Centre Universitaire d'Informatique

2013

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

As an interdisciplinary center devoted to teaching and research in computer science, the Centre Universitaire d'Informatique (CUI) is home to more than 120 scientists - including 20 at the professor level - supported by a small but efficient administrative staff of 7 people. CUI collaborators belong to three of the nine faculties of the University of Geneva, the Faculty of Sciences, the Faculty of Humanities and the Faculty of Economy and Management.

As over half of the CUI researchers are on «soft money», the importance of external funding and subsidies cannot be overestimated. In this respect, 2013 has been an excellent year, as we obtained nearly 5m, with approximately 2,6m for Swiss-funded projects and a little over 2,1m 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.

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. As a first step, a new MA programme in computer science has started in 2013, bringing together courses from the Department of computer science, the Institute of information science and the unit of computer science for the humanities.

CUI is at a turning point. At the level of both education and research, new projects, new partners, new courses are in the pipeline. I am looking forward to next year's report to present the «new» CUI !
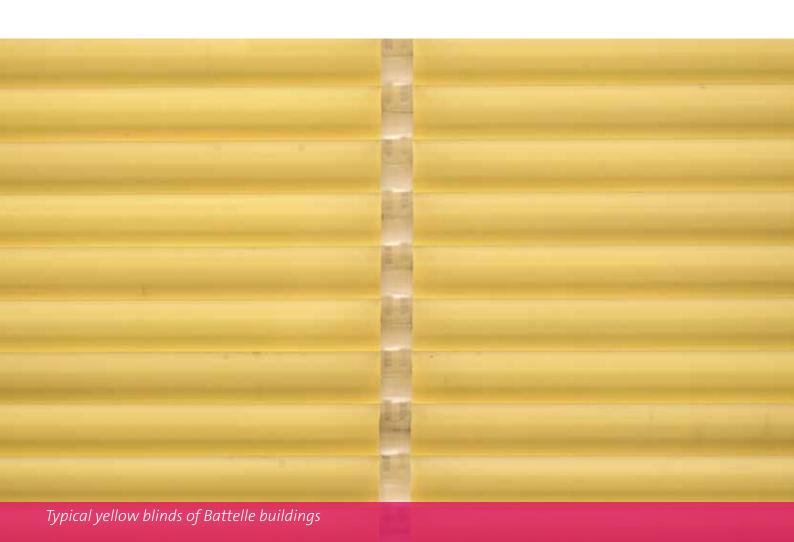
Happy reading

Prof. Eric Wehrli
Director of the CUI
University of Geneva

CLCL

Computational Learning and Computational Linguistics

Typical yellow blinds of Battelle buildings

Computational Learning and Computational Linguistics

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

Team

Directors
Paola Merlo
Associate professor

James Henderson
CC (UNIGE)
Parsem Group,
Xerox Research
Centre Europe

Senior researchers
Dr. Joël Lang
Dr. Sarah Ouwayda
Dr. Majid Yazdani

Assistants (PhD students)
Kristina Gulordava
Tanja Samardzic
Andrea Gesmundo

Administration
Eva Capitao

algorithms to efficiently model more linguistically motivated structures in statistical machine translation.

In the Suiss NSF grant for The Grammatical Basis of Linguistics Frequencies: Probabilistic Models of Language Universals we investigate the probabilistic and statistical properties of a set of well-documented typological distributions of sentential word order and word order in the noun phrase. The fundamental research questions we ask is the following: Given what we know from linguistic theory, why are the frequency distributions of these phenomena as they are?

PhD thesis
- Tanja Samardzic, «Dynamics, causation, duration in the predicate-argument structure of verbs : A computational approach based on parallel corpora», December 2013
- Andrea Gesmundo, «Algorithms and Frameworks for Tree-based Machine Translation and Tree Structure Prediction», December 2013

List of publications
Refereed papers in international journals
[1] James Henderson, Paola Merlo, Ivan Titov and Gabriele Musillo (2013), "Multi-lingual Joint Parsing of Syntactic and Semantic Dependencies with a Latent Variable Model", Computational Linguistics, 39(4).

Full refereed papers in Conference Proceedings
[2] J.Lang and J.Henderson, Graph-Based Seed Set Expansion For Relation Extraction Using Random Walk Hitting Times. NAACL 2013, Atlanta, Georgia, USA, 2013.
[3] Helen Hastie, Marie-Aude Aufaure, Panos Alexopoulos, Heriberto Cuayáhuitl, Nina Dethlefs, Milica Gasic, James Henderson, Oliver Lemon, Xingkun Liu, Peter Mika, Nesrine Ben Mustapha, Verena Rieser, Blaise Thomson, Pirros Tsiakoulis, Yves Vanrompay, Boris Villazon-Terrazas, Steve Young. Demonstration of the Parlance system: a data-driven, incremental, spoken dialogue system for interactive search In proceeding of SIGDIAL 2013.

International and national advisory committees
- Paola Merlo: member of the Executive Board of the Association for Computational Linguistics, as editor of the journal of the association, Computational Linguistics, MIT Press.

Member of conference program committees
- James Henderson: area chair, ACL 2013
- James Henderson: area chair, NAACL 2013
- James Henderson: program committee, NIPS 2013

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/

CLCL team in 2012.

Participation to National projects

The Grammatical Basis of Linguistics Frequencies: Probabilistic Models of Language Universals.
Principal Investigator: Paola Merlo
Period: 2013 - 2015
Granted by the Swiss National Science Foundation

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Including Semantic Representations from Multiple Data Sources
Principal Investigator: James Henderson
Period: October 2011 - September 2013.
Granted by the Swiss National Science Foundation

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Improving the Coherence of Machine Translation Output by Modeling Intersentential Relations.
Swiss NSF Sinergia project
Principal Investigator: Prof. Paola Merlo, James Henderson
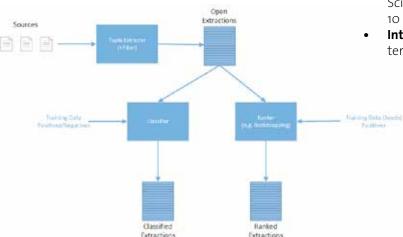Period: March 2010 - February 2013

Figure 1: A rchitecture of information extraction system

OTHERS
Refeereeing
- Sarah Ouwayda: Natural Language and Linguistic Theory (NLLT)
- Sarah Ouwayda: Linguistic Inquiry (LI)
- Sarah Ouwayda: Lingua
- Paola Merlo: ERC grants

Editorial responsibilities
- Paola Merlo: Editor of the journal Computational Linguistics, MIT Press.
- James Henderson- Member of Editorial Board of Computational Linguistics, 2012—2014.

Invited talks
- Paola Merlo: Computational Models of Universal 20 , 19th International Congress of Linguists, Geneva, August 2013
- Paola Merlo: Multilingual Computational Models and their Relevance for Typology, Third Transalpine Typology Meeting, Zurich, May 2013.
- Sarah Ouwayda: Singular with numerals: The role of the DP in collective interpretations. Coettingen University Linguistics Colloquium.

Technology transfer
- James Henderson: CTI Grant

Other
- Kristina Gulordava: SNF grant for participating in LSA Linguistic Institute 2013 (University of Michigan, USA)

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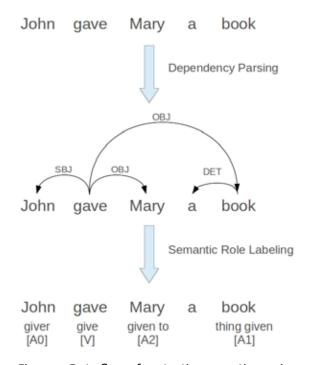

Figure 2: Data flow of syntactic-semantic parsing

CVML

Computer Vision and Multimedia Laboratory

Inside Battelle building A, © Google street view

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 physiological 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

Direction
Thierry Pun
Full professor

Sviatoslav Voloshynovskiy
Associate professor

Stéphane
Marchand-Maillet
Associate professor

Senior researchers
Dr. Alexandros Kalousis (main affiliation: University of Applied Studies, Geneva)
Dr. Guido Bologna (also affiliated with University of Applied Studies, Geneva)
Dr. Guillaume Chanel (also affiliated with the Swiss Center for Affective Science)
Dr. Theodoros Kostoulas (also affiliated with the Swiss Center for Affective Science)
Dr. Taras Holotyak

Assistants (PhD students)
Séverine Cloix
Juan Gomez
Viviana Weiss
Moritz Deephuis
Farzad Farhadzadeh
Sohrab Ferdowsi
Dimche Kostadinov
Hisham Mohamed
April Morton
Ke Sun

Visiting academic guest
Dr. Mohammad Soleymani (Imperial College, London, UK)
Hasmik Osipyan (University of Yerevan, Armenia)

Internship
Morgane Gramont (July-August 2013)
Donato Cereghetti (July-August 2013)
Sarah Lacour (December 2013)

Administration
Lara Broi
Maëlle Rümbeli

List of publications

Refereed papers in international journals

[1] J. D. Gomez, G. Bologna, T. Pun, "Registering color and range images", EURASIP Journal on Image and Video Processing, 2013:41, June 2013. Doi:10.1186/1687-5281-2013-41, http://jivp.eurasipjournals.com/content/2013/1/41.

[2] 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, 2013.

[3] Marchand-Maillet, S., Lambert, P., Merialdo, B., & Benois, J. (2013). Introduction to the special issue on content-based image retrieval. Multimedia Tools and Applications.

Full refereed papers in Conference Proceedings

[4] G. Chanel, G. Molinari, D. Cereghetti, T. Pun and M. Betrancourt, "Assessment of Computer-Supported Collaborative Processes using Interpersonal Physiological and Eye-Movement Coupling", ACII 2013, 5th Int. Conf. Affective Computing and Intelligent Interaction, Geneva, Switzerland, Sept. 2-5, 2013.

[5] G. Bologna, J. D. Gomez, T. Pun, "Vision substitution experiments with See CoLOr", IWINAC2013, 5th. Int. Workshop on the Interplay between Natural and Artificial Computation, Mallorca, Balearic Islands, Spain, June 10-14, 2013.

[6] 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.

[7] G. Molinari, C. Bozelle, D. Cereghetti, G. Chanel, M Bétrancourt, T. Pun, "Feedback émotionnel et collaboration médiatisée par ordinateur : Quand la perception des interactions est liée aux traits émotionels", EIAH 2013, Environnements Informatiques pour l'Apprentissage Humain, 6ème édition, 29-31 mai 2013, Toulouse, France.

[8] F. Farhadzadeh, S. Voloshynovskiy, Active content fingerprinting: Shrinkage and lattice based modulations, 2013 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp. 3073 – 3077, Vancouver, BC, Canada, 26-31 May 2013.

[9] F. Farhadzadeh, F. M. J. Willems, and S. Voloshynovskiy, «Fundamental Limits of Identification: Identification rate, search and memory complexity trade--off,» in Proc. IEEE International Symposium on Information Theory (ISIT), Istanbul, Turkey, 2013.

[10] F. Farhadzadeh, S. Voloshynovskiy, Active content fingerprinting: Shrinkage and lattice based modulations, 2013 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp. 3073 – 3077, Vancouver, BC, Canada, 26-31 May 2013.

[11] M. Diephuis and S. Voloshynovskiy, Physical object identification based on FAMOS microstructure fingerprinting: comparison of templates versus invariant features, 8th International Symposium on Image and Signal Processing and Analysis (ISPA 2013), Trieste, Italy, September 4-6, 2013 (best student paper award).

[12] F. Beekhof, S. Voloshynovskiy, M. Diephuis, F. Farhadzadeh, «Physical object authentication with correlated camera noise», 1st Workshop on Databases in Biometrics, Forensics and Security Applications, Magdeburg, Germany, March 11-15, 2013.

[13] Hofreiter, B., & Marchand-Maillet, S. (2013). Rank Aggregation for QoS-Aware Web Service Selection and Composition. In Proceedings of the IEEE International Conference on Service Oriented Computing & Applications (SOCA 2013), Kauai Island, Hawai.

[14] Roman-Rangel, E., Odobez, J., & Gatica-Perez, D. (2013). Evaluating Shape Descriptors for Detection of Maya Hieroglyphs. In Proceedings of the 5th Mexican Conference on Pattern Recognition (MCPR).

[15] Roman-Rangel, E., & Marchand-Maillet, S. (2013). Bag-of-Visual-Phrases via Local Contexts. In Proceedings of Workshop in Recent Advances in Computer Vision and Pattern Recognition (RACVPR). In the 2nd Asian Conference on Pattern Recognition (ACPR).

[16] Roman-Rangel, E., & Marchand-Maillet, S. (2013). Stopwords Detection in Bag-of-Visual-Words: The Case of Retrieving Maya Hieroglyphs. In Proceedings of the 2nd International Workshop on Multimedia for Cultural Heritage (MM4CH). In the 17th International Conference on Image Analysis and Processing (ICIAP).

[17] Mohamed, H., & Marchand-Maillet, S. (2013). Metric Suffix Array For Large-Scale Similarity Search. In ACM WSDM 2013 Workshop on Large Scale and Distributed Systems for Information Retrieval, Rome, IT.

[18] Mohamed, H., & Marchand-Maillet, S. (2013). Quantized Ranking for Permutation-Based Indexing. In SISAP, Coruna, SP.

[19] Mohamed, H., & Marchand-Maillet, S. (2013). Permutation-Based Pruning for Approximate K-NN Search. In DEXA, Prague, CZ.

[20] Sun, K., Morrison, D., Bruno, E., & Marchand-Maillet, S. (2013). Learning Representative Nodes in Social Networks. In 17th Pacific-Asia Conference on Knowledge Discovery and Data Mining, Gold Coast, AU.

[21] Marchand-Maillet, S., & Hofreiter, B. (2013). Multi-dimensional Information Ordering to Support Decision-making Processes. In IEEE Conference on Business Informatics (IEEE-CBI 2013), Vienna, AT.

[22] Huyen Do, Alexandros Kalousis: Convex formulations of radius-margin based Support Vector Machines. ICML 2013:169-177

Books ans book chapters

[23] 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, 2013.

[24] Mohammed, H., vonWyl, M., Bruno, E., & Marchand-Maillet, S. (2013). Learning-Based Interactive Retrieval in Large-scale Multimedia Collections. Lecture Notes in Computer Science no 7836, Springer.

[25] Marchand-Maillet, S. (2013). Multimedia Information Retrieval in a Social Context. In N. Agosti M.and Ferro, P. Forner & H. Müller & G. Santucci (Eds.), "Information Retrieval meets Information Visualization", Lecture Notes in Computer Science no 7757, Springer.

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 Board 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

PhD Thesis Committees

- T. El Maliki (S. Voloshynovskiy, as a jury member), SES-University of Geneva, (2013), Geneva
- U X. Titi (S. Voloshynovskiy, as a jury member), SES-University of Geneva, (2013), Geneva

Conference organization as chair or co-chair

- T. Pun: ACII 2013 - Affective Computing and Intelligent Interaction (Geneva, Switzerland, co-general chair, general organization), Sept. 2-5, 2013. http://www.acii2013.org
- G. Chanel, aBCI 2013 - Affective Brain Computer Interfaces (Geneva, Switzerland, co-chair), Sept. 2, 2013. http://hmi.ewi.utwente.nl/abci2013/Committee

Member of conference/workshop program committees

- T. Pun: HBU13 - Human Behavior Understanding, ACM Multimedia 2013 (Barcelona, Spain); EUVIP 2013 (steering comm.; Paris, FR); IEEE SSCI 2013 - Workshop CICAC - CI for Creativity and Affective Comp. (Singapore);
- S. Voloshynovskiy: ICIP2013 (area chair in Information Forensics and Security, Melbourne, Australia, September 2013), SPIE2013, Electronic Imaging 2013, Media watermarking, security and forensics (San Francisco, USA, 2013, program committee and chairman of Watermark session); WIFS2013, IEEE Workshop on Information Forensics and Security, (Guangzhou, China, technical committee); ICASSP2013, (Vancouver, Canada, May 26-31, 2013, technical committee); 1st Workshop on Databases in Biometrics, Forensics and Security Applications, Magdeburg, Germany, March, 2013, (program committee); 1st ACM Information Hiding and Multimedia Security Workshop, June, 2013, (Montpellier, France, program committee).
- S. Marchand-Maillet: ACM-SIGIR 2013 (Dublin, Ireland, Area Chair and PC member for the Short Paper track), AAM Workshop at ICME 2013 (San Jose, CA), CORIA 2013 (Neuchatel, Suisse), MICIA 2013 (Mexico), ACM-SAC 2013 (Coimbra, Portugal), ICPRAM 2013 (Barcelona, Spain), SIVA 2013 (Algeria).
- A. Kalousis: ECML-PKDD 2013 (Prague, Czech republic, PC member).

Refereeing

- T. Pun: various conferences. IEEE Trans. Affective Computing. EURASIP Int. J. of Image and Video Processing (Springer), etc.
- 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.
- A. Kalousis, Machine Learning Journal, Data Mining and Knowledge Discovery Journal, Computational Statistics and Data Analysis Journal, British Medical Journal, Neurocomputing.

Editorial Responsabilities

Thierry Pun:
- Editorial board: Advances in Multimedia (Hindawi).
- 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)

Events organised in Geneva

- T. Pun: ACII 2013 - Affective Computing and Intelligent Interaction (Geneva, Switzerland, co-general chair, general organization), Sept. 2-5, 2013. http://www.acii2013.org

Invited talks

- S. Voloshynovskiy: Privacy preserving content identification, Intel Research Labs, Santa Clara, CA, The USA (February 7, 2013)
- S. Marchand-Maillet: From Data to Knowledge: Large-scale Information Management and Analysis in Business Informatics. Keynote talk at the IEEE Conference on Business Informatics, Vienna, Austria, 2013.

Participation in TV and Radio Programs

- T. Pun, P. Lombardo, Interview by Virginie Matter, RTS1 - Swiss Radio 1, Corpus, Oct. 2, 2013. About the Movie experiment affective computing project.

Funded research projects
Participation to European projects

Observer
EU Intereg ProFit
Travel support for participation to MC Meetings and Action-related events
Period: 2011 - 2013

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COST Action IC1002 MUMIA
Multilingual and Multifaceted Interactive Information Access
Prof. S. Marchand-Maillet
Period: 2012 - 2015

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

Figure 1: Similarity-based collection browser

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

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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, renewed until 2017

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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

EU-related grant

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

Industrial grant

Research and development of verification system based on digital fingerprint of microstructure images
CTI project
Partner: U-Nica S.A.
Principal investigator: Prof. S. Voloshynovskiy
Period: January 2013 – June 2014

Swiss-Polish research programme

New perspectives on intelligent multimedia management with applications in medicine and privacy protecting systems
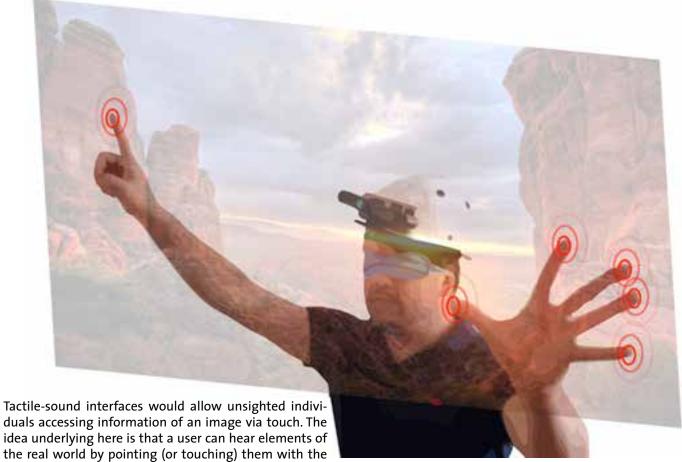SR125/2010
Principal investigator: Prof. S. Voloshynovskiy
Period: September 2011 – September 2014

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.

CVML team, December 3rd, 2013

Tactile-sound interfaces would allow unsighted individuals accessing information of an image via touch. The idea underlying here is that a user can hear elements of the r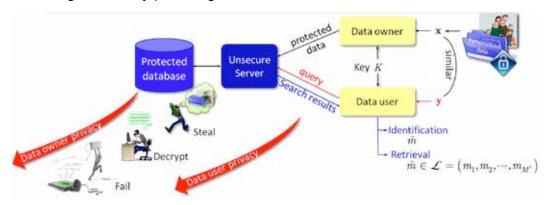eal world by pointing (or touching) them with the fingers, as shown in this figure. Ideally, the user needs only to sweep (explore) the real world with his hands and fingers in order to get visual information.   In an attempt to reproduce this idea, in See ColOr we capture the appearance of the real world into an image that is presented to the user through a tactile tablet. Thus, instead of naturally pointing into the real world, See ColOr's users need to carry a tablet and point (tap) into it in order to explore the sonified visual information. The implementation of this tablet-based interface will be discus in this section, whereas seminal ideas and early implementations of the ideal model (tablet-free) will be exhibited later in the conclusion section of this work.

(left) The sonification in the local module is illustrated. There are 25 points and 25 sources in this module. To effects of visualization however, only 3 points and 8 sources are respectively displayed. Note that when the row of 25 pixels (points) related to the central part of the image is mapped into sound, it is also augmented to cover the whole azimuth-frontal auditory field. (right)An illustration of the sonification in the global module is presented. Now, only the pixel tapped with the fingertip is sonified. Note that the use of spatialized sounds gives the user awareness of the lateral position of the point (from left to right), which is why in this illustration the source matches the position of the point horizontally though not in elevation. In other words, the source is put down on the azimuth plane, preserving only the horizontal position of the finger on the image. It is well known that rendering elevation is much more complicated than lateralization.

Figure 2: Privacy-preserving multimedia identification/retrieval architecture

Teaching

- **Applied cybernetics**, Computer Science, Master, T. Pun and S. Voloshynovskiy, 56h course, 56h practical work, approx. 10 students. 8 ECTS, 10 students.
- **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. 15 students.

- **Information Analysis and Processing**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 25 students.
- **Elements of multiuser information theory and wireless communications**, Computer 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.
- **Data Mining**, Computer Science, Bachelor, 28h course and 28h. lab work, 4 ECTS.

Figure 3: EEGs (electroencephalograms) recordings for affective computing

ISS

Institute of Services Science

Exterior of Battelle building A (Drone view)

Institute of Services Science

Senior Researchers
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Dr. David Hausheer
Dr. Verena Kantere
Dr. Abdelaziz Khadraoui
Dr. Laurent Moccozet
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Adrian Hindle
Giorgia Ionescu
Jérôme Marchanoff
Javier Martin de Valmaseda
Dejan Munjin
Niels Nijdam
Wanda Opprecht
Sabrina Ossey
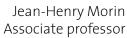Aikaterini Stamou
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Dimitri Konstantas
Full professor

Michel Léonard
Full professor

Nadia Magnenat-Thalmann
Honorary professor

Domain activities

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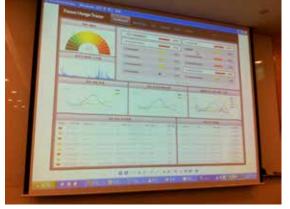
Our international network includes many academic institutions, public administrations, creativity and innovation consultants, think tanks and services providers across Europe, Asia, North America.

Relevant Facts about ISS in 2013:
- LIFTAcademia: workshop within the LIFT Conference (Jan 2013)
- TEDxCERN@CUI: retransmission of TEDxCERN event (May 3rd)
- 2 ISS teams (QoL & TaM) among the winners of the TPG challenge

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, crowd steering, smart environments, ecosystems of services, services for mobile users and dynamically resilient systems, privacy embedded into the design.

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

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 4 European projects in the Ambient Assisted Living (AAL) program. 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 this 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,
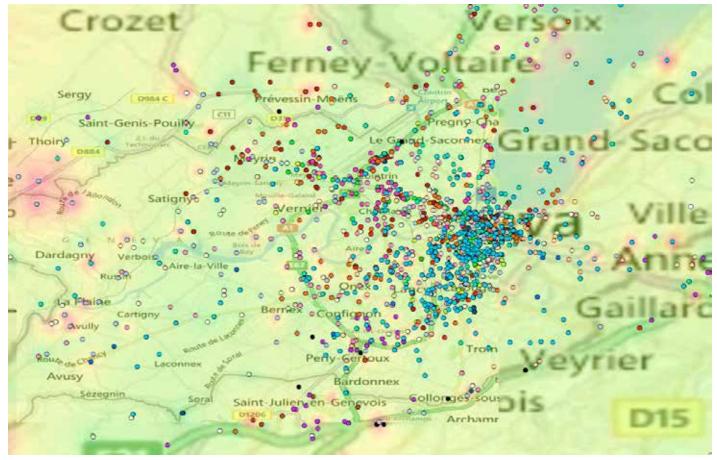- Company evolution through IS evolution by means of services.

Thus, we work on the creation of Tiers-Lieux in the context of a new emerging kind of economy: the contributory economy. They will provide cognitive cross-pollination spaces for developing large services requiring multidisciplinary, multi-institutional, notably public and private, researchers and practitioners, in order to face the intricate situations, for instance with Big Data, Open Data, Smart Region. It is an interconnected grid of activities, platforms and methods aiming at accelerating exploration, development and market validation of new services. It will enable students and researchers to express, model and experiment specific requirements, and to be immerged in real situations.

Nadia Magnenat-Thalmann - MIRALab

MIRALab was founded in 1989 by Professor Nadia Magnenat-Thalmann and has brought together PhD students and researchers from different fields, such as computer science, 3D graphics, 3D simulation, social robotics, 3D fashion design, and cognitive science. This truly interdisciplinary group continues to work in the field of medical informatics, virtual worlds and virtual humans .

Since 1992, MIRALab has participated in more than 50 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 with virtual models and clothes. In 2013, MIRALab was working on the following projects: 3D LIFE, AERIAL CROWD, EMC2, MULTISCALEHUMAN, REPLAY, ITN-DCH and ANINEX.

Figure 2: EU AAL MyGuardian project

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

PhD Thesis

- Alessandro Foni, «Methodological approaches for the protection of cultural heritage in the digital age», December 2013
- Dejan Munjin, «User Empowerment in the Internet of Things», June 2013
- Mabel Tirguis, «Backward Traceability: Watching and learning from the user interaction with the application», June 2013
- Alfredo Villalba Castro, «Hovering Information : A Self-Organising, Infrastructure-Free Information Storage and Retrieval Service for Mobile Applications», August 2013

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Figure 4: CLOVIS Project : Service Level Agreement as a Sercvice (SLAaaS)

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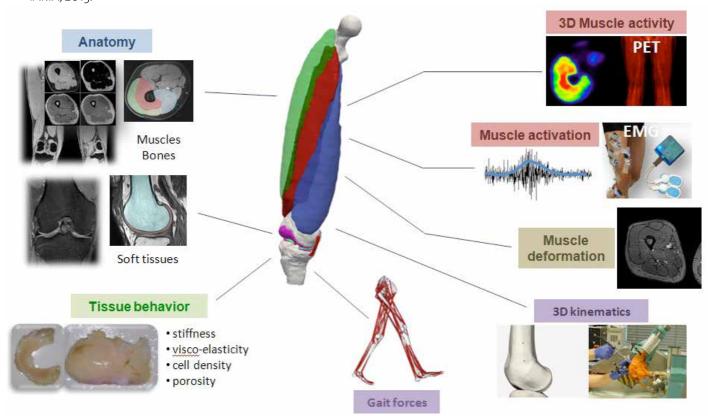
Figure 5: Multimodal knee articulation model © MIRALab

Figure 6: Augmented reality with FoxyTour

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[56] S. Sarda, M. Constable, J. Dauwels, S. Dauwels, M. Elgendi, Z. Mengyu, U. Rasheed, Y. Tahir, D. Thalmann and N. Magnenat-Thalmann, Real-Time Feedback System for Monitoring and Facilitating Discussions, Proc. International Workshop On Spoken Dialogue Systems (IWSDS 2012), Paris, France

[57] J. Hou, L.P. Chau, Y. He, J. Chen and N. Magnenat-Thalmann, Human Motion Capture Data Recovery Via Trajectory-based Sparse Representation, 2013 IEEE International Conference on Image Processing, Melbourne, Australia, September 15-18, 2013

[58] W. Gu, G. Seet and N. Magnenat-Thalmann, Improved Human Interaction in Telepresence Robot using Real-time Face Segmentation, 32nd Chinese Control Conference (CCC2013), Xi'an, China, July 26-28, 2013

[59] Musimage: using social multimedia to engage pupils in classical music appreciation, L. Moccozet, C. Tardy, H. Lakhdar, A. Lakhdar, R. Rentsch, M. Wirth, In proc. Interactive Collaborative Learning (ICL) 2013, IEEE xplore, Kazan, Russia, 2013.

[60] Gamification-based assessment of group work, L. Moccozet, C. Tardy, W. Opprecht, M. Léonard, In Proc. Interactive Collaborative Learning (ICL) 2013, IEEE xplore, Kazan, Russia, 2013.

[61] Intégrer les Environnements d'Apprentissage Personnels dans un environnement institutionnel, L. Moccozet, O. Benkacem, M. Foerster, Hervé Platteaux, In Proc. Environnements Informatiques pour l'Apprentissage Humain (EIAH 2013), 2013.

[62] Inferring ultraviolet anatomical exposure patterns while distinguishing the relative contribution of radiation components, L. Vuilleumier, A. Milon, J.-L. Bulliard, L. Moccozet, et D. Vernez, In Proc. AIP Conference, vol. 1531, no 1, p. 792 796, 2013.

[63] Intégrer les Environnements d'Apprentissage Personnels dans un environnement institutionnel, L. Moccozet, O. Benkacem, M. Foerster, Hervé Platteaux, Environnements Informatiques pour l'Apprentissage Humain (EIAH 2013), 2013

Full refereed papers in Workshop Proceedings

[64] Marios Fanourakis, Katarzyna Wac, Lightweight Clustering of Cell IDs into Meaningful Neighbourhoods (Work in Progress), Seventh International IFIP Working Conference on Performance and Security Modelling and Evaluation of Cooperative Heterogeneous Networks (HET-NETs), West Yorkshire, England, UK, November 2013.

[65] Mattia Gustarini, Selim Ickin, Katarzyna Wac, Evaluation of Challenges in Human Subject Studies "In-the-Wild" Using Subjects' Personal Smartphones, International Workshop on Ubiquitous Mobile Instrumentation (Ubi-MI), co-located with the UBICOMP conference, Zurich, Switzerland, September 2013.

[66] Katerina Stamou, Verena Kantere, Jean-Henry Morin, Michalis Georgiou. A SLA Graph Model for Data Services. (To Appear) In the 5th International Workshop on Cloud Data Management (CloudDB), collocated with CIKM, 2013.

[67] Katerina Stamou, Verena Kantere, Jean-Henry Morin. SLA data management criteria. In the Scalable Cloud Data Management Workshop (SCDM), collocated with IEEE BigData Conference, 2013.

Books and book chapters

[68] T. Shon, J. H. Park, C. Lambrinoudakis, J.-M. Seigneur. Special Issue on Advanced Information Security for Secure and Trust Computing. Computers & Mathematics with Applications, 65(9): 1233, Journal, Elsvier, 2013.

[69] Katarzyna Wac, Muhammad Ullah, From Mobile Cognition to Cognitive Mobility: QoS-aware, Mobile Healthcare Services, chapter in: Human Aspects in Ambient Intelligence, Ambient and Pervasive Intelligence Book Series, Bosse, T., Cook, D.J., Neerincx, M., Sadri, F. (Eds.), Atlantis Press, September 2013.

[70] J.-M. Seigneur. Online e-Reputation Management Services. Book chapter of «Computer And Information Security Handbook», Second Edition, ISBN-13: 978-0123943972, Morgan Kauffman, Elsevier, 2013.

[71] T. El Maliki and J.-M. Seigneur. Online Identity and User Management Services. Book chapter of «Computer And Information Security Handbook», Second Edition, ISBN-13: 978-0123943972, Morgan Kauffman, Elsevier, 2013.

[72] Abdelaziz Khadraoui, Damien Nicolas, Christophe Feltus, "Prosumer's Responsibilities?... On Stage to a Dedicated Framework for Services Sharing and Compliance in the Healthcare Domain", Book: Frameworks of IT Prosumption for Business System Development, 2013.

[73] Regina Frei, Giovanna Di Marzo Serugendo. Self-healing software. The Computer After Me, Jeremy Pitt (Eds), IC Press, 2013.

[74] Giovanna Di Marzo Serugendo, Matteo Risoldi, Mohammad Soleymani. The Social Computer. The Computer After Me, Jeremy Pitt (Eds), IC Press, 2013.

Articles in Professional Journals

[75] Katarzyna Wac, Get to Know the Performance of Your Mobile Network Operator Anywhere-Anytime - ERCIM News, Special Theme: Mobile Computing, April 2013.

Research and technical reports

[76] Several technical reports for the following projects: 3D LIFE, AERIAL CROWD, EMC2, MULTISCALEHUMAN, RE-PLAY, ITN-DCH and ANINEX.

[77] M. Léonard, Emerging overlapped Societies, stemming from Big Data thanks to Service Science, World Summit on Big Data and Organization Design, Paris, 16-17 Mai 2013.

Figure 7: A multi user approach for a collaborative view: VTO showing three clients: Left tablet, middle desktop system with touch-screen and right below a Smartphone
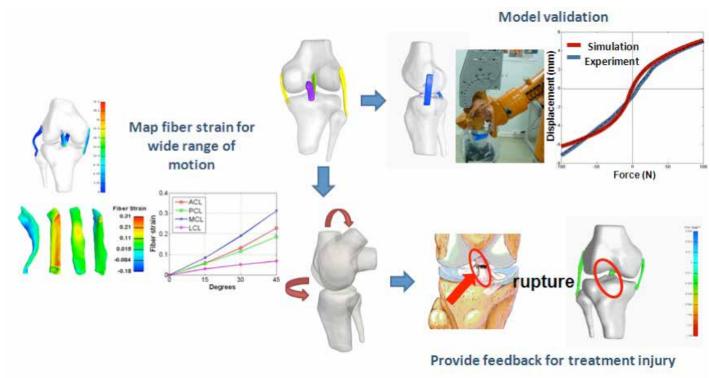© MIRALab

Figure 8: Simulations to support clinical evaluation © MIRALab

[78] M. Léonard, A. Yurshychyna, Tiers-Lieu: Exploratory Environments for Service-Centered Innovations, Low Carbon Earth Summit 2013, 26-28 September 2013, Xi'An, Chine.

International and national advisory committees

Jolita Ralyté:
- Since 2012: Steering Committee Member: CAiSE – International Conference on Advanced Information Systems Engineering

Nadia Magnenat-Thalmann:
- 2013: Member of the Scientific Council of the Institute of Mines-Telecom, Paris, France
- 2013: Expert on the advanced grant panel of the European Research Council (ERC)
- 2013: Expert for the French Research Agency, Paris (CO-MINT)
- 2007-2013: Expert and reviewer of the Seventh Framework Programme FP7, European Commission
- Since 1994: President of the Computer Graphics Association (CGS)

International and national research programs committees

Giovanna Di Marzo Serugendo:
- Since 2011: Member: Comité de Direction, CADMOS
- Since 2011: Member: Programme Doctoral Romand d'Informatique (CUSO)
- 2012: Expert evaluator: Lecturership positions, University of Stockholm
- 2012: Audit evaluator: Luxembourg ministry of educaction
- Since 2012: Member: Commission de renouvellement HEC, Faculty of Economic and Social Sciences, University of Geneva
- Since 2011: Programme Director: MSc in Management - Option Information Systems and Management
- Since 2011: Programme Director: PhD Programme in Information Systems and Management

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-Henry Morin:
- Evaluateur pour le fonds de science et technologie de Vienne, Autriche.
- Membre du jury du concours Open Data TPG (Transports Publics Genevois), Genève, 18 sept - 22 nov 2013.
- Co-founder and board member of the Cloud Security Alliance (CSA) Swiss chapter, responsible for academic relations, April 2013.
- Co-founder and President-Elect of the Association for Information Systems (AIS) Swiss chapter, June 2013.
- Membre du Conseil Scientifique de La Muse, Fondation pour la Créativité Entrepreneuriale (FCE), Genève.
- Animation d'un atelier de sensibilisation à la vie privée et au numérique, dans le cadre du programme Elargis tes Horizons pour faire découvrir aux filles de 11 à 14 ans les métiers scientifiques. Université de Genève, 14 novembre 2013.

- Participation au TecDay au Collège Emilie-Gourd sur le thème de la protection des données et la transparence, organisé par l'Académie Suisse des Sciences Techniques (SATW), Genève, 5 nov 2013.

Jolita Ralyté:
- 2013: Expert Evaluator for the Research Council of the University of Leuven, Belgium

Jean-Marc Seigneur:
- Expert Evaluator for the European Commission
- Expert Evaluator for the US Air Force Research
- Expert Evaluator for the European Research Council
- Expert Evaluator for the French National Research Agency
- Expert Evaluator for the Swiss National Science Foundation
- Expert Evaluator for the Australian Research Council
- Expert Evaluator for the Portuguese Foundation for Science and Technology
- Expert for the European Union Agency for Network and Information Security

Katarzyna Wac:
- Expert Evaluator for the research projects submitted to Fondazione Cariplo, Italy
- Evaluator for the Partnership Programme - Joint Applied Research Projects (PCCA), Executive Agency for Higher Education, Research, Development and Innovation Funding, Romania

PhD Thesis committees
Giovanna Di Marzo Serugendo:
- External Examiner: Franck Gechter. Systèmes multi-agents réactifs d'inspiration physique pour la prise de décision et la résolution de problèmes. HDR, Belfort-Montbéliard, France, 2013
- President Jury, External Examiner: Nicolas Brax. Self-adaptive multi-agent systems for aided decision-making: an application to maritime surveillance. Université Paul Sabatier, Toulouse, France, Décembre 2013

Figure 9: Context-aware information flow

- Examiner: Alexis Marechal. Unifying the syntax and semantics of modular extensions of Petri Nets. University of Geneva, July 2013.
- External examiner: Noélie Bonjean. Auto-organisation de fragments pour la conception de processus de développement . Université Paul Sabatier, Toulouse, France, Mars 2013
- External examiner: Andrei Pruteanu. Computing in Large Scale Dynamic Systems . Universtiy of Delft, April 2013
- External examiner: Mohamed Bakhouya. Adaptive Approaches for Pervasive Systems. HDR. Universtiy of Haute-Alsace, France, May 2013

Conference organization as chair or co-chair
Jose Luis Fernandez Marquez:
- Publicity Chair: IEEE International Conference on Self-Adaptive and Self-Organizing Systems, Pittsburgh, September 2013
- Co-chair: ACM SAC 2013 - Track on Coordination Models, Languages and Applications.

Verena Kantere:
- Co-organizer of the 1st Workshop on SLA Data Services co-allocated with the 17th East-European Conference on Advances in Databases and Information Systems (ADBIS 2013).

Abdelaziz Khadraoui:
- Program Chair: The 2nd International Conference on Software Engineering and New Technologies Hammamet, Tunisia, December 21-23, 2013.

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

Jean-Henry Morin:
- Co-chair of the Secure Cloud Computing minitrack, Hawaii International Conference on System Sciences, HICSS-46, Hawaii, January, 2013.

Jolita Ralyté:
- Doctoral Consortium Chair: RCIS 2013 – 7th IEEE International Conference on Research Challenges in Information Science, May 29-31 2013, Paris, France.
- Track Co-Chair: ECIS 2013 – 21st European Conference of Information Systems, Utrecht, The Netherlands, June 5-8, 2013. Track on Methods, Tools and Human Factors in IS/IT Development and Management.
- Track Co-Chair: INFORSID 2013 – 31ème Congrès Informatique des Organisations et Systèmes d'Information et de Décision, Paris, France, May 29-31, 2013. Track on Methods and Creativity for Information Systems Engineering.

Jean-Marc Seigneur:
- Co-Chair of the Trust, Reputation, Evidence and other Collaboration Know-how Track, SAC, ACM.
- Publication Chair of the 4th Augmented Human International Conference, ACM.

Katarzyna Wac:
- Co-organizer of the «Workshop on Service Science for e-Health» (SSH) at the International Conference on e-Health Networking, Application and Services, Oct 2013 (IEEE HealthCom 2013)

Member of conference program committees

Giovanna Di Marzo Serugendo:

- IEEE International Conference on Self-Adaptive and Self-Organising Systems, Pittsburgh, 2013 (SASO'13)
- ERCIM Workshop on Software Engineering for Resilient Systems, Kiev, Ukraine, September 2013 (SERENE'13)
- 10th European Dependability Computing Conference (EDCC'14)
- 13th International Conference on Autonomous Agents and Multi-Agents Systems, Demo Tracks (AAMAS'14-Demo track)
- International Workshop on Bio-Inspired Computing (BioCom'13)

Jose Luis Fernandez-Marquez:

- IEEE International Conference on Self-Adaptive and Self-Organising Systems, Pittsburgh, 2013 (SASO'13 Demos)
- UncertaintyAmI 2013 - 1st International Workshop on Uncertainty in Ambient Intelligence.

Verena Kantere:

- International Conference on Extending Database Technology (EDBT) 2013.
- Hawaii International Conference on Systems Science (HICSS) 2013.
- International Conference on Scientific and Statistical Database Management (SSDBM) 2013.
- International Conference on Web Information System Engineering (WISE) 2013.
- Hawaii International Conference on Systems Science (HICSS) 2014.
- International Conference on Extending Database Technology (EDBT) 2014.
- ACM International Conference of Special Interest Group on Management Of Data (SIGMOD) 2014.
- Intern. Workshop on Elasticity Measures for Software-Defined Environments, (col. with ICDCS) 2014

Abdelaziz Khadraoui:

- International Conference on Computer Medical Application (ICCMA'2013), Sousse, Jan 1, 2013

Figure 10: Responsibility Aspects in Service engineering

- International Conference on Information Systems and Technologies (ICIST'2013), Morroco, March, 2013.
- International Conference on Software Engineering and New Technologies (ICSENT'2013), Hammamet, Tunisia, December 21-23, 2013

Michel Léonard:
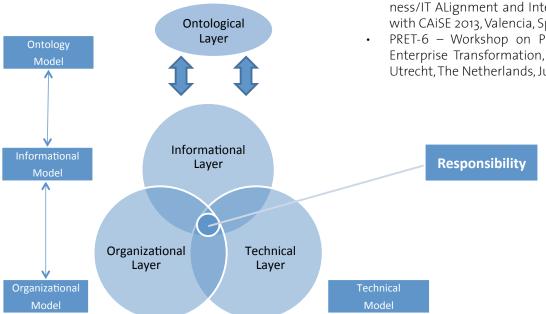
- IESS *13, CAISE*2013, ICEIS 2013

Jean-Henry Morin:

- PC member Eighth International Conference on Internet Monitoring and Protection, (ICIMP 2013), June 23 – 28, 2013, Rome, Italy.
- PC member of the 3rd International Conference on Exploring Service Science, IESS 1.3, Feb. 2013, Porto, Portugal.

Jolita Ralyté:

- CAiSE'13 – 25th International Conference on Advanced Information Systems Engineering, Valencia, Spain, June 17-21, 2013.
- RCIS 2013 – 7th IEEE International Conference on Research Challenges in Information Science, May 29-31 2013, Paris, France.
- ER 2013 – 32nd International Conference on Conceptual Modeling, Hong Kong, November 11-13, 2013.
- REFSQ 2013 – 19th Working Conference on Requirements Engineering: Foundation for Software Quality, Essen, Germany, April 8-11, 2013.
- EMMSAD 2013 – International Conference on on Exploring Modeling Methods in Systems Analysis and Design, Valencia, Spain, June 17-18, 2013.
- ICEIS 2013 – 15th International Conference on Enterprise Information Systems, Angers, France, July 3-7, 2013.
- IESS 2013 – 4th International Conference on Exploring Services Science, Porto, Portugal, February 7-8, 2013.
- ECIS 2013 – European Conference of Information Systems, Utrecht, The Netherlands, June 5-8, 2013.
- PoEM 2013 – 6th IFIP WG8.1 Working Conference on The Practice of Enterprise Modeling, Riga, Latvia, November 6-7, 2013.
- INFORSID 2013 – 31ème Congrès Informatique des Organisations et Systèmes d'Information et de Décision, Paris, France, May 29-31, 2013.
- BUSITAL 2013 – International Workshop on on BUSinness/IT ALignment and Interoperability. In conjunction with CAiSE 2013, Valencia, Spain, June 17, 2013.
- PRET-6 – Workshop on Practice-driven Research on Enterprise Transformation, collocated with ECIS 2013, Utrecht, The Netherlands, June 5-8, 2013.

- IEEE CBI 2013 – 15th IEEE Conference on Business Informatics, Vienna, Austria, July 15-18, 2013.
- BMSD 2013 – 3rd International Symposium on Business Modeling and Software Design, Noordwijkerhout, The Netherlands, July 8-10, 2013.
- RIGIM 2013 – 5th International Workshop on Requirements, Intentions and Goals in Conceptual Modeling. In conjunction with ER 2013, Hong Kong, November 11-13, 2013.
- SoEA4EE 2013 – 5th International Workshop on Service-oriented Enterprise Architecture for Enterprise Engineering, Vancouver, Canada, September 9, 2013.

Jean-Marc Seigneur:
- ACM Symposium of Applied Computing 2013
- ACM Augmented Human International Conference 2013
- IFIP Trust Management International Conference 2013

Katarzyna Wac:
- Reviewer for the 9th International Conference on Network and Service Management (CNSM 2013)
- 4th International Wireless Health Conference (Wireless-Health 2013)
- Reviewer for the 15th International ACM Conference on Ubiquitous Computing (UbiComp 2013)
- Location-based services for Indoor Smart Environments (LISE 2013) collocated with IPIN 2013
- Symposium on Smart Environment Technologies at the IEEE International Conference on Software, Telecommunications and Computer Networks (IEEE SoftCOM 2013)
- 2nd International Workshop on Ubiquitous Mobile Instrumentation (UbiMI) collocated with UbiComp 2013
- International Workshop on Pervasive Participation (PerPart 2013) collocated with the 6th Int. Conf. on Communities and Technologies
- International Workshop on Behavior Change Support Systems (BCSSs) collocated with the 8th International Conference on Persuasive Technology (PERSUASIVE 2013)
- International Conference on Mobile Web Information Systems (MobiWIS 2013)

INVITED TALKS

Michel Deriaz:
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "Maprika", Geneva, January 2013
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "Cobian Backup", Geneva, February 2013
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "Hoax", Geneva, March 2013
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "Cryptology", Geneva, May 2013
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "How to select a good password", Geneva, June 2013
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "Wiping HD, PGP", Geneva, September 2013
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "Duplicate cleaner", Geneva, October 2013
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "Privazer", Geneva, November 2013
- CREG (Centre de Rencontre des Entrepreneurs - Genève), "Se faire offrir sa R&D", Geneva, December 2013

Giovanna Di Marzo Serugendo:
- Panelist, WSIS+10 High-Level Event, Geneva, ITU, 2013
- Speaker at High-level Dialogue. ICT Innovations and Standards: Creating technology for the next three billion. World Summit for Information Society. WSIS Forum 2013, Geneva, ITU.
- Self-protected content – University of Delft, May 2013.
- Privacy by design – prix des préposées cantonales à la protection des données et transparence, Geneva, February 2013

Verena Kantere:
- Data Center for Astrophysics, ISDC on the 10/04/2013
- University of Lugano on the 24/04/2013

Jean-Henry Morin:
- Panelist au Café Scientifique sur le thème « Facile / pas facile... de se faire surveiller», association bancs publics, Musée d'histoire des sciences, Genève,16 décembre 2013.

- Conférencier invité à l'occasion de la remise du Prix 2013 d'encouragement à la protection des données et à la transparence sur le thème : Protection et Contrôle de l'Information : Enjeux et Perspectives Sociotechniques, Genève, 9 décembre 2013.

Katarzyna Wac:
- Smartphone as a Personal Pervasive Health Information Services Platform, The International Conference on Using Advanced Technologies for Elderly Care: A New Paradigm (ElderlyTech 2013), Tel Aviv, Israel, Feb 2013
- mQoL Living Lab: Experience of Running Longitudinal Studies for Mobile Internet Measurements, «News and Community Feedback Session», Internet Measurement Conference, Barcelona, Spain, Oct 2013.

Nadia Magnenat-Thalmann:
- Invited talk at Virtual Humans and Cognitive Modeling Workshop, Interacting with Virtual Characters and Social Robots, Institute for Media Innovation, Singapore, April 26, 2013
- Invited talk at Workshop on 3D Displays and Related Technologies, Interacting with Social Robots and Virtual Humans, Nanyang Executive Centre Auditorium, Singapore, February 4, 2013

Refereeing

Jose Luis Fernandez-Marquez:
- Pervasive and Mobile Computing. Elsevire Editorial. PMC

Verena Kantere:
- IEEE Transactions on Parallel and Distributed Systems
- The IEEE Network
- IEEE Transactions of Knowledge and Data Engineering
- Acta Informatica
- IEEE Internet Computing
- Concurrency and Computation: Practice and Experience
- Peer-to-Peer Networking and Applications

Abdelaziz Khadraoui:
- International Journal on Information Systems and Technologies (IJIST), 2013

Jolita Ralyté:
- IJISMD – International Journal of Information Systems Modeling and Design
- IJISSS – International Journal of Information Systems in the Service Sector
- SOSYM – Software and Systems Modeling
- RE – Requirements Engineering Journal
- JSEP – Journal of Software: Evolution and Process
- TSE – Transactions on Software Engineering
- IJSOI – International Journal of Services Operations and Informatics
- ISI – Revue Ingénierie des systèmes d'information

Katarzyna Wac:
- Reviewer for IEEE Pervasive Computing
- IEEE Journal of Biomedical and Health Informatics
- Journal of Medical Internet Research (JMIR Publications Inc.)
- Plos ONE (Public Library of Science)

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.
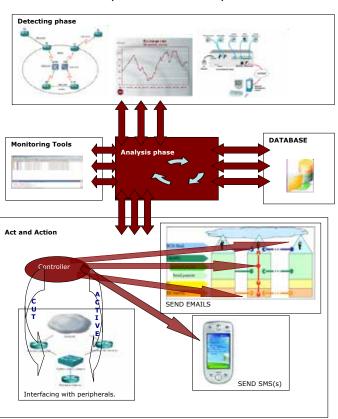- Natural Sciences and Engineering Research Council of Canada.

- 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: Multiagent and Grid Systems - An International Journal. ISSN: 1574-1702.
- Editorial Board Member: International Journal of Intelligent Information and Database Systems.   I n d e r - Science.
- Editorial Board Member (2013 -) - TCAASA

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

Jose Luis Fernandez-Marquez & Giovanna Di Marzo Serugendo:
• Guest Co-editor (2014). Special issue on Self-Organising Coordination in Science of Computer Programming (SCP)

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

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

Jean-Henry Morin:
• Associate Editor for the 22nd European Conference on Information Systems (ECIS 2014), IS Security and Privacy track, June 9-11, 2014, Tel-Aviv, Israel.
• Editorial board member of the Journal of Service Science Research (JoSS), ISSN: 2093-0720, Springer, Journal no. 12927, since 2009.
• Editorial board member of the International Journal On Advances in Systems and Measurements, ISSN: 1942-261x, IARIA, since 2008.

Jolita Ralyté:
• Editorial Board Member (2009 -) : IJISMD – International Journal of Information Systems Modeling and Design
• Editorial Board Member (2010 -): IJISSS – International Journal of Information Systems in the Service Sector
• Special Issue Editor: IS - Information Systems Journal, Special Issue on Advanced Information Systems Engineering (to appear in 2014)

Nadia Magnenat-Thalmann:
• Since 2000 Editor-in-chief of the Journal "The Visual Computer" published by Springer Verlag, Germany.
• Since 1995 Editor, Computational Geometry Journal, Elesevier, North Holland.
• Since 1990 Co-founder and Co-editor-in-chief, "Journal of Visualization and Computer Animation", John Wiley and Sons.

Katarzyna Wac:
• Special Issue Editor: Rawassizadeh, R., K. Wac, and M. Tomitsch, Theme Issue on Electronic Memories and Life Logging, Journal on Personal and Ubiquitous Computing, Springer, 17(4):603-604, April 2013.
• Special Issue Editor: Swiatek, P., Wac, K., Martini, M., Patrick, K., Special Issue on Service Science for e-Health, IEEE Journal of Biomedical and Health Informatics, (forthcoming 2014)

Working groups / Standard Bodies participation

Giovanna Di Marzo Serugendo:
• IEEE CIS Task Force on Terminology and Taxonomy – Member
• IEEE ETTC Organic Computing Task Force – Member
• ERCIM SERENE Working Group – Member

Jean-Henry Morin:
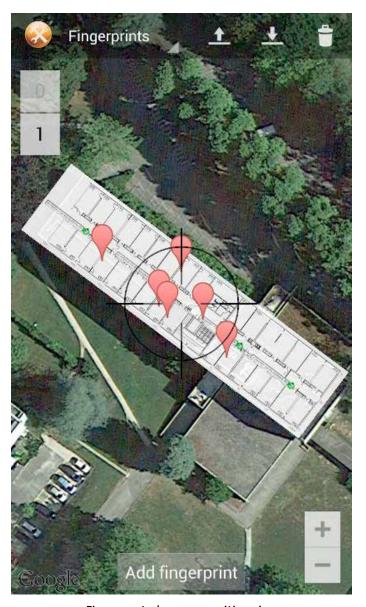• ThinkServices, ThinkTank on Services Science and Innovation, President, Since 2010.

Figure 13: Indoor geopositionning

• 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.

Jolita Ralyté:
• IFIP WG 8.1: Design and Evaluation of Information Systems – Vice-Chair (2010 - 2015), Member since 2004.
• AIS – Association of Information Systems – Member since 2010.

Katarzyna Wac:
• Associate Expert of the International Telecommunication Union (ITU) European Regional Initiative for mHealth (since 2012).

Events

Jean-Henry Morin:

- Co-organiser of the Open Knowledge Conference 2013 Legal Hack Day, « From Code to Sense : Bringing the Law to the Public - Law Mining Hackathon», 16-19 September 2013, CICG & CUI Open Innovation Lounge (CUI-OIL), Geneva, Switzerland.
- Organisation de la conférence du Prof. Seang-Tae Kim, The 4th Wave of Smart Revolution: Government 3.0 in Smart Society, suivi d'une table ronde sur le thème eGov et Société Numérique. Université de Genève, 6 novembre 2013.
- Atelier sur les Aspects techniques de la mise en oeuvre du droit à la protection des données personnelles, sixième Journée suisse du droit de la protection des données sur le thème du « droit à l'autodétermination informationnelle », Université de Fribourg, Faculté de Droit, 7 juin 2013.
- Organisation du Simulcast du TEDxCERN au Centre Universitaire d'Informatique (CUI-OIL), Genève, 3 mai 2013
- Organisation de deux conférences, 2012 et 2013, à l'IDHEAP (Lausanne) à l'occasion des Journées de la Protection des Données, avec le bureau du Préposé fédéral à la protection des données et à la transparence. 28 janvier 2012 : Lancement du service ThinkData et conférence de M. Jean-Philippe Walter, Préposé fédéral suppléant, sur le thème - Risques et enjeux des technologies pour les droits et libertés fondamentales. 27 janvier 2013 Conférence du Prof. Ebrahimi Touradj, EPFL sur le thème de la vidéo surveillance - A la recherche d'un «Big Brother» protecteur mais respectueux de ma sphère privée! Suivi d'une table ronde et du lancement de la version 2 de ThinkData repris officiellemnt par le bureau du préposé fédéral à la protection des donndées et à la transparence.

Katarzyna Wac:

- Co-organization of the «Quantified Self & Quality of Life Seminars series" since 2012 (2013 schedule: 20 Feb, 25 Apr, 11 Jun, 11 Sep, 27 Nov, Speakers: Mr Clement Charles, Mr Jose Cardoso, Mr Bruno Chanel, Mr Frederic Mauch, Mr Laurent Eymard)

Participation in TV and radio programs

Michel Deriaz:

- WebTV: Qu'est-ce que le positionnement interne ? May 2013. http://tam.unige.ch/assets/videos/press/20130528_WebTV.mp4

Giovanna Di Marzo Serugendo:

- Flots d'information sensibles au contexte. WebTV, Faculty of SES, University of Geneva, 2013 - http://webtv.unige.ch/ses/index.html?emission=parole-de-chercheur&videoID=parole_sapere
- Guidage de foule / Crowd Steering. PodCast Scientifique, June 2013 - http://www.podcastscience.fm/emission/2013/06/29/podcast-science-137-le-crowd-steering/
- EU Project AWARE Interview, September 13th, 2012 - http://www.aware-project.eu/category/research-agenda-2/video-opinions/

Katarzyna Wac:

- Un bracelet qui mesure tout, Emission Radio, Invitée: Dr. K. Wac, RTS.CH, April 2013. http://www.rts.ch/audio/la-1ere/programmes/on-en-parle/4811102-un-bracelet-qui-mesure-tout-25-04-2013.html

Press release

Michel Deriaz:

- Tribune de Genève: L'Université va rendre les seniors plus autonomes. http://tam.unige.ch/assets/documents/press/20130701_TdG.pdf
- Le Monde Economique: Que font les smartphones pour les seniors ? http://tam.unige.ch/assets/documents/press/20130506_LeMondeEconomique.pdf
- Tribune de Genève: Une start-up sort un jeu inédit grâce à l'Université. http://tam.unige.ch/assets/documents/press/20130930_TdG.pdf
- Géomatique Expert: SIG et seniors. http://tam.unige.ch/assets/documents/press/20130620_GeomatiqueExpert.pdf
- Le Monde Economique: La Cryptologie a écrit l'Histoire. http://www.monde-economique.ch/dossier/977-la-cryptologie-a-%C3%A9crit-l-histoire
- Le Temps: Des audioguides qui géolocalisent les visiteurs. http://tam.unige.ch/assets/documents/press/20131210_LeTemps.pdf

Figure 14: Interactive platform components for digitizing and preserving traditional participative sports © MIRALab

Giovanna Di Marzo Serugendo:
- Tribune de Genève, February 2013 - Données intelligentes

Katarzyna Wac:
- Connecté pour se soigner, E-medicine: Les technologies de l'information transforment la pratique médicale, 24heures, Vaud Futur, Invitée: Dr. K. Wac, September 2013. http://www.qol.unige.ch/publications/VaudFuture_24heures_13Sep2013.pdf

Public exhibitions and performances
Giovanna Di Marzo Serugendo, Jose Luis Fernandez-Marquez, Francesco De Angelis:
- ICT 2013, Vilnius – Demonstration of the EU SAPERE Project - http://ec.europa.eu/digital-agenda/en/ict-2013-conference

Honours and scientific awards
Nadia Magnenat-Thalmann:
- Professor Nadia Magnenat-Thalmann received the CGI Achievement Award Computer Graphics International 2013, Germany - http://cgi2013.welfenlab.de/

Other achievements
Giovanna Di Marzo Serugendo:
- Invited Professor, University Claude Bernard Lyon 1, 2013-2014

Jean-Henry Morin:
- Participation avec les étudiants du cours Design Science de 3ème année du Bachelor en Système d'Information et Science des Services, à un atelier de co-création dans le cadre du concours Open Data des TPG, Lift, Genève, 9 novembre 2013

Katarzyna Wac:
- International short research visit at Stanford University (USA) titled «Studying the Usage of Mobile Applications for Chronic Disease Self-Management in Different Contexts of Daily Life» (SNSF-IZK0Z2_148824)(7-9.2013), http://p3.snf.ch/Project-148824
- Quality of Life Living Lab (mQoL) is a Member of European Network of Living Labs (ENoLL) since August 2013, http://www.qol.unige.ch/mQoL.html
- The QoL team's mobile application UnCrowdTPG has won a second place in the TPG Open Data Challenge, http://www.tpg.ch/web/open-data
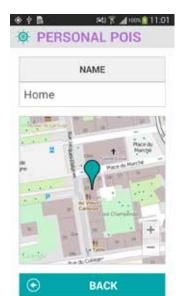

Figure 16: Object localisation - EDLAH project

Figure 15: Indoor positionning & Navigation adapted to seniors - Virgilius project

Technology transfer
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.
- Launch of ThinkData in South Korea, November 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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EDLAH
AAL project
Partners: karisgroup (England), rsa (Austria), PYXIMA (Belgium), Université de Genève (Switzerland), EverdreamSoft (Switzerland), Maison de Retraite du Petit-Saconnex (Switzerland)
Period: 2013 - 2015
Website: http://edlah.eu

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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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ACROSS
Autonomous Control For A Reliable Internet Of Services
EU COST Action, ACROSS-IC1304
Period: November 2013 – November 2017
Web site: http://www.cost.eu/domains_actions/ict/Actions/IC1304

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AAPELE
Architectures, Algorithms and Platforms for Enhanced Living Environments
EU COST Action, AAPELE-IC1303
Period: November 2013 - November 2017
Web site: http://www.cost.eu/domains_actions/ict/Actions/IC1303

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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://www.qol.unige.ch/research/myguardian.html

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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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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
Support Action Towards Excellence in Media Computing and Communication
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: June 2011 - June 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 2011 - September 2015
Website: http://multiscalehuman.miralab.ch/

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REPLAY

Reusable low-cost platform for digitizing and preserving traditional participative sports
EU FP7 project
Partners: Fundacion Centro de Tecnologias de Interaccion Visual y Comunicaciones VICOMTECH – Spain, Dublin City University – Ireland, MIRALab, University of Geneva – Switzerland, IN2 Search Interfaces Development Limited – United Kingdom, Gaelic Athletic Association – Ireland, Centre For Research and Technology Hellas – Greece, Eusko Jaurlaritza-Gobierno Vasco – Spain, Vicon Motion Systems Limited – United Kingdom
Period: March 2013 - February 2016
Web site: http://www.fp7-replay.eu/

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ITN-DCH

Initial Training Network for Digital Cultural Heritage: Projecting our Past to the Future
EU FP7 project
Partners: Cyprus University of Technology - Cyprus, National Technical University of Athens - Greece, Universitaet Stuttgart – Germany, Foundation for Research and Technology Hellas – Greece, Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.v. - Germany, Katholieke Universiteit Leuven – Belgium, Fondazione Bruno Kessler – Italy, Centre National de la Recherche Scientifique - France, Universidad de Murcia - Spain, Univerzav Ljubljani - Slovenia, Arctron 3d Vermessungstechnik-und Softwareentwincklungs
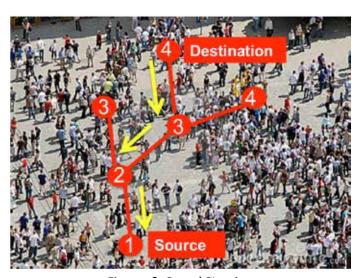

Figure 18: Crowd Steering

Figure 17: Confidential channel over MANET

Gmbh - Germany, 7Reasons Medien Gmbh - Germany, The University of Warwick – United Kingdom
Period: October 2013 - September 2017
Web site: http://www.itn-dch.org/

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ANINEX

User Centred Computer Animation Techniques for Next Generation Digital Creation and Modelling
EU FP7 project
Partners: National Centre for Computer Animation, Bournemouth University – United Kingdom, MIRALab, University of Geneva – Switzerland, National Laboratory for Information Science and Technology, Tsinghua University – China, The State Key Laboratory of Computer Science, Institute of Software, Chinese Academy of Sciences – China, The State Key Laboratory of Computer Aided Design and Computer Graphics, Zhejiang University – China
Period: December 2013 - November 2017
Web site: -

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://ple.unige.ch

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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: September 2011 – December 2014

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An Open Market for Cloud Data Services
SNF project 146603
Period: October 2013 - September 2014
Website: http://p3.snf.ch/project-146603

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Geosop
CTI project
Partners: EverdreamSoft SA
Period: June 2012 - December 2013
Website: http://tam.unige.ch/projects/geosop.html

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GAVI
Period: 2012 - 2013
Website: http://tam.unige.ch/projects/gavi.html

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MoveYourStory
Period: 2013 - 2014
Website: http://tam.unige.ch/projects/moveyourstory.html

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PCS-OBEY
Enabling People-Centric Sensing by Overcoming the privacy Barrier
SNF project 149591
Period: 2013 - 2015
Website: http://p3.snf.ch/project-149591

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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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Identité académique numérique
SWITCH Project
Partners: Université de Fribourg, SWITCH
Period: August 2012 - March 2013
Website: http://www.switch.ch/fr/aaa/projects/detail/UNIGE.11

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Learning infrastructure
CRUS Project
Partners: SWITCH and Swiss Universities
Period: January 2012 - December 2013
Website: http://www.switch.ch/fr/uni/projects/learn_infra/

TEACHING
Giovanna Di Marzo Serugendo:
- **Self-organising Mechanisms and Design Patterns for Engineering Self-Organising Applications** – A Smart Environment Application (MSc – University Lyon)
- **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, 4 students
- **Contextualisation et Qualité des Services**, ISS, Bachelor course, 6 ECTS, 84 hours, 20 students
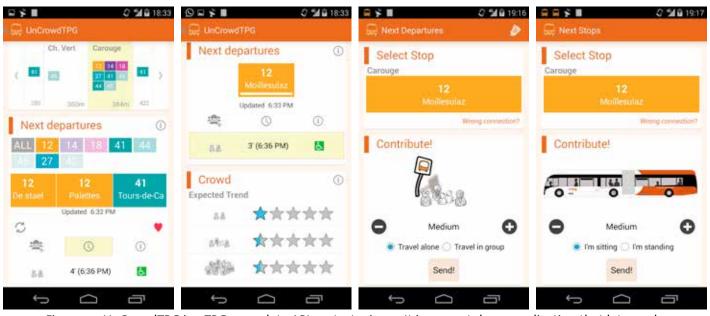

Figure 19: UnCrowdTPG is a TPG open data API contest winner. It is a smartphone application that let people know which are the less crowded trams and buses for a more comfortable commute. It is based on the collaboration between people to engage them and be part of the general society and family of TPG raiders

- **Social and Legal Issues in Informatics**, ISS, Master course, 3 ECTS, 84 hours, 55 students
- **Design Science Research**, ISS, Master course, 3 ECTS, 42 hours, 20 students

Giovanna Di Marzo Serugendo and Jose Luis Fernandez-Marquez:
- Sep 2013 - **From Self-Organizing Mechanisms to Design Patterns to Engineering Self-Organizing Applications**, IEEE International Conference on Self-Adaptive and Self-Organising Systems (SASO'13), Philadelphia, USA

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 2013, November 2013, 10 ECTS, 8 students

Dimitri Konstantas:
- **Réseaux de communication**, ISS, Bachelor, 48 hours, 12 students
- **Mobile Systems and Services**, ISS, Master, 48 hours, 10 students
- **Design of Multimedia Services**, ISS, Master, 48 hours, 12 students
- **Technologies for Services**, ISS, Master, 48 hours, 11 students
- **Veille technologique, InfoSec (program director)**, ISS, Continuous education, 24 hours, 30 students
- **Systèmes d'information et sciences des services**, ISS, Master 2 Gestion d'entreprise / Continuous education, 24 hours, 20 students

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

Laurent Moccozet:
- **Service Innovation Lab**, ISS, Master, 3 ECTS, 28 hours, 8 students
- **Introduction à la programmation**, ISS, Bachelor, 6 ECTS, 56 hours, 20 students

- **Services et technologies multimédia**, ISS, Bachelor, 6 ECTS, 56 hours, 60 students
- **Introduction à la sience des services**, ISS, Bachelor, 6 ECTS, 56 hours, 300 students

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
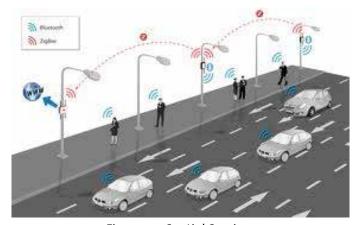

Figure 20: Spatial Services

Figure 21: Collaborative telemedicine system – A collaborative segmentation scenario: A teacher (center) uses her laptop to monitor and guide the two students in a collaborative segmentation session, where one student is using a portable device (left) and the other using a conventional workstation (right) © MIRALab

Figure 22: ThingVibe, Internet of Things (IoT) social network and application store

Jolita Ralyté:
- **Project Management**, ISS, Bachelor, 3 ECTS, 28 hours, 50 students
- **Requirements Analysis**, ISS, Bachelor, 3 ECTS, 28 hours, 200 students
- **CAS MATIS GPSI - Gestion de projets des systèmes d'information et des services (Continuous education)**, 10 ECTS, 68h, 8 students
- **CAS MATIS DSI - Direction des systèmes d'information et des services (Continuous education)**, 10 ECTS, 38h, 8 students

Jean-Marc Seigneur:
- **Services Internet**, ISS, Bachelor, 6 ECTS, 56 hours, 16 students
- **Intégration et Déploiement de Services Informatisés**, ISS, Bachelor, 6 ECTS, 56 hours, 13 students

- **e-Réputation**, ISS, Continuous education, InfoSec, 2 hours, 30 students
- **Web Marketing et e-Réputation**, ISS, Master Journalisme et Communication, 3 ECTS, 14 hours, 36 students

Katarzyna Wac:
- Teaching assistant for **Mobile Health Without Borders** Massive Open Online Course (MOOC), Stanford University, USA, June-August 2013
- Dr. Wac teaches a module on **Medical Informatics**, contributing to the Continuous Education Program by Hospital University of Geneva and University of Geneva, Switzerland, May 2013
- Tutorial: **Methodology for Evaluating Experience of Mobile (Healthcare) Applications Used in Different Contexts of Daily Life**, 15th Intl Conference on e-Health Networking, Application and Services (IEEE HealthCom'13), Lisbon, Portugal, 9-12 October 2013

ISS team in 2013

KE

Knowledge Engineering

Emblematic inside and ouside wall of Battelle building A

Knowledge Engineering

Domain activities

The Knowledge Engineering research group studies the representation, processing, and visualization of formalized and non-formalized knowledge resources. It's current research activities concentrate on the following topics:

- Defining models, operations, and algorithms for the management of heterogeneous knowledge resources (ontologies, terminologies, thesauri, text corpora, …) in large knowledge repositories.
- Semantically enriching semi-formal knowledge organization systems to produce formal ontologies
- Extracting and representing scientific knowledge elements contained in scientific texts, and building systems for precise scientific information retrieval
- Studying 3D visualization techniques to represent data and knowledge associated to objects of 3D virtual environments.
- Develop models to formalize linguistic knowledge resources and to process them with high performance computing infrastructures.

The main application areas are: semantic digital libraries; manuscript indexing, retrieval, and interconnection; urban and geographic knowledge engineering; the extraction linguistic knowledge from large open resources (Wikipedia)

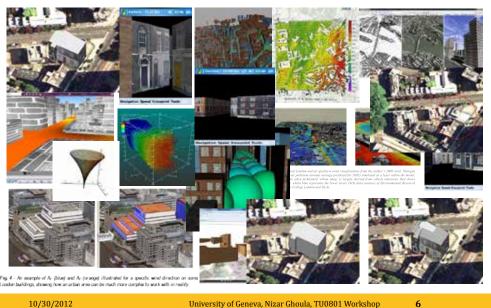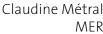## Visualization of enrichment information in enriched 3D city models

Figure 1: Data and knowledge visualization techniques in urban models

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
Georges Bediang

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

Administration
Marie-France Culebras

List of publications

Full refereed papers in international journals

[1] Bouaziz, R., Bourque, P., Falquet, G. (Eds.) (2013) Ontologies : Évolution et opérationalisation Numéro spécial de la revue Technique et science informatiques, Hermès, Vol. 32, No. 7-8.

[2] Lacasta, J., Nogueras-Iso, J., Falquet, G., Teller, J., Zaraza-ga-Soria, F.J. (2013) Design and evaluation of a semantic enrichment process for bibliographic databases. Data & Knowledge Engineering. (in press, DOI: http://dx.doi.org/10.1016/j.datak.2013.10.001)

Full refereed papers in Conference Proceedings

[3] Métral C., Ghoula N., Silva, V., Falquet G. (2013) A repository of information visualization techniques to support the design of 3D virtual city models. In Proc. 8th 3D GeoInfo Conference, November 27-29 2013, Instanbul, Turkey, ISPRS Annals-Volume II-2/W1, U. Isikdag (Ed), pp 247-254

[4] Métral C., Ghoula N., Silva, V., Falquet G. (2013) Une ontologie de techniques de visualisation d'informations : application aux modèles urbains 3D enrichis. Actes des 24ème journées francophones d'Ingénierie des Connaissances (IC 2013), 3-5 juillet 2013, Lille, France.

[5] Moccozet, L., Tardy, C., Opprecht, W., Léonard, M. (2013) Gamification-based assessment of group work. In proceeding of: Interactive Collaborative Learning 2013, Kazan, Russia.

[6] Moccozet, L., Tardy, C., Lakhdar, H., Lakhdar, A., Rentsch, R., Wirth, M. (2013) Musimage: using social multimedia to engage pupils in classical music appreciation. In proceeding of: Interactive Collaborative Learning 2013, Kazan, Russia.

Full refereed papers in Workshops Proceedings

[7] de Ribaupierre, H., Falquet, G. (2013) A User-Centric Model to Semantically Annotate and Retrieve Scientific Documents. in Proc. ACM Sixth International Workshop on Exploiting Semantic Annotations in Information Retrieval. ESAIR'13, October 28-27 2013, San Francisco, CA, USA

[8] Ghoula N., Falquet G. Nindanga, H. (2013) A meta-model and ontology for managing heterogenous alignment resources. In proceeding of: KDO 2013: First Workshop on Knowledge Discovery in Ontologies at IEEE/WIC/ACM International Conference on Web Intelligence, Atlanta, USA

PhD Thesis committees

- Piotr Adam Praczyk. Rapporteur, Computer Science and Systems Engineering Dept., Universidad de Zaragoza, Spain.

Member of conference/workshop progam committees

Gilles Falquet:

- Extraction et Gestion des Connaissances (EGC 2013)
- Ingénierie des Connaissances (IC 2013)
- 6th International Workshop on Semantic and Conceptual Issues in GIS (SeCoGIS 2013)
- 8th CERN Workshop on Innovations in Scholarly Communication

Claudine Métral:

- 3D GeoInfo 2013, Istanbul, November 2013

Funded research projects

Participation to National projects

Ontology-Based Precise Multilingual Information Retrieval
FNS
Main applicant: Gilles Falquet
PhD researcher: Hélène de Ribaupierre
Period: 2011 - 2013

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Designing and evaluating 3D knowledge visualization techniques for urban planning
SER No. C10.0150
Applicant: Claudine Métral
Researchers: Claudine Métral, Vitor Silva, Nizar Ghoula, Gilles Falquet
Period: 2011 - 2013

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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)
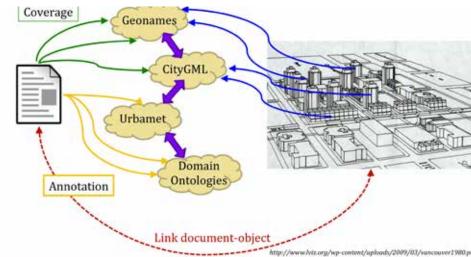Period: 2011 - 2014

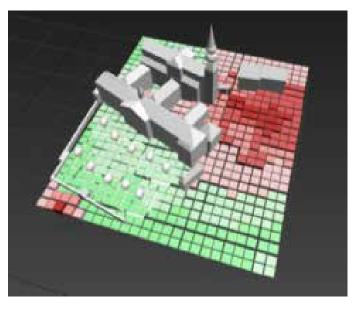Figure 2: Connecting documents and city objects through ontologies

Others

Refeereeing

- Knowledge and Data Engineering, Elsevier
- Information Retrieval, Springer
- International Journal of Digital Earth
- International Journal of Spatial, Temporal and Multimedia Information Systems (IJSTMIS)

Events organized in Geneva

- OAI8 - 8th CERN Workshop on Innovations in Scholarly Communication, Geneva, Switzerland, 19th to to 21st June 2013, 300 participants - http://indico.cern.ch/event/211600/

Teaching

- **Fondements formels des systèmes d'information**, KE, Bachelor, 6 ECTS, 56 hours, 18 students
- **Algorithme appliquée**, KE, Bachelor, 6 ECTS, 56 hours, 10 students
- **Interfaces des systèmes d'information**, KE, Bachelor SES & Master Sciences, 6 ECTS, 56 hours, 15 students
- **Semantic Web technologies**, KE, Master, 6 ECTS, 56 hours, 26 students
- **Knowledge organisation systems**, KE, Master, 6 ECTS, 56 hours, 12 students
- **Systèmes d'information de l'environnement**, Master en sciences de l'environnement (MUSE) course, 6 ECTS, 10 hours, 51 students
- **Modélisation des bases de données spatiales,** Certificat complémentaire de mathématiques, Service course, 3 ECTS, 28 hours, 45 students
- **Space-City: Modèles urbains 3D,** KE, Master, Service course, 3 ECTS, 28 hours, 12 students
- **Nouvelle technologies du Web**, Continuous education, CAS, 2012-13

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

KE team in 2013

LATL

Laboratory for the Analysis and Technology of Language

Battelle building A drone view

Laboratory for the Analysis and Technology of Language

Domain activities

LATL (http://www.latl.unige.ch) has been active in the field of natural language processing since the early 1990's. Its main research focus is the development of a multilingual syntactic parsing model (the Fips parser), as well as the development of large lexicons and dictionaries.

The Fips parser is currently available for several of the main European languages (English, French, German, Italian and Spanish), with several other languages at various stages of development. It is based on a grammatical model inspired by Chomsky's generative grammar and on an object-oriented design for its implementation. The parser and its rich lexical database (Figure 1) are used in a number of applications, including machine translation (Figure 4), terminology extraction, speech-to-speech translation, and computer-assisted language learning.

LATL has also speech technology activities ranging from speech corpus collection to acoustic analysis, through three on-going research projects:
- on speaking style characterisation and modelling
- on Swiss German dialect recognition through a smartphone application : Voice App project in partnership with University of Zurich (Figure 2)
- on speech-to-speech translation in the Siwis project in partnership with IDIAP, ETH and University of Edinburgh (Figure 3)

Team

Director
Eric Wehrli
Full professor

Senior researchers
Luka Nerima
Jean-Philippe Goldman
Dr. Yves Scherrer

Assistants (PhD students)
Alexis Kauffmann
Asheesh Gulati
Kamel Nebhi
Lorenza Russo
Maria Ivanova
Sharid Loaiciga
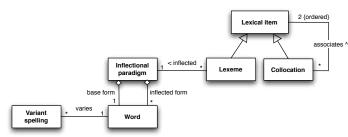
Administration
Eva Capitao
Lara Broi

Figure 1: The lexical database schema of the Fips parsing system.

Figure 2: Screen shoots of Dialäkt Äpp : from left to right: dialectal variation choice with buttons, result provided as a choice of five best fitting localities and their corresponding points on a map, and the screen to start recording user's voice.
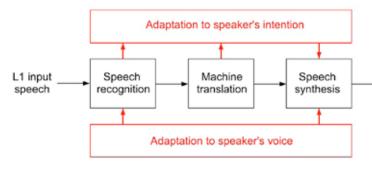
Figure 3: SIWIS speech-to-speech translation concept with speaker's voice and intention adaptation

PhD Thesis
- Alexis Kauffmann, «Structural Asymmetries in Machine Translation : The case of English-Japanese», June 2013

List of publications
Full refereed papers in Conference Proceedings

[1] Luka Nerima & Eric Wehrli, «Résolution d'anaphores appliquées aux collocations : une évaluation préliminaire», TALN, ATALA, Proceedings of TALN-2013, pp 772-778, June 2013

[2] Sharid Loáiciga, «Résolution d'anaphores et traitement des pronoms en traduction à base de règle», TALN, ATALA, Proceedings of TALN-2013, pp 772-778, June 2013

[3] Kamel Nebhi, Luka Nerima & Eric Wehrli, «NERITS -- A machine translation mashup system using Wikimeta and Linked Open Data», 10th Extended Semantic Web Conference, Proceedings of the AI Mashup Challenge, 2013

[4] Kamel Nebhi, «Extraction de relations basées sur une Ontologie pour le Web Sémantique», Congress of Linguists 2013, Proceedings of the International Congress of Linguists 2013 (ICL), Genève, Suisse, 2013

[5] Alexis Kauffmann, Asheesh Gulati, «Comparative Evaluation of Statistical Post-Editing in English-Japanese», MT, 19th annual meeting of the association of Natural Language Processing (言語処理学会第19回年次大会 (NLP2013)), Japan, March 2013

Full refereed papers in Workshops Proceedings

[6] Eric Wehrli, Luka Nerima & M. Farahmand, «Des bigrammes au secours de la grammaire», Atelier Mixeur, TALN, Proceedings of the TALN conference, June 2013

[7] Kamel Nebhi, «Named Entity Disambiguation using Freebase and Syntactic Parsing», ISWC 2013 LD4IE Workshop, Proceedings of the ISWC 2013 LD4IE Workshop, Sydney, Australia, 2013

[8] Lorenza Russo, «Pour une analyse linguistique comparative italien-français en vue d'une traduction automatique», Publif@rum (revue on-line : http://www.publifarum.forum.it/index.php), Italie.

[9] Yves Scherrer & Benoît Sagot (2013): «Étiquetage morphosyntaxique de langues non dotées à partir de ressources pour une langue étymologiquement proche», TALARE Workshop, TALN 2013, Les Sables d'Olonne.

[10] Yves Scherrer & Tomaz Erjavec (2013): «Modernizing historical Slovene words with character-based SMT». 4th Biennial Workshop on Balto-Slavic Natural Language Processing (BSNLP 2013), ACL 2013, Sofia.

[11] Yves Scherrer & Benoît Sagot (2013): «Lexicon induction and part-of-speech tagging of non-resourced languages without any bilingual resources». RANLP 2013 Workshop on Adaptation of language resources and tools for closely related languages and language variants, Hissar, Bulgarie.

[12] Sandra Schwab, Mathieu Avanzi, Jean-Philippe Goldman, Alice Bardiaux, Pauline Dubosson (2013): «Variations in French Accentual Phrase Realization - the Case of Penultimate Marking». Workshop on Word stress: dialectal variation and perception . CIL-19, Geneva, 2013.

[13] Tea Prsir, Jean-Philippe Goldman, Antoine Auchlin: «Variation prosodique situationnelle: étude sur corpus de huit phonogenres en français», Interface Discours-Prosodie, Leuven, 2013

[14] Jean-Philippe Goldman, Antoine Auchlin, Anne Catherine Simon: «Les variables temporelles dans le dialogue», Interface Discours-Prosodie, Leuven, 2013

[15] Jean-Philippe Goldman: «ProsoReportDialog: a tool for temporal variables description in dialogues», Tools and Resources for the Analysis of Speech Prosody, Aix-en-Provence 2013

Books and book chapters

[16] Eric Wehrli, Chapter : «Collocations and anaphora resolution in machine translation», The Language Cognition Interface, Eds : Stephen R. Anderson, Jacques Moeschler & Fabienne Reboul Droz, Genève.

[17] Violeta Seretan & Eric Wehrli, «Context-sensitive look-up in electronic dictionaries», Rufus H. Gouws, Ulrich Heid, Wolfgang Schweickard, and Herbert E. Wiegand-Dictionaries. An International Encyclopedia of Lexicography. Supplementary volume: Recent Developments with Focus on Electronic and Computational Lexicography, volume 5/4 of Handbooks of Linguistics and Communication Science (HSK), pages 1046–1052. De Gruyter Mouton, Berlin, Boston, 2013.

[18] Hans Goebl, Yves Scherrer & Pavel Smecka (2013): Kurzbericht über die Dialektometrisierung des Gesamtnetzes des „Sprachatlasses der deutschen Schweiz" (SDS). In: Karina Schneider-Wiejowski, Birte Kellermeier-Rehbein, Jakob Haselhuber (eds.): Vielfalt, Variation und Stellung der deutschen Sprache [Festschrift für Ulrich Ammon], 153-176, De Gruyter.

PhD Thesis committees
- Eric Wehrli, rapporteur, Assaf Urieli, Université de Toulouse, December 2013

Conference organization as chair or co-chair
- Eric Wehrli, Chair of session 9 of the International Congress of Linguists "Experimental and computational approaches", Geneva, July 2013

Member of conference program committees
- Luka Nerima, program committee member, TALN 2013, Les Sables d'Olonne, juin 2013.
- Yves Scherrer, program committee member, TALARE Workshop (Traitement automatique des langues régionales de France et d'Europe), TALN 2013, Les Sables d'Olonne, juin 2013.
- Eric Wehrli, program committee member, TALN 2013, Les Sables d'Olonne, juin 2013.

Invited talks
Yves Scherrer
- Yves Scherrer (April 2013): Dialektometrische Experimente mit schweizerdeutschem Dialektmaterial. Colloque de recherche en linguistique, Université de Zurich.
- Yves Scherrer (July 2013): Continuous variation in computational morphology - The example of Swiss German. TheoreticAl and Computational MOrphology: New Trends and Synergies (TACMO 2013), 19ICL, Genève.
- Yves Scherrer (Novembre 2013): Dialektometrische Experimente mit schweizerdeutschen Daten. Séminaire de recherche en linguistique, Ruhr-Universität Bochum.

Eric Wehrli
- University of Costa Rica, Linguistic conference, The Relevance of Linguistics for NLP: The Case of Collocations, San Jose, Costa Rica, May 29, 2013
- University of Costa Rica, Dept of Linguistics, The Problem with Pronouns in Translation, San Jose, Costa Rica, May 30, 2013

Jean-Philippe Goldman
- Relations entre degré d'accent régional et mesures prosodiques chez les locuteurs suisses romands, Journées PFC (Phonologie du Français Contemporain), Paris, December 2013

Funded research projects
Participation to European projects

PARSEME: Parsing and Multi-word Expressions
COST action IC 1207
Parterns: 28 European partners
Period: March 2013 - March 2017
Website: http://typo.uni-konstanz.de/parseme/

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/

Voice Äpp: your voice, your identity
Swiss NSF AGORA project
Principal Investigator: J.Ph. Goldman (UniGe) and A. Leemann (UZH)
Period: February 2013 - January 2015
Website: http://www.voiceapp.ch

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 use its POS-Tagger: Acapela Group, a European Speech synthesis company, and ShareWizMe, a French innovative company specialized in real time analysis of contributions (ideas, feedback, comments).

Others
- Luka Nerima, « Les manuscrits de Saussure : Modèles et systèmes informatiques pour une édition numérique » presented at the « Digital Humanities Days», Académie suisse des sciences humaines et sociales (ASSH), Bern, November 2013.

Teaching
Eric Wehrli:
- **Informatics I - Web programming**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 23 students
- **Informatics I - Algorithms and programming**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 12 students
- **Informatics II - Data structures and Object Oriented Programming**, Computer Science for the Humanities, Bachelor, 4 ECTS, 42 hours, 3 students
- **Natural language processing, linguistic approaches and empirical approaches**, Computer Science for the Humanities, Master, 4 ECTS, 56 hours, 25 students

Luka Nerima:
- **Databases**, Computer Science for the Humanities, Bachelor, 12 ECTS, 112 hours, 12 students
- **Informatics II - Java seminar**, Computer Science for the Humanities, Bachelor, 2 ECTS, 28 hours, 3 students
- **Informatics II - Object Oriented Project**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 7 students
- **Information and Communication Technology**, Computer Science for the Humanities, Bachelor, 12 ECTS, 112 hours, 8 students

Figure 4: Translation of Word in Context (TWiC) is a reading aid system for readers of materiel in foreign languages. Here in use on the Tages Anzeiger newspaper Website

SMV

Software Modeling and Verification

Battelle's building A historic elevator

Software Modeling and Verification

Domain activities

Symbolic Model Checking was developed with the idea of verifying high level models with a reasonable amount of work for the user. In particular we propose to separate the model to the informations for performing efficiently model checking (clustering, anonymization, partial unfolding). The introduction of new kind of decision diagrams (Σ-DD) based on a generalization of the Shannon decomposition principles allow us to perform efficiently model checking for models with huge combinatorial explosion of states (around 4^{500} symbolic states). We are currently exploring the systematic use of rewriting of set of terms principles based on decision diagrams and operational control based on strategies as a metalevel in model checkers. A tool , called ALPINA, was implemented. We also launch a model checking contest in the conference Petri Nets in order to be able to compare existing model checkers on significant benchmarks. Our tool performed relatively well, but most remarkably perform on most of the models which is not the case for all the other tools in competition. We unify modular Petri Nets using an extension of the CO-OPN synchronization composition operators. This model gathers all modular extensions of Petri nets in an elegant way. The interest of this approach is also to contribute to the standardization efforts made in the context of the ISO organization for standardizing Petri Nets.

SMV team in 2014: Edmundo Lopez, Stefan Klikovits, David Lawrence, Didier Buchs, Mihai-Lica Pura, Maximilien Colange, Dimitri Racordon

Team

Director
Didier Buchs
Full professor

Senior researchers
Dr. Maximilien Colange
Dr. Mihai-Lica Pura

PhD students
Edmundo Lopez
Alexis Marechal
Stefan Klikovits

Intership Fellow
Dimitri Racordon
David Lawrence

Administration
Maëlle Rümbeli
Lara Broi

PhD Thesis

- Alexis Marechal, «Unifying the syntax and semantics of modular extensions of Petri nets», July 2013

List of publications
Refereed papers in international journals

[1] Fabrice Kordon, Alban Linard, Marco Beccuti, Didier Buchs, Lukasz Fronc, Lom-Messan Hillah, Francis Hulin-Hubard, Fabrice Legond-Aubry, Niels Lohmann, Alexis Marechal, Emmanuel Paviot- Adet, Franck Pommereau, César Rodríguez, Christian Rohr, Yann Thierry-Mieg, Harro Wim- mel, Karsten Wolf: Model Checking Contest @ Petri Nets, Report on the 2013 edition. CoRR abs/1309.2485 (2013)

Refereed papers in Conference Proceedings

[2] Mihai Lica Pura and Didier Buchs, A Self-Organized Key Management Scheme for Ad Hoc Networks Based on Identity-Based Cryptography, COMM 2014 International Conference on Communications, 2014.

[3] Edmundo López Bóbeda, Maximilien Colange and Didier Buchs, StrataGEM: A Generic Petri Net Verification Framework, Application and Theory of Petri Nets and Concurrency, 2014, Springer Verlag.

[4] Marechal, Alexis and Buchs, Didier, Unifying the Semantics of Modular Extensions of Petri Nets, Application and Theory of Petri Nets and Concurrency, pp= 349–368, 2013, Springer Verlag.

Refereed papers in Workshops Proceedings

[5] Mihai Lica Pura and Didier Buchs, Using algebraic Petri nets for testing ad hoc secure routing protocols in mobility scenarios, SECTEST 2014 Workshop, Cleveland, Ohio.

International and national advisory committees

- RichModels COST action management committee
- Serene ERCIM working group Chairman
- Serene Conference Steering Committee
- RSP Conference Steering Committee
- Member of COPIL (Comité de pilotage), Hasler Foundation action for Diploma of Advanced studies in Computer Science for Gymnasium Teacher

Conference organization as chair or co-chair

- General Chair of Model Checking Contest @ Petri Nets 2013, june 2013, Milan.

Member of conference program committees

- Program Committee of SERENE 2014, june 2014, Budapest.
- Program Committee of PNSE 2014, june 2014, Tunis, Tunisia.
- Program Committee of Petri Nets 2014, june 2014, Tunis, Tunisia.

- Program Committee of VOLT 2013, VOLT 2014, Verification Of ModeL Transformation, june 17, Budapest Hungary.
- Program Committee of PNSE'13, Petri Nets and Software Engineering, june 2013, Milan, Italy.

Funded research projects
Participation to European projects

Movere
Partners: Didier Buchs (UNIGE), Prof. Nicolas Guelfi (University of Luxembourg)
Period: 2010 - 2013

Participation to National projects

BRINTA
Fundamental issues in symbolic model checking techniques for Hierarchical high level modes
FNS Project
Period: 2012 - 2014

―――

ESTATE
Embedded SysTem Automatic TEsting, support by Honeywell international
Parterns: Didier Buchs (UNIGE), Dr. Armin Wellig (Honeywell)
Period: 2014 - 2015

―――

CERN
PhD support on testing control systems
Partners: Didier Buchs (UNIGE), Dr. Manuel Berges & Dr. Paul Burkimsher (CERN)
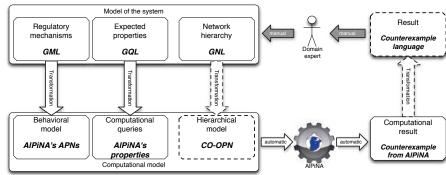Period: 2014 - 2016

―――

Toxicology
Support by SCATH and SECO
Partners: Didier Buchs (UNIGE), Dr. David Vernez (IST), Bojan Gasic (SECO)
Period: 2014 - 2015

―――

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

SCIEX-RO - SARPOT

Secure ad hoc routing protocol based on a web-of-truct like trust management system
Partners: Didier Buchs (UNIGE), Prof. Victor Patriciu (Military University of Bucharest), Dr. Mihai-Lica Pura (Military University of Bucharest)
Period: October 2013 - September 2014

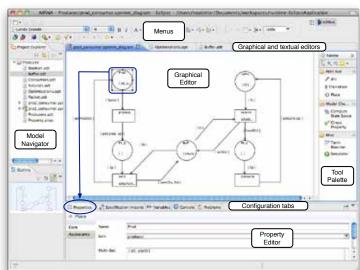## Others

Editorial responsabilities

* LNCS Transactions on Petri Nets and Other Models of Concurrency (ToPNoC) Editorial Board, Springer Verlag.

Refereeing

* IEEE Trans. on Reliability, march 2013

Special issues

* Various public demonstrations in TEC Days (Collège Emilie-Gourd) : «Programmez un robot», Maximilien Colange, Mihai-Lica Pura , Edmundo Lopez and Didier Buchs

Invited talks

* D. Buchs: Seminar at the DSM-TP second doctoral symposium, September 2013, Lisbon (Portugal), title of the talk: " Algebraic Abstract data types for DSML".

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, 8 students
* **Modeling and Verification**, Computer Science, Master, 4 ECTS, 56 hours, 20 students
* **Advanced Formal Tools** (Optional), Computer Science, Master, 4 ECTS, 56 hours, 6 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/
* **Compilateurs et interprètes**, Computer Science, 3rd year Bachelor, 6 ECTS, 56 hours

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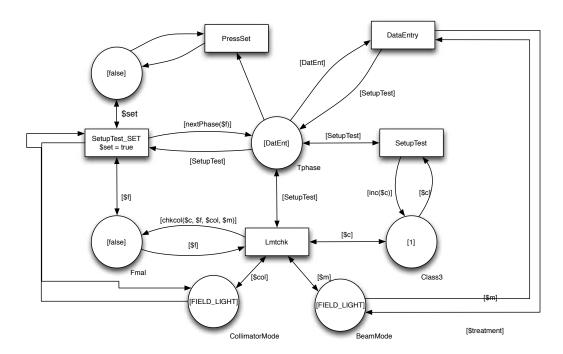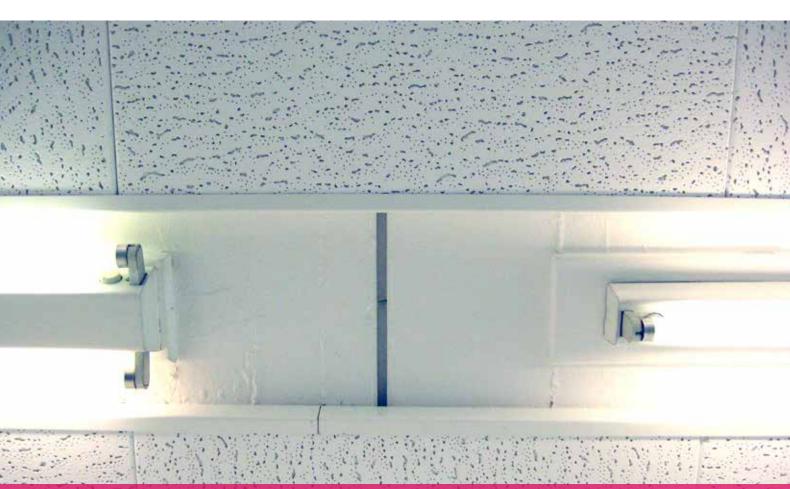

Figure 3: Algebraic Petri net describing the critical module of the famous case of the Therac-25, a radiation therapy machine that caused at least 3 fatal accidents between 1985 and 1987

SPC

Scientific and Parallel Computing

Typical lighting in Battelle buildings

Scientific and Parallel Computing

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. In particular we keep developing and improving the PALABOS software, a powerful open-source Lattice Boltzmann solver.

Recent activities have focused on developing a new methodology and a new software infrastructure to solve challenging multiscale applications, in particular in biomedical problems thrombosis in cerebral aneurysms (THROMBUS European project). In the European MAPPER project, we developed MML, a multiscale modeling language that allows the implementation of distributed multiscale applications on the European computing infrastruture, as well as the coupling of parallel clusters with HPC cloud systems. As a demonstrator, we develop a multiscale simulation of the Rhône river, in collaboration with SIG (See figure below). Within the European MARINET project, we provide a numerical simulation of a wave energy converter.

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).

Team

Director
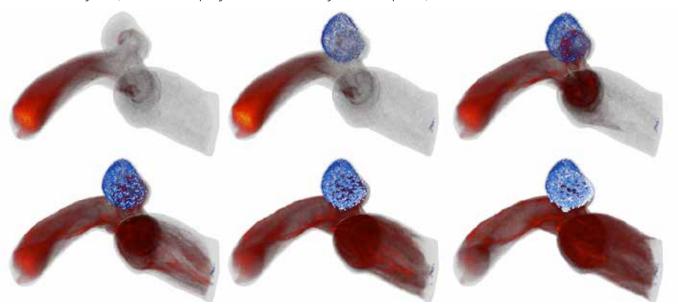Bastien Chopard
Full professor

Senior researchers
Dr. Jean-Luc Falcone
Dr. Jonas Latt
Dr. Orestis Malaspinas
Dr. Alexandre Dupuis

PhD students
Christophe Charpilloz
Ranaivo Razakanirina
Mohamed Ben Belgacem
Gregor Chliamovitch
Daniel Lagrava
Aziza Merzouki
Xavier Meyer

Visiting Academic Guests
Prof. François Grey

Administration
Anne-Isabelle Giuntini

PhD thesis

- Diemer Anda Ondo, «Modélisation et Analyse des Systèmes à paramètres distribués non linéaires par la méthode de Boltzmann sur réseau: application aux canaux d'irrigation», in co-supervision with Prof. L. Lefèvre, INP-Grenoble, 9 July 2013

List of publications

Refereed papers in international journals

[1] Olivier Marcou, Bastien Chopard, Samira El Yacoubi, Boussad Hamroun, Laurent Lef\`{e}vre and Eduardo Mendes. A Lattice Boltzmann model to study sedimentation phenomena in irrigation canals. CiCP, vol 13(3), pp 880--899, 2013

[2] Joris Borgdorf, Jean-Luc Falcone, Eric Lorenz, Carles Bona-Casas, Bastien Chopard, Alfons G. Hoekstra. Foundations of Distributed Multiscale Computing: Formalization, Specification, Analysis and Execution. J. of parallel and distributed computing, vol. 73 (2013), pp. 465-483,

[3] Andrea Parmigiani, Jonas Latt, Mohamed Ben Belgacem and Bastien Chopard. A Lattice Boltzmann simulation of the Rhone river. Int. J. Mod. Phys. C, 24(11):1340008, 2013

[4] Jonas Latt, Dimitrios Kontaxakis, Laurent Chatagny, Felix Muggli and Bastien Chopard. Hybrid lattice Boltzmann method for the simulation of static mixers, Int. J. Mod. Phys. C, 24(11): 1340009, 2013

[5] Bruno Barbieri, Guillaume Sartoretti, Jean-Luc Falcone, Bastien Chopard and Martin J. Gander. Traffic prediction based on a local exchange of information. J. of Cellular Automata, Vol. 8:(5-6), p. 429--441, 2013

[6] G. Ionescu and B. Chopard. An agent-based model for the bibliometric h-index. Eur. Phys. J. B 86:426, 2013

[7] Bastien Chopard, Pham van Thang and Laurent Lefevre. An asymmetric Lattice Boltzmann model for the 1D shallow water equation. Computers and Fluids 88 (2013), pp. 225-231

Full refereed papers in Conference Proceedings

[8] Mohamed Ben Belgacem, Bastien Chopard, Joris Borgdorff, Mariusz Mamonski, Katarzyna Rycerz and Daniel Harezlak. Distributed Multiscale Computations using the MAPPER framework. Procedia in Computer Science, vol 18, pp. 1106 - 1115, 2013.

[9] S. Zimny, B. Chopard, O. Malaspinas, E. Lorenz, S. Roller and J. Bernsdorf, A multiscale approach for the coupled simulation of blood flow and thrombus formation in intracranial aneurysms. Procedia in Computer science, 2013

[10] Ranaivo Razakanirina and Bastien Chopard. Dynamics of Artificial Markets on Irregular Topologies. Springer Proceedings in Complexity, 2013, pp. 1020-1031.

Books and book chapters

[11] Alfons G. Hoekstra, Bastien Chopard, Pat Lawford. Multiscale Modeling and Computing, in VPH textbook, Oxford University Press, 2013

[12] B. Chopard. Cellular Automata and lattice Boltzmann modeling of physical systems, Handbook of Natural Computing, Rozenberg, Grzegorz; Bäck, Thomas; Kok, Joost N. (Eds.) Springer, pp. 287--331, 2013

[13] Xavier Meyer, Bastien Chopard and Paul Albuquerque. Linear programming on a GPU: a case study}, in Designing Scientific Applications on GPUs. Raphael Couturier Edt. Chapman & Hall/CRC Numerical Analysis and Scientific Computing Series. 2013

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

International and national research programs committees

- 2013, Expert for the evaluation of a Master program in Computational Science, University of Amsterdam, The Netherlands

PhD thesis committees

- Expert for Olivier Bouré, LORIA Nancy, 13 Sept. 2013

Conference organization as chair or co-chair

- Co-Chair for Multiscale Modelling and Computing, Lorentz Center, Leiden, NL, 8-12 April 2013

Member of conference program committees

- DSFD Discrete Simulation of Fluid Dynamics, Yeravan, Armenia, July 2013

Funded research projects

Participation to European projects

MAPPER

FP7, agreement RI-261507
Multiscale Applications on European e-Infrastructures
Period: October 2010 - September 2013
Partners: University of Amsterdam, University College London, University of Ulster, ICBP Poznan , AGH / AGH-UST Krakow, Ludwig-Maximilians-Universitaet Muenchen, Chalmers Tekniska Hoegskola Ab, Max Planck Gesellschaft Zur Foerderung Der Wissenschaften E.V.
Web Site: http://www.mapper-project.eu

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THROMBUS: A quantitative model of thrombosis in intracranial aneurysms

FP7-VPH, agreement 269966
Complex Automata for modelling and simulation of complex systems
Period: February 2011 - January 2014
Partners: Creatis-CNRS, UNIGE, University of Amsterdam, German Research School, EPFL, University of Charleroi, Covalia
Web Site: http://www.thrombus-vph.eu

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SOPHOCLES: Self-Organised information PrOcessing, Criticality 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 Multilayer 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

——

SystemX : EpiPhysiX

Coordinator: M. Milinkovitch (UNIGE)
Partners: M. Gonzales, A. Roux (UNIGE), A. Wagner (UNIZH)
Period: 2013 - 2016
Web Site: http://www.systemsx.ch/

——

Efficient computational solutions for advanded codon models of natural selection

CR3213_1437 68/1
Partners: Nicolas Salamin, M Robinson-Rechavi (UNIL)
Period: April 2013 - December 2015

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

Events organized in Geneva
- April 22-23, Geneva, CUSO workshop on Citizen Cyberscience

Invited talks
- ICFD 2013 (Int. Conf. on Flow dynamics), «Modeling and simulation of thrombosis in cerebral aneurysms», Sendai (Japan), 26 November 2013

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

Others
- Interview for le Temps (Lucia Sillig) sur les superordinateurs et certaines recherches du CSCS
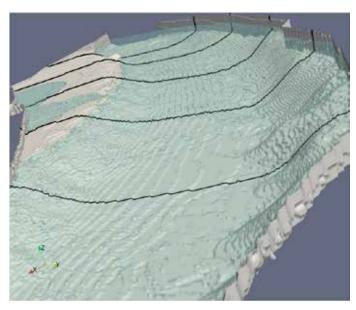

Figure 2: Draining of the river Rhône, with riverbed erosion. Water level is shown in semi-transparent light-blue color. © palabos.org

TEACHING
- **Méthodes Heuristiques d'apprentissage et d'optimisation**, Computer Science, Master, 8 ECTS, 112 hours, 20 students
- **Programmation Bioinformatique**, Computer Science, Master, 7 ECTS, 84 hours, 15 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, Master, 4 ECTS, 56 hours, 25 students

SUPERVISION OF BACHELOR & MASTER THESIS
- Bruno Barbieri, Bachelor, «Influence de la portée et de la fréquence de communication dans une méthode décentralisée d'estimation du trafic», February 2013
- Pierre Kuenzli, Master «Simulation parallèle de particules dans un champ d'advection appliqué au transport de tephra volcanique», November 2013

TCS

Theoretical Computer Science

Outside Battelle building A, © Google street view

Theoretical Computer Science

Domain activities

Experimental driven research on Topology Control Protocols for Wireless Sensor Networks (WSN) using transmission power and throughput rate feedback schemes. The goals include link qualification in terms of symmetry and coherence and link quantification. Transmission power constitutes the link «generator» and throughput rate the link «regulator» to meet the qualitative and quantitative criteria for links between WSN nodes .

Research on designing a geographic routing algorithm for large scale networks, which is an extension to the Virtual Raw Anchor Coordinate localization based geographic routing. The goal is to perform routing in wireless ad-hoc network in a hierarchical manner, where in the top level routing is done between two geographic regions and in the bottom level performing routing to the exact node. A randomized protocol is designed and evaluated with simulations.

Design of a distributed publish/subscribe algorithm for an ubiquitous sensing scenario. We consider unstructured and free-geocoordinates sensing networks in which no network protocol is provided. Our solution, which avoids implying all the nodes of the network in the dissemination process, uses a distributed notification service defined by Directional Random Walks (DRW). A DRW is a probabilistic technique able to go forward into the network following a loop-free path. The principle assumed in our research is that two lines in a plane cross.

Also research on Future Networks, Internet of Things and Crowdsensing. Our efforts focus on problem modeling aspects and incentive formulation regarding the crowd participation in tasks that aim at optimizing spatial and temporal coverage issues.

Also, research on radiation aware wireless networking; studying the cumulative impact on ERM caused by multiple wireless sources in terms of numbers, topology, protocol, etc.

Team

Director
José Rolim
Full professor

Senior researchers
Dr. Pierre Leone (MER)
Dr. Aubin Jarry (MA)
Dr. Christoforos Raptopoulos
Dr. Constantinos Marios Angelopoulos
Dr. Ricardo Wehbe

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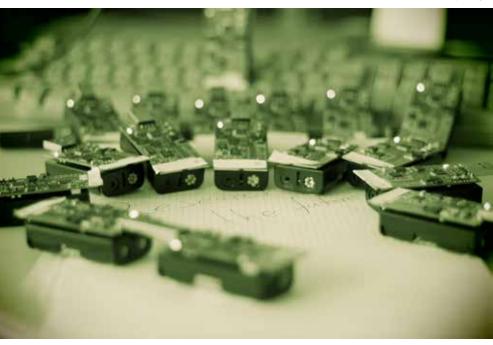Napoleon-Orestis Evangelatos
Ali Fakheri

Figure 1: Testing experimental algorithms and models on Wireless Sensor Networks (WSN) © Orestis Evangelatos

Administration
Lara Broi

PhD thesis

- Hakob Aslanyan, «Some Aspects of Interference Minimization, Mobile Data Propagation and Data Encryption in Wireless Sensor Networks», 30 May 2013
- Tigran Tonoyan, «Bounds and Algorithms for Scheduling Transmissions in Wireless Networks», 26 November 2013

List of publications

Refereed papers in international journals

[1] Prasad Raghavendra, Sofya Raskhodnikova, Klaus Jansen, José D. P. Rolim (Eds.): Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques - 16th International Workshop, APPROX 2013, and 17th International Workshop, RANDOM 2013, Berkeley, CA, USA, August 21-23, 2013. Proceedings. Lecture Notes in Computer Science 8096, Springer 2013, ISBN 978-3-642-40327-9

[2] JARRY, Aubin. Fast reroute paths algorithms. Telecommunication Systems, 2013, vol 53, p 881-888.

[3] George B. Mertzios, Sotiris E. Nikoletseas, Christoforos Raptopoulos, Paul G. Spirakis: Natural models for evolution on networks. Theor. Comput. Sci. 477: 76-95 (2013)

[4] Constantinos Marios Angelopoulos, Sotiris Nikoletseas, Theofanis P. Raptis: Wireless Energy Transfer in Sensor Networks with Adaptive, Limited Knowledge Protocols. COMNET-D-13-1709 (to appear)

[5] Pierre Leone and Elad M. Schiller, "Self-Stabilizing TDMA Algorithms for Dynamic Wireless Ad Hoc Networks," International Journal of Distributed Sensor Networks, vol. 2013, Article ID 639761, 17 pages, 2013. doi:10.1155/2013/639761

Full refereed papers in Conference Proceedings

[6] Marcelo G. Almiron, Olga Goussevskaia, Antonio A. F. Loureiro, José D. P. Rolim: Connectivity in obstructed wireless networks: from geometry to percolation. MobiHoc 2013: 157-166

[7] Anthony Gasperin, Topology of Asymptotic Cones and Non-deterministic Polynomial Time Computations. CiE 2013, <http://www.informatik.uni-trier.de/~ley/db/conf/cie/cie2013.html#Gasperin13>: 191-199

[8] Anthony Gasperin: Topology and Non-Deterministic Polynomial Time Computation : Avoidance of The Misbehaviour of Hub-Free Diagrams and Consequences. MCU 2013, <http://www.informatik.uni-trier.de/~ley/db/series/eptcs/eptcs128.html#Gasperin13>: 76-84

[9] Sotiris E. Nikoletseas, Panagiota N. Panagopoulou, Christoforos Raptopoulos, Paul G. Spirakis: On the Structure of Equilibria in Basic Network Formation. FCT 2013: 259-270

[10] Ara Alexanyan, Hakob Aslanyan, José D. P. Rolim, Symmetric-key encryption scheme based on the strong generating sets of permutation groups, PerCom Workshops 2013, 470-474, March18-22, 2013

[11] Hakob Aslanyan, Tigran Tonoyan, José D. P. Rolim, Low radiation paths in wireless networks pass along Voronoi diagram. Software, Telecommunications and Computer Networks (SoftCOM), 2013 21st International Conference on. pp1-5. 18-20 Sept. 2013

[12] Tigran Tonoyan: Conflict Graphs and the Capacity of the Mean Power Scheme. ALGOSENSORS 2013, 278-290.

[13] Tigran Tonoyan: Comparing Schedules in the Conflict-Graph and SINR Models with Different Power Schemes. ADHOC-NOW 2013, 317-328.

[14] Pierre Leone, Elad Michael Schiller: Self-stabilizing TDMA Algorithms for Dynamic Wireless Ad-hoc Networks. SENSORNETS 2013: 119-124

[15] Constantinos Marios Angelopoulos, Sotiris E. Nikoletseas, Theofanis P. Raptis: Adaptive, limited knowledge wireless recharging in sensor networks. MOBIWAC 2013: 65-72

[16] Orestis Evangelatos, Kasun Samarasinghe, Jose Rolim, Syndesi: A Framework for Creating Personalized Smart Environments using Wireless Sensor Networks, Distributed Computing in Sensor Systems (DCOSS), 2013 IEEE International Conference on, pp.325-330, Cambridge, USA, May 2013

Full refereed papers in Workshops Proceedings

[17] P. Leone and C. Muñoz, "Content based routing with directional random walk for failure tolerance and detection in cooperative large scale wireless networks," in Proc. 2nd Intl. Workshop on Architecting Safety in Collaborative Mobile Systems, SAFECOMP, 2013, pp. 313–324.

Books and book chapters

[18] Prasad Raghavendra, Sofya Raskhodnikova, Klaus Jansen, José D. P. Rolim (Eds.): Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques - 16th International Workshop, APPROX 2013, and 17th International Workshop, RANDOM 2013, Berkeley, CA, USA, August 21-23, 2013. Proceedings. Lecture Notes in Computer Science 8096, Springer 2013, ISBN 978-3-642-40327-9

Research and technical reports

[19] Anthony Gasperin, Maurice Margenstern, <http://www.informatik.uni-trier.de/~ley/pers/hd/m/Margenstern:Maurice.html>: A note on groups of a family of hyperbolic tessellations. CoRR abs/1402.4337, <http://www.informatik.uni-trier.de/~ley/db/journals/corr/corr1402.html#GasperinM14>

International and national advisory committees

- 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

PhD Thesis committees

- Georgios Georgiadis, Ph.D. thesis on January 31, 2013 at Chalmers University, Sweden – José Rolim member of the jury
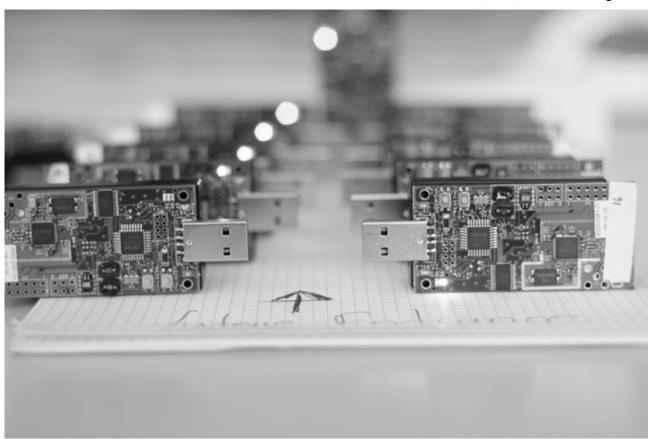
Conference organization as chair or co-chair

- DCOSS 2013 IEEE International Conference on Distributed Computing in Sensor Systems, Cambridge, Boston, US chair steering committee: Jose Rolim
- APPROX 2013 – 16th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems – Berkeley- August 2013 - chair steering committee: Jose Rolim
- RANDOM 2013 - 17th International Workshop on Randomization and Computation –Berkeley – August 2013 - chair steering committee: Jose Rolim
- SEA 2013– 12th International Symposium on Experimental Algorithms –May –Rome, Italy- chair steering committee: Jose Rolim
- ALGOSENSORS 2013 - 9th International Workshop on Algorithms for Sensor Systems, Wireless Ad Hoc Networks and Autonomous Mobile Entities –Sophia Antipolis, France - member steering committee: Jose Rolim
- IPDPS 2013 - 27th IEEE International Parallel & Distributed Processing Symposium. May 2013, Cambridge, US member steering committee: Jose Rolim

Member of conference program committees

- ADHOC-NOW 2013: International Conference on Ad Hoc Networks and Wireless (ADHOC-NOW) Worclaw Poland, Jose Rolim
- CIAC 2013: International Conference on Algorithms and Complexity, Barcelona, May 2013 – Jose Rolim
- ICALP 2013: 40th International Colloquium on Automata, Languages and Programming, July 2013 – Latvia, Riga. Jose Rolim
- MOBIWAC 2013: The 11th ACM* International Symposium on Mobility Management and Wireless Access, Barcelona, Spain, Pierre Leone
- UBICOMM 2013: The Seventh International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies Porto,Portugal, Pierre Leone
- ALGOSENSOR 2014: 9th International Symposium on Algorithms and Experiments for Sensor Systems, Wireless Networks and Distributed Robotics, Sophia Antipolis, France, Pierre Leone
- AsCOMS 2013: 2nd Workshop on Architecting Safety in Collaborative Mobile Systems, Toulouse, France Pierre Leone
- TPMC 2013: International Conference on Theory and Practice in Modern Computing, Prague, Czech Republic, Pierre Leone
- SEA 2013: 12th International Symposium on Experimental Algorithms, Rome, Italy, Pierre Leone
- sensornets 2013: 2nd International Conference on sensor networks, Barcelona, Spain, Pierre Leone

Figure 2: Designing Topology Control Protocols for Wireless Sensor Networks (WSN) © Orestis Evangelatos

Funded research projects
Participation to European projects

IoT Lab
Researching crowdsourcing to extend IoT testbed infrastructure for multidisciplinary experiments, with more end-user interactions, flexibility, scalability, cost efficiency and societal added value
Partners: Mandat International MI Switzerland, Dunavnet DNET Serbia, Computer Technology Institute and Press «Diophantus» CTI Greece, Geneva University UniGE Switzerland, Alexandra Institute Alexandra Danemark, Luleå Univers ity of Technology – Centre for Distant Spanning Technology (CDT) LTU Sweden, University of Southampton Soton UK, University of Surrey
Period: October 2013 – September 2016
Website: http://www.iotlab.eu/

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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

Dynamic and Evolutionary Networks ; Modeling, Complexity and Algorithms
FNSR
Principal Investigator: José Rolim

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Global Virtual Raw Anchor Coordinates Routing in Sensor Networks
FNSR
Principal Investigator: Pierre Leone

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WSNLab Project. Nanotera - Wireless Sensor Network Laboratory
Financed by the Nano-tera CH (NTCH) program.
Partners: University of Bern (Prof. Torsten Braun)
Period: January 2013 - April 2013.
Website: http://www.nano-tera.ch/projects/332.php#

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POPWIN
Parallel Object Remote Programming for Heterogeneous Wireless Networks over IPv6
Hasler Stiftung
Pierre Leone

Others
Refeereeing
- Journal of Green Computing
- Computer Networks (COMNET)
- Simulation Modeling Practice and Theory (SIMPAT)
- Transactions on Computers (TC)
- HortTechnology (HORTTECH)

Editorial responsibilities
- Member of the Editorial Board of the Journal Ad Hoc & Sensor Wireless Networks, Pierre Leone
- Member of the Editorial Board of the journal Algorithm letters, Pierre Leone
- Member of the Editorial Board of the journal ISRN Sensor Networks, Pierre Leone
- Member of the Editorial Board of the journal Algorithms, Pierre Leone

Invited talks
- KNX-city Workshop, «IoT crowdsourcing technologies for energy efficient buildings», Athens, Greece, December 6th, 2013

Technology transfer
- Wisebed testbed. To keep Konstantinos Chantzis' project alive where he had setup a WSN testbed using Wisebed framework. He has transferred his knowledge about that framework and there is a testbed being installed using new version of Wisebed.

Teaching
- **Network Optimisation**, Computer Science, Master (Option), 4 ECTS, 56 hours, 20 students
- **Compilateurs et Interprètes**, Computer Science, Bachelor, 4 ECTS, 56 hours, 20 students
- **Calculabilité complexité**, Computer Science, Bachelor, 4 ECTS, 56 hours, 24 students
- **Langages Formels**, Computer Science, Bachelor, 4 ECTS, 56 hours, 20 students
- **Algorithmique avancée**, Computer Science, Bachelor, 56 hours, 15 students
- **Programmation de Systèmes**, Computer Science, Bachelor, 56 hours, 15 students
- **Systèmes Informatiques**, Computer Science, Bachelor, 56 hours, 15 students
- **Réseaux Complexes**, Computer Science, Master (Option), 56 hours
- **Systèmes concurrents et distribués**, Computer Science, Bachelor (Option), 56 hours
- **Cryptographie et sécurité**, Computer Science, Bachelor, 56 hours, 15 students
- **Réseaux Informatiques**, Computer Science, Bachelor, 56 hours, 10 students

Administrative Staff

Centre Universitaire d'Informatique

Lara Broi

Marie-France Culebras

Anne-Isabelle Giuntini

Maëlle Rümbeli

The administrative staff of CUI is dedicated to serving at its best the community of researchers, teachers and students. Essentially covering four domains :
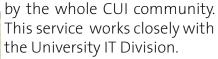
Administration: Its role is to manage the CUI budget, logistics, communication, etc. It also manages the Web site, the production of documents (activity report, flyers, etc.) as well as the organization and coordination of public and promotional events such as the book and student fair (Salon du Livre 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.
• **Lara Broi** is secretary.
• **Marie-France Culebras** is secretary;
• **Anne-Isabelle Giuntini** is part-time secretary (50%);
• **Maëlle Rümbeli** 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 print journals.
• **Amélia Bossard** is head librarian;
• **Marie Bertinat** is assistant-librarian (-> April 2013);
• **Jérôme Napoléon** is librarian (start: May 2013).

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, Jérôme Napoléon

Centre Universitaire d'Informatique

Financial Report

CUI

Staff	CHF 930'636.-
• Academic	CHF 283'474.-
• Administrative and Technical	CHF 484'521.-
• Employer's social contributions	CHF 162'641.-
Operating costs - Investment	CHF 65'300.-
Operating costs - Others	CHF 191'000.-
Library	CHF 0.-
CUI subtotal	**CHF 1'186'936.-**

Faculty of sciences (Computer Science Department)

Staff	CHF 3'183'507.-
• Academic	CHF 2'459'653.-
• Administrative and Technical	CHF 167'287.-
• Employer's social contributions	CHF 556'567.-
Operating costs - Investment	CHF 71'082.-
Operating costs - Others	CHF 38'531.-
Sciences subtotal	**CHF 3'293'120.-**

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

Staff	CHF 2'013'331.-
• Academic, incl. Charges (estimation)	CHF 1'968'909.-
• Administrative and Technical, incl. Charges (estimation)	CHF 44'422.-
Operating costs - Investment	CHF 11'380.-
Operating costs - Others	CHF 0.-
SES subtotal	**CHF 2'024'711.-**

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

Staff - Academic, incl. Charges (estimation)	CHF 799'751.-
Operating costs	CHF 20'000.-
Humanities subtotal	**CHF 819'751.-**

TOTAL BUDGET	**CHF 7'324'518.-**

External funding obtained by the professors · Credit

Faculty of sciences (Computer Science Department)

UE-funded Projects	CHF 1'013'372.-
Swiss-funded Projects	CHF 1'366'403.-
Sciences subtotal	**CHF 2'379'775.-**

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

UE-funded Projects	CHF 1'100'440.-
Swiss-funded Projects	CHF 1'150'479.-
SES subtotal	**CHF 2'250'919.-**

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

Swiss-funded Projects	CHF 152'833.-
Humanities subtotal	**CHF 152'833.-**

TOTAL CREDIT · **CHF 4'783'527.-**

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