.

In the European project SOPHOCLES, recently started, we develop a theory of complex systems based on the way information progagates in various dynamical systems and complex networks. The theory is then applied to high frequency financial data and social interactions.

The figure below illustrates the time evolution of the formation of a thrombus in a cerebral aneurysm (THROMBUS project, simulation by O. Malaspinas).

Senior researchers
Dr. Jean-Luc Falcone
Dr. Jonas Latt
Dr. Orestis Malaspinas
Dr. Rafik Ouared
Dr. Andrea Parmigiani

PhD students
Christophe Charpilloz
Ranaivo Razakanirina
Mohamed Ben Belgacem
Daniel Lagrava
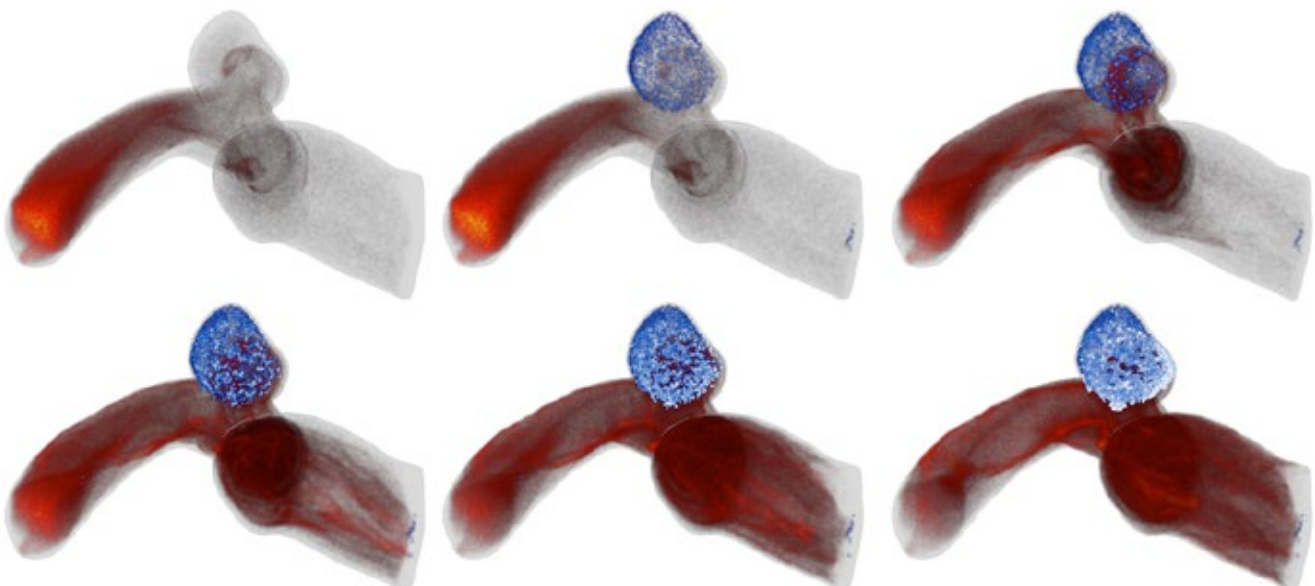Xavier Meyer

Developers / Designers
Nicolas Maisonneuve
Yann Sagon

Visiting Academic Guests
Prof. François Grey

Administration
Anne-Isabelle Giuntini

PhD thesis

- Kae Tsunematsu, «New numerical solutions for the description of volcanic particle dispersal», 23 January 2012
- Daniel Lagrava, «Revisiting grid refinement algorithms for the Lattice Boltzmann method», 18 December 2012

List of publications

Refereed papers in international journals

[1] Hitomi Anzai, Makoto Ohta, Jean-Luc Falcone, Bastien Chopard. «Optimization of flow diverters for cerebral aneurysms». J. of Computational Science, vol. 3 pp 1--7, 2012

[2] Ranaivo Razakanirina and Bastien Chopard. «Labour and Goods Market Dynamics Using an Abstract Microeconomical Model», Acta Physica Polinica B, Proceedings Supplement vol. 5 (2012) page 0131, 2012, DOI:10.5506/APhysPolBSupp.5.131

[3] D. Lagrava, O. Malaspinas, J. Latt, B. Chopard, «Advances in multi-domain lattice Boltzmann grid refinement». J. Comput. Physics 231(14): 4808-4822 (2012)

Full refereed papers in Conference Proceedings

[4] Hitomi Anzai, Jean-Luc Falcone, Bastien Chopard, Makoto Ohta, «The design characteristics extracted from an optimal flow diverter in an ideal side-wall aneurysm using lattice Boltzmann method», 8th European Solid Mechanics Conference in Austria, 2012.

[5] Bastien Chopard and Jonas Latt, «The lattice Boltzmann method and its applications to science and engineering», proceedings of the plenary session 2012 of the Hassan II Academy of Sciences & technology or Morroco.

[6] Mohamed Ben Belgacem, Bastien Chopard, Andrea Parmigiani, «Coupling method for building a network of irrigation canals on a distributed computing environment», in G.C. Sirakoulis and S. Bandini (Eds.): ACRI 2012, LNCS 7495, pp. 309–318, 2012. Springer-Verlag Berlin Heidelberg 2012.

[7] Guillaume Sartoretti, Jean-Luc Falcone, Bastien Chopard and Martin Gander. «Decentralized Method for Traffic Monitoring», in G.C. Sirakoulis and S. Bandini (Eds.): ACRI 2012, LNCS 7495, pp. 464–473, 2012. Springer-Verlag Berlin Heidelberg 2012.

[8] Nicolas Maisonneuve and Bastien Chopard, «Crowdsourcing satellite imagery analysis: study of parallel and iterative models», GIScience USA, 2012

[9] Leonardo Florez-Valencia, Eduardo E. Davila Serrano, Juan G. Riveros Reyes, Olivier Bernard, Jonas Latt, Orestis Malaspinas, Bastien Chopard, Guy Courbebaisse and Maciej Orkisz. «Virtual deployment of pipeline flow diverters in cerebral vessels with aneurysms to understand thrombosis». MICCAI 2012

International and national advisory committees

- CADMOS, President of the steering committee
- CUSO, President of the Doctorate program in computer science
- SwiNG, Representative of UNIGE
- COINF, Representative of the Science Facutlty

Member of conference program committees

- DSFD Discrete Simulation of Fluid Dynamics, Bangalore, India, July 2012
- ACRI Automates Cellulaire pour la Recherche et l'Enseignement, Santorini, Greece, Sept 2012
- Discrete Model of Complex Systems, Arcidosso, Italy, June 2012
- ICCS Internaltional Concerence for Computational Science, Nebraska, USA, 2012

Invited talks

- Speedup meeting, Basel, Feb 6: Modeling and simulations using the Lattice Boltzmann method.
- Académide des sciences du Maroc Feb 16: The lattice Boltzmann method and its applications to science and engineering. Plenary Session on Computational Science.
- Seminaire de l'Observatoire de Genève: Feb 21: The lattice Boltzmann method and its applications to science and engineering.
- Young scientist conference, University of Amsterdam, April 4th:The lattice Boltzmann method and its applications to science and engineering.
- DSFD, Discrete Simulation of Fluid dynamics, Bangalore, India, July 2012: Modeling Thrombosis in cerebral aneurysms.

Funded research projects
Participation to European projects

SOPHOCLES: Self-Organised information PrOcessing, Critica-Lity and Emergence in multilevel Systems
FP7, agreement 317534
Period: December 2012 - November 2015
Partners: University of Amsterdam, University of Geneva, Warsaw University of Technology, Universitat de les Illes Balears, Olsen Ltd., Jozef Stefan Institute
Web Site: http://www.sophocles.eu/

Participation to National projects

Controllability of Simple Economical Models Using Multi-layer Cellular Automata on Graph
FN - 200020-140975
Period: April 2012 - February 2014

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HP2C: Numerical modeling of the ear: towards the building of new hearing devices
Partner: Elisabeth Delevoy, CEA Grenoble
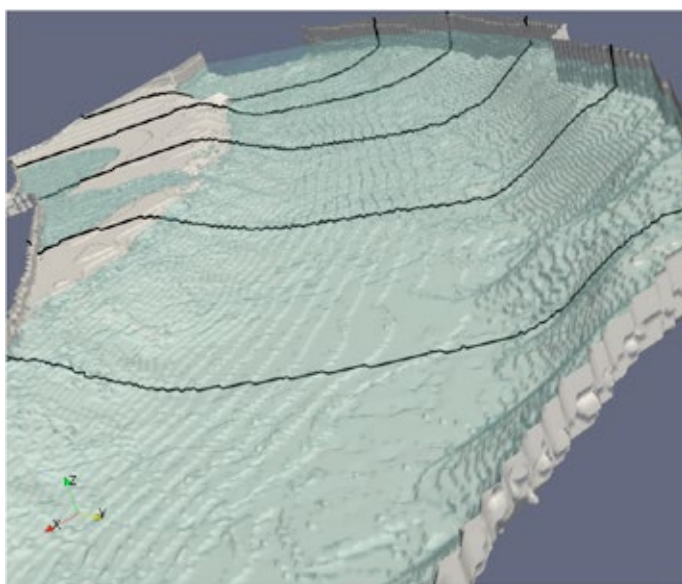Period: November 2010 - June 2013

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Projet Rhône
Partners: SIG (Services Industriels de Genève), University of Geneva
Period: December 2011 - May 2012

———

HP-Innovative Lab for developing an infrastructure for volunteer mapping and damage assessments from sattelite images
Partners: UNOSAT (within the CCC), University of Geneva (Switzerland)
Period: January 2011 - April 2012

Others
Refeereeing
- Referee for many intenational journals

Editorial responsibilities
- Int. J. of Mod Phys, Editorial Board Member
- J. of Computational Sciences (JoCS), Editorial Board Member
- J. of Cellular Automata, Editorial Board Member
- Natural Computing Journal (NACO), Editorial Board Member

Other duties
- Groupe Leader à l'Inst. Suisse de Bioinformatique (SIB)
- Président CIFS, représentant Fac Science à la COINF

Teaching
- **Méthodes Heuristiques d'apprentissage et d'optimisation**, Computer Science, Master, 8 ECTS, 112 hours, 20 students
- **Programmation Bioinformatique**, Computer Science, 7 ECTS, 84 hours, 10 students
- **Parallelisme**, Computer Science, Bachelor, 4 ECTS, 56 hours, 15 students
- **Algorithmique**, Computer Science, Bachelor, 4 ECTS, 56 hours, 15 students
- **Algorithme paralleles/probabilistites**, Computer Science, Master, 4 ECTS, 56 hours, 10 students
- **Modélisation et simulation de phénomènes naturels**, Computer Science, 4 ECTS, 56 hours, 25 students

Supervision of Bachelor thesis
- David Cervini, «Optimisation de stents dans un anévrisme», February 2012
- Xiaoyu Shi, «Simulation et modélisation de l'érosion», July 2012
- Lino Velasquez, «Modèles de propagation d'opinion sur réseaux complexes», November 2012

Supervision of Master thesis
- Guillaume Sartoretti, «Communication method for decentralized estimation of tra-c density», June 2012
- Georgia Ionescu, «A numerical model for the bibliometic h-index (Arditi award, 2012)», July 2012
- Teodora Dan, «Exploring new methods for the N-K landscape problem», December 2012
- Johan Koch, «Simulateur de trafic routier - Modélisation pas automates cellulaires», September 2012

Figure 2: Draining of the river Rhône, with riverbed erosion. Water level is shown in semi-transparent light-blue color. © palabos.org

TCS

Theoretical Computer Science

IBM PC/XT (1983) - © CUI museum

Theoretical Computer Science

Domain activities

The TCS-Sensor Lab (theoretical Computer Science and Sensor Networks Lab) main research activities are in large measure concerned with the representation, transformation and communication properties of information systems such as ad-hoc, sensor networks and embedded systems. A certain body of knowledge emphasizing the interweaving themes of complexity and algorithms represent the research axis of theoretical computer science. Under complexity one includes questions which tasks can or cannot be performed by information systems of different aspects restricted in several resources such as running time, memory amount, energy dissipation or communication transmission. Under algorithm one includes questions regarding how efficient a task can be performed in term of such resources. These questions are often addressed by developing models of relevant parts of information systems such as processors, their interconnections, their rules of operation, the means of communication, etc, and by the study of properties of such models.

Team

Director
José Rolim
Full professor

Senior researchers
Dr. Pierre Leone (MER)
Dr. Aubin Jarry (MA)

Assistants (PhD students)
Anthony Gasperin
Eugenio Noto
Marios Karagiannis
Konstantinos Chantzis
Kasun Wijesiriwardana Samarasinghe
Hakob Aslanyan
Tigran Tonoyan
Pierre Repetto
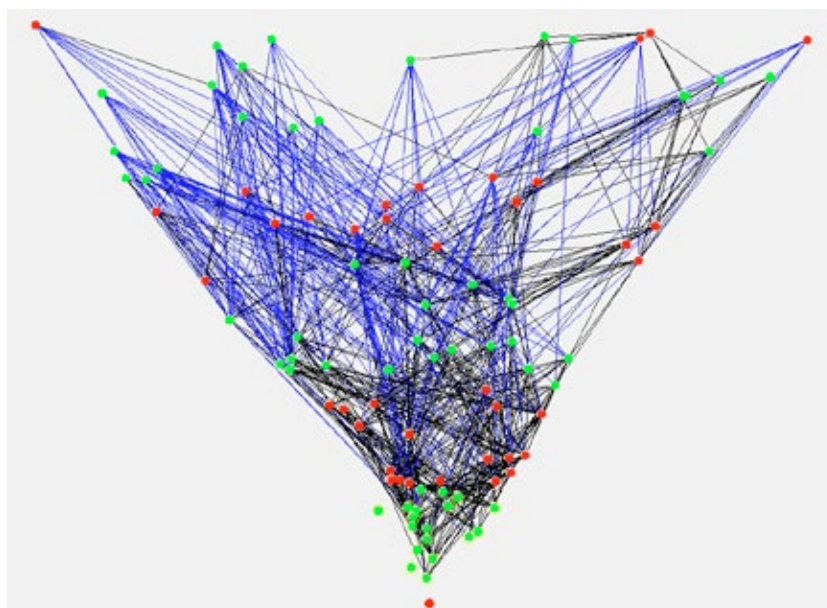Cristina Muñoz
Napoleon-Orestis Evangelatos

Figure 1: Example of a clustered sensor network

List of publications

Refereed papers in international journals

[1] Florian Huc, Aubin Jarry, Pierre Leone, Jose Rolim, «Virtual raw anchor coordinates: A new localization paradigm» in Theoretical Computer Science, In Press, Accepted Manuscript, Available online 28 November 2011.

[2] Aubin Jarry, «Fast reroute paths algorithms» in Telecommunication Systems (19 August 2011), pp. 1-8.

[3] Aubin Jarry, Pierre Leone, Sotiris Nikoletseas, Jose Rolim, «Optimal Data Gathering Paths and Energy Balance Mechanisms in Wireless Networks», Ad Hoc Networks Journal 9(6), PP. 1036-1048 2011.

[4] Hakob Aslanyan, «Interference minimization in physical model of wireless networks». International Journal of Information Theories and Applications, 2010. ITHEA2010: Volume 17, Number 3,pp. 235-248.

Full refereed papers in Conference Proceedings

[5] Marios Karagiannis, Konstantinos Chantzis, Sotiris E. Nikoletseas and Jose Rolim: Passive target tracking: Application with mobile devices using an indoors Future Internet testbed, Barcelona, Spain, June 27,2011, 1st IEEE Workshop on Holistic Building Intelligence through Sensing Systems (HOBSENSE'11)

[6] Konstantinos Chantzis, Christos Koninis, Ioannis Chatzigiannakis, Jose Rolim, «Design and Evaluation of a Lightweight Tracking Algorithm using Wireless Sensor Networks», Valencia, Spain, The Eighth IEEE International Conference on Mobile Ad-hoc and Sensor Systems (IEEE MASS 2011), 17 Oct. 2011

[7] Tigran Tonoyan, «Algorithms for Scheduling with Power Control in Wireless Networks», Rome, Italy, April 18-20, 2011, 1st International ICST Conference on Theory and Practice of Algorithms in (Computer) Systems (TAPAS'11)

[8] Tigran Tonoyan; On the Capacity of Oblivious Powers, Saarbruecken, Germany, September 8-9, 2011, 7th International Symposium on Algorithms for Sensor Systems, Wireless Ad Hoc Networks and Autonomous Mobile Entities (ALGOSENSORS'11)

[9] Sotiris E. Nikoletseas, Dimitra Patroumpa, Christoforos Raptopoulos, José D. P. Rolim: Work-in-progress: Efficient heuristics for low radiation paths in wireless sensor networks. DCOSS 2011: 1-3

[10] Marios Karagiannis, Konstantinos Chantzis, Sotiris E. Nikoletseas, José D. P. Rolim, «Passive target tracking: Application with mobile devices using an indoors WSN» Future Internet testbed. DCOSS 2011: 1-6

[11] José D. P. Rolim, «Energy Balance Mechanisms and Lifetime Optimization of Wireless Networks». IC3 2011: 1

[12] Konstantinos Chantzis, Christos Koninis, Ioannis Chatzigiannakis, José D. P. Rolim, «Design and Evaluation of a Lightweight Tracking Algorithm using WSN». MASS 2011: 640-645

Books and book chapters

[13] Pierre Leone, Sotiris Nikoletseas, Jose Rolim, «Energy-Balanced Data Propagation in Wireless Sensor Networks», book chapter in Theoretical Aspects of Distributed Computing in Sensor Networks, Springer Verlag, 2011.

[14] Konstantinos Chantzis, Ioannis Chatzigiannakis, Giuseppe Persiano, Antonio Ranieri, Book chapter in «Distributed Self-organized Societies of Tiny Artefacts: Design & Implementation» Lulu Publishers, May 2011.

[15] Jose D. P. Rolim, Jun Luo, Sotiris E. Nikoletseas, «Proceedings of the 9th ACM International Workshop on Mobility Management & Wireless Access», MOBIWAC 2011, October 31- November 4, 2011, Miami Beach, FL, USA ACM 2011

[16] Leslie Ann Goldberg, Klaus Jansen, R. Ravi, Jose D. P. Rolim, «Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques» - 14th International Workshop, APPROX 2011, and 15th International Workshop, RANDOM 2011, Princeton, NJ, USA, August 17-19, 2011. Proceedings Springer 2011

Research and technical reports

[17] Florian Huc, Aubin Jarry, Pierre Leone, Jose Rolim, « Distributed Planarization and Local Routing Strategies in Sensor Networks» CoRR abs/1107.5154: (2011)

International and national advisory committees

- SARIT - Swiss Association for Research in Information Technology – José Rolim - president
- ERCIM- European Research Consortium for Informatics and Mathematics.- José Rolim- member of the Board of Directors
- IFIP - The Swiss IFIP Committee (SIC) - TC1 Foundations of Computer Science – delegate: Jose Rolim

Conference organization as chair or co-chair

- DCOSS 2011 IEEE International Conference on Distributed Computing in Sensor Systems, June , 2011 – Barcelona, Spain – chair steering committee: Jose Rolim
- APPROX 2011 – 14th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems – Princeton University- August 2011 - chair steering committee: Jose Rolim
- RANDOM 2011 - 15th International Workshop on Randomization and Computation –Princeton University – August 2011 - chair steering committee: Jose Rolim
- SEA 2011– 10th International Symposium on Experimental Algorithms –May –Creta, Greece, - chair steering committee: Jose Rolim
- ALGOSENSORS 2011 - 7th International Workshop on Algorithms for Sensor Systems, Wireless Ad Hoc Networks and Autonomous Mobile Entities –Max Planck institute - member steering committee: Jose Rolim
- IPDPS 11 - 25th IEEE International Parallel & Distributed Processing Symposium. April 2011 , Anchorage, USA member steering committee: Jose Rolim

Member of conference program committees

- MobiWac 2011, ACM International Symposium on Mobility Management and Wireless Access, Pierre Leone
- IADIS 2011 Informatics Conference, Pierre Leone
- IADIS 2011 Wireless Applications and Computing, Pierre Leone
- AlgoSensors 2011, Aubin Jarry

Invited talks

- Jose D. P. Rolim, «Energy Balance Mechanisms and Lifetime Optimization of Wireless Networks». IC3 2011: 1, New Dheli, India
- Jose D.P. Rolim, «Algorithmes pour l'optimisation de la durée de vie d'un réseau sans fils», 13es Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications, 23 - 26 May, 2011, Cap Estérel, France

Funded research projects
Participation to European projects

FRONTS
Foundations of Adaptive Networked Societies of Tiny Artefacts
UE7 – 215270
Period: February 2008 – January 2011

⸻

WISEBED
Wireless Sensor Network Testbeds
UE7 – 224460
Period: June 2008 – May 2011

⸻

HOBNET
Holistic Platform Design for Smart Buildings of the Future InterNET
UE7 – 257466
Period: June 2010 – May 2013
Website: www.hobnet-project.eu

Participation to National projects

POPWIN, Parallel Object Remote Programming for Heterogeneous Wireless Networks over IPv6
Hasler project SmartWorld call
Partners: UNIGE, HES-Fribourg
Principal Investigator: Pierre Leone

⸻

Virtual Raw Anchor coordinates
FNSR
Principal Investigator: Pierre Leone

Others

- Member of the Editorial Board of the journal Algorithm letters, http://scik.org/index.php/al , Pierre Leone
- Member of the Editorial Board of the journal ISRN Sensor Networks, www.isrn.com/journals/sn/ , Pierre Leone
- Member of the Editorial Board of the journal Algorithms, http://www.mdpi.com/journal/algorithms, Pierre Leone
- Exhibitor at «The European Future Technologies Conference and Exhibition (FET 2011)», FRONTS: Adaptive Network Societies of Tiny Artefacts, Chantzis Konstantinos

Teaching

- **Distributed Algorithms for Wireless Sensor Networks**, Computer Science, Master, 4 ECTS, 80 hours, 15 students
- **Artificial Intelligence**, Computer Science, 8 ECTS, 3rd year Bachelor, 112 hours, 20 students
- **Formal languages**, Computer Science, 3 ECTS, 1st year Bachelor, 42 hours
- **Calculability and complexity**, Computer Science, 4 ECTS, 2nd year Bachelor, 56 hours, 9 students
- **Cryptography and security**, Computer Science, 4 ECTS, Bachelor, 80 hours, 14 students

Administrative Staff

Lara Broi,
Marie-France Culebras,
Anne-Isabelle Giuntini

The administrative staff of CUI is dedicated to serving at its best the community of researchers, teachers and students. Essentially covering four domains :

Administration: Its role is to manage the CUI budget, logistics, communication, etc. It also manages the Web site, the production of documents (activity report, flyers, etc.) as well as the organization and coordination of public and promotional events such as the book and student fair (Salon du Livre et de l'Etudiant)
• **Elie Zagury** is direction assistant;

Secretariat: Works at the departments level of CUI. Hiring and contract renewals of doctoral students as well as all the tasks related to CUI operations are handled by the secretariat. It also provides a perfect connection to major University services such as HR, accounting, etc.
• **Germaine Gusthiot** is administrative assistant;
• **Marie-France Culebras** is secretary;
• **Anne-Isabelle Giuntini** is part-time secretary (50%);
• **Lara Broi** is part-time secretary (50%).

IT: Two systems-engineers manage the basic computer infrastructure of CUI (data storage, backups, servers, network, etc.) using Linux, Mac and Windows. Their help and support is appreciated daily by the whole CUI community. This service works closely with the University IT Division.
• **Nicolas Mayencourt** is system-engineer;
• **Daniel Agulleiro** is system-engineer;

Nicolas Mayencourt, Elie Zagury, Daniel Agulleiro

Library: The CUI Library provides services and tasks as any specialized library of an universitary center. It is part of the library network of the University of Geneva (http://www.unige.ch/biblio/sciences/infos/cui.html) and is proud to offer some specifities in its field. Its current collection contains approximately 10'000 books and 25 specialized paper journals.
• **Marie Bertinat** is librarian;
• **Amélia Bossard** is librarian.

Reception: Visitors are welcomed by the CUI. Reception will guide them to their destination in CUI building or any place in the University.
• **Raoul Sahli** is receptionist.

Raoul Sahli

Amélia Bossard, Marie Bertinat

Centre Universitaire d'Informatique

Financial Report

CUI

Staff	CHF 882'388.-
• Academic	CHF 268'398.-
• Administrative and Technical	CHF 477'033.-
• Employer's social contributions	CHF 136'957.-
Operating costs - Investment	CHF 128'900.-
Operating costs - Others	CHF 211'000.-
Library	CHF 0.-
CUI subtotal	**CHF 1'222'288.-**

Faculty of sciences (Computer Science Department)

Staff	CHF 3'192'313.-
• Academic	CHF 2'484'461.-
• Administrative and Technical	CHF 163'639.-
• Employer's social contributions	CHF 544'213.-
Operating costs - Investment	CHF 105'021.-
Operating costs - Others	CHF 38'531.-
Sciences subtotal	**CHF 3'335'865.-**

Faculty of economic and social sciences (ISS including MIRALab & ICLE)

Staff	CHF 2'122'459.-
• Academic	CHF 1'691'734.-
• Administrative and Technical	CHF 37'740.-
• Employer's social contributions	CHF 392'985.-
Operating costs - Investment	CHF 11'380.-
Operating costs - Others	CHF 0.-
SES subtotal	**CHF 2'133'839.-**

Faculty of humanities (Unit of Computer Science for the Humanities)

Staff - Academic, incl. Charges (estimation)	CHF 881'646.-
Operating costs	CHF 20'000.-
Humanities subtotal	**CHF 901'646.-**

TOTAL BUDGET   **CHF 7'593'638.-**

External funding obtained by the professors — Credit

Faculty of sciences (Computer Science Department)

UE-funded Projects	CHF 1'085'564.-
Swiss-funded Projects	CHF 1'886'594.-
Sciences subtotal	**CHF 2'972'158.-**

Faculty of economic and social sciences (ISS including MIRALab & ICLE)

UE-funded Projects	CHF 1'519'093.-
Swiss-funded Projects	CHF 1'297'617.-
SES subtotal	**CHF 2'816'710.-**

Faculty of humanities (Unit of Computer Science for the Humanities)

UE-funded Projects	CHF 12'614.-
Swiss-funded Projects	CHF 116'463.-
Humanities subtotal	**CHF 129'076.-**

TOTAL CREDIT   **CHF 5'917'943.-**

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