

Centre Universitaire d'Informatique

2014

Activity Report



Battelle building A drone view, March 19th 2014.



**UNIVERSITÉ
DE GENÈVE**



UNIVERSITY OF GENEVA
Centre Universitaire d'Informatique
Battelle - Bâtiment A
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CVML - Computer Vision and Multimedia Laboratory Prof. Thierry Pun Prof. Sviatoslav Voloshynovskiy Prof. Stéphane Marchand-Maillet	13
ISS - Institute of Information Service Science Prof. Giovanna Di Marzo Serugendo Prof. Gilles Falquet Prof. Dimitri Konstantas Prof. Michel Léonard Prof. Nadia Magnenat-Thalmann Prof. Jean-Henry Morin	23
LATL - Laboratory for the Analysis and Technology of Language Prof. Eric Wehrli	49
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Foreword

Welcome to the CUI

The mission of the Centre Universitaire d'Informatique (CUI) is to bring together research and teaching in computer science at the University of Geneva. Faculty along with their research teams take advantage of this unique setting to foster collaboration and interaction among scientists coming from four out of the ten faculties of the University of Geneva (Faculty of Science, Faculty of Humanities, Faculty of Social Sciences, School of Economics and Management).

At the end of 2014, CUI is home to about 20 scientists at the professor level, about 120 collaborators, at various levels of seniority - from PhD candidates to tenured senior researchers -, efficiently supported by a staff of 7 administrative and technical collaborators.

As you will discover while reading the following pages, CUI is an interdisciplinary centre at the crossroads of disciplines as diverse as science, humanities or social and economic science covering many areas bringing together scientists across disciplines. This trend will be further encouraged in the near future with new and exciting research in domains such as citizen science, big data, emotions, digital humanities, bio-informatics, information systems, just to name a few.

Enjoy...



Prof. Eric Wehrli
Director of the CUI
University of Geneva

clcl.unige.ch

CLCL

**Computational
Learning and
Computational
Linguistics**



Typical yellow blinds of Battelle buildings

Computational Learning and Computational Linguistics

DOMAIN ACTIVITIES

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

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

Today, machine learning is everywhere, and is one of the most sought-after skill by information technology employers. We apply it to language problems using very large amounts of multi-lingual data.

Our current research includes the development of adaptive data-driven systems for several parsing-based tasks, such as investigations of shallow levels of meaning representations and spoken-language understanding for dialogue systems, large-scale information extraction, and statistical machine translation. These systems span several languages (French, English, German, Italian, Spanish, Japanese, Arabic, Czech, Chinese, Catalan) and for some languages have reached state-of-the-art performance.

These systems are based on our linguistic work on cross-lingual syntactic and semantic parallelism and on machine learning methods based on latent variable models, neural networks and graph-based learning.

The CLCL group gets funding from several Swiss NSF and EU grants. For example:

The EU project PARLANCE is developing the next generation of spoken dialogue systems, using statistical modelling to make them more robust and natural. Our work in this project focuses on incrementally understanding users as they speak, allowing natural fluent interactions with a computer.

The Swiss NSF Sinergia grant COMTIS is extending the capabilities of machine translation technology to include inter-sentential phenomena, such as pronouns, verb tense, discourse connectives, and register. Our work in this project focuses on algorithms to efficiently model more linguistically motivated structures in statistical machine translation.

In the Swiss 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?

TEAM

Directors

Paola Merlo
Associate professor



James Henderson
CC (UNIGE)
Principal Scientist,
Xerox Research
Centre Europe



Senior researchers

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

Assistants (PhD students)

Kristina Gulordava
Nikhil Garg

Administration

Eva Capitaio

LIST OF PUBLICATIONS

Full refereed papers in Conference Proceedings

- [1] Andrea Gesmundo, James Henderson, Undirected Machine Translation with Discriminative Reinforcement Learning. EACL 2014, Gothenburg, Sweden, 2014.
- [2] Hassan Ghasemzadeh Mohammadi, Pierre-Emmanuel Gaillardon, Majid Yazdani, Giovanni De Micheli. Fast process variation analysis in nano-scaled technologies using column-wise sparse parameter selection. 2014 IEEE/ACM International Symposium on Nanoscale Architectures (NANOARCH), pp163-168, IEEE.
- [3] Helen Hastie, Marie-Aude Aufaure, Panos Alexopoulos, Hugues Bouchard, Catherine Breslin, Heriberto Cuayáhuitl, Nina Dethlefs, Milica Gasic, James Henderson, Oliver Lemon, Xingkun Liu, Peter Mika, Nesrine Ben Mustapha, Tim Potter, Verena Rieser, Blaise Thomson, Pirros Tsiakoulis, Yves Vanrompay, Boris Villazon-Terrazas, Majid Yazdani, Steve Young, Yanchao Yu. The PARLANCE mobile application for interactive search in English and Mandarin. 15th Annual Meeting of the Special Interest Group on Discourse and Dialogue.
- [4] Sarah Ouwayda, "Composing additive complex numerals in the DP". To appear in the proceedings of WECOL 2013, Arizona State University.

Full refereed papers in Workshops Proceedings

- [5] Tanja Samardzic and Paola Merlo (2014). "Likelihood of External Causation in the Structure of Events", Proceedings of the EACL 2014 Workshop on Computational Approaches to Causality in Language (CAtoCL).

Books and book chapters

- [6] Paola Merlo, 'Testing Models of Word Order Universals', In J. Blochowiak, C. Grisot, S. Durrleman-Tame, C. Laenzlinger (eds.), Papers dedicated to Jacques Moeschler, Genève.

Research and technical reports

- [7] Kristina Gulordava, Mémoire de pré-doctorat «Quantitative patterns of word order variation: a cross-linguistic approach» (defended on 7th July 2014)

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

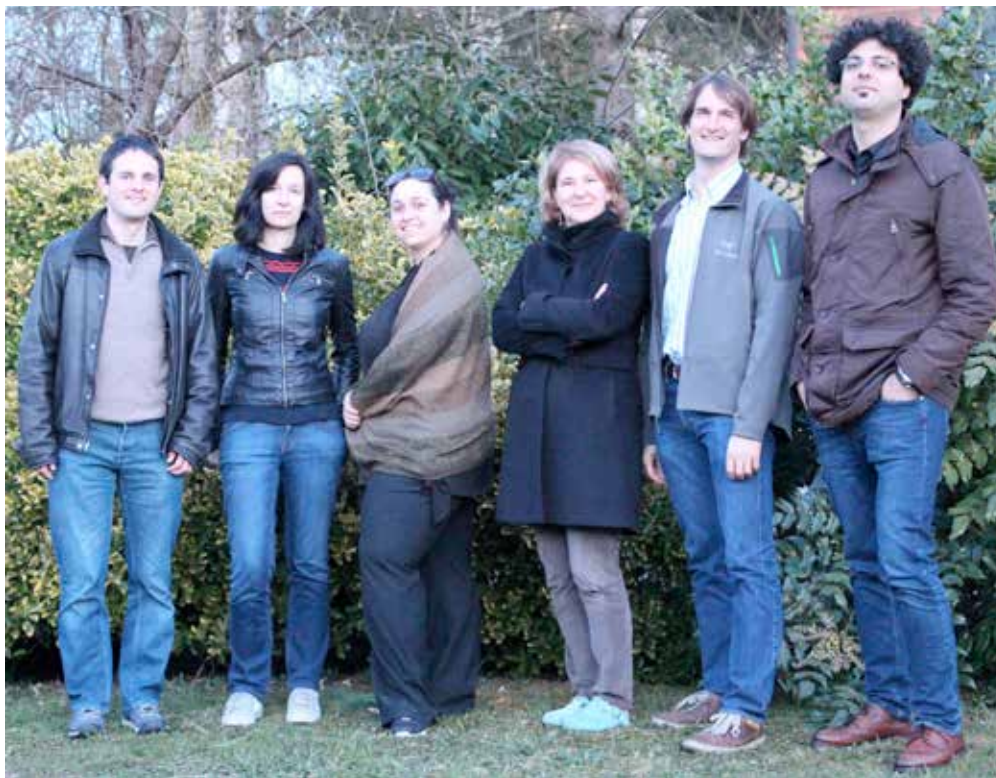
- Paola Merlo: member of the Executive Board of the Association for Computational Linguistics, as editor of the journal of the association, Computational Linguistics, MIT Press.

PHD THESIS COMMITTEES

- Paola Merlo: Ph.D. committee member, Linguistics, University of Uppsala. Christian Hardmeier. "Discourse in Statistical Machine Translation", June 2014.
- James Henderson: PhD external examiner at University of Sydney for Richard Billingsley, who worked with James Curran on deep neural network models of parsing.
- James Henderson: PhD external examiner at Univ Edinburgh for Aciel Eshky, who worked with Mark Steedman on probabilistic user simulation for dialogue systems.

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- James Henderson: NIPS 2014 (Neural Information Processing Systems), Montreal, Quebec, Canada.
- James Henderson: EMNLP 2014 (Conf. on Empirical Methods in Natural Language Processing)
- James Henderson: EACL 2014 (European Chapter of the Association for Computational Linguistics)
- James Henderson: CoNLL 2014 (Conf. on Computational Natural Language Learning)
- James Henderson: ACL 2014 (Meeting of the Association for Computational Linguistics), Baltimore, Maryland, USA.
- Sarah Ouwayda: Member of the Conference Program Committee of the Generative Linguistics in the Old World (GLOW)



CLCL team in 2015

FUNDED RESEARCH PROJECTS

Participation to European projects

PARLANCE

Probabilistic Adaptive Real-Time Learning And Natural Conversational Engine

Period: November 2011 - October 2014.

Granted by EC FP7 area Information and Communication Technologies (ICT)

Partners: Heriot-Watt Univ., Cambridge Univ., Yahoo! Iberia, French CRSA, iSoco. PI for Univ. Geneva.

Web site: <https://sites.google.com/site/parlanceprojectofficial/>

Participation to National projects

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

Optimized Machine Learning Methods for Automated Analysis of Journalistic Content

James Henderson and Joël Lang

Period: July 2013 - April 2014

Swiss CTI R&D Grant

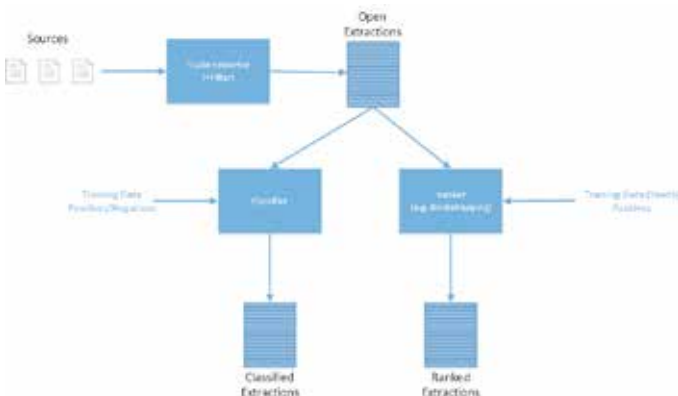


Figure 1: A rchitecture of information extraction system

OTHERS

Refereeing

- James Henderson: Computational Linguistics
- Sarah Ouwayda: Natural Language and Linguistic Theory (NLLT)
- Sarah Ouwayda: Linguistic Inquiry (LI),
- Sarah Ouwayda: Lingua
- Sarah Ouwayda: Studia Linguistica

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: Multilingual NLP meets Universal Grammar, Natural language processing group, Computer Science, Stanford University, October 2014.

- Paola Merlo: Multilingual Syntactic and Semantic Processing, Uppsala University, June 2014.
- Paola Merlo: Multilingual Issues in Syntactic and Semantic Processing, Saarbruecken University, May 2014.
- Paola Merlo: Multilingual Issues in Syntactic and Semantic Processing, Heidelberg University, January 2014.
- Sarah Ouwayda: Perfective is trouble for all kinds of modals, University of Manchester LEL Research Seminar
- Sarah Ouwayda: Syntax and Semantics of the noun phrase in Arabic, California State University, Fullerton
- James Henderson: Towards Social Mass Media through Natural Language Processing, Dialog Talk, Palo Alto Research Centre, Nov 2014.

Technology transfer

- Successful collaboration with Presspectrum Technologies GmbH, a startup developing machine learning and natural language processing technologies for digital media and e-commerce, through our CTI project on machine learning for journalistic articles.

Other

- Paola Merlo: Visiting scholar, Stanford University, fall 2014.
- Kristina Gulordava. Labex EFL (Paris) mobility grant for a short visit to ALPAGE laboratory (Paris 7, CNRS).
- Sarah Ouwayda: Editorial Assistant for the Journal of Computational Linguistics, MIT Press
- James Henderson: Visiting Researcher at Xerox' Palo Alto Research Center (PARC).

TEACHING

- **Projet METL: Encadrement personnalisé**, 2 ECTS, 56 hours, 4 students
- **Traitement automatique du langage: approches linguistiques et approches statistiques**, 56 hours, 25 students
- **Empirical Methods in Natural Language Processing**, 56 hours, 3 students

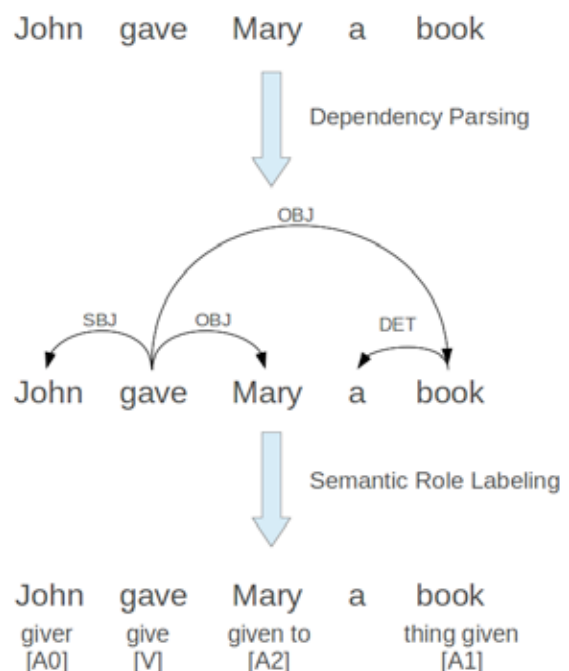


Figure 2: Data flow of syntactic-semantic parsing

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, Big 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>): affective computing and multimodal interaction. Studies various forms of interaction between humans, computers, and environment. Used modalities: 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 Quad-Core, 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.;
- light field camera: Raytrix.

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. Mohammad Soleymani
- Dr. Taras Holotyak

Assistants (PhD students)

- Séverine Cloix
- Juan Gomez
- Viviana Weiss
- Moritz Deephuis
- Farzad Farhadzadeh (till Feb. 2014)
- Sohrab Ferdowsi
- Dimche Kostadinov
- Hisham Mohamed (ended Aug. 2014)
- Michal Muszinsky (started Oct. 2014)
- April Morton (ended June 2014)
- Ke Sun
- Magda Gregorova
- Pablo Strasser
- Phong Nguyen (to defend within the next six months)
- Jun Wang (to defend within the next six months)

Visiting academic guest

- Dr. Mohammad Soleymani (Imperial College, London, UK)
- Hasmik Osipyan (University of Yerevan, Armenia) until Sep. 2014

Administration

- Lara Broi
- Maëlle Rübèli

PHD THESIS

- Juan Diego Gomez Valencia. February 2014, SeeColor: Seeing colors with an orchestra. Thèse No. 4642. Jury: Prof. Edwige Pissaloux, Univ. Pierre-et-Marie-Curie, Paris, France, Dr. Christophe Jouffrais, Univ. P. Sabatier, Toulouse, France, Dr. André Assimacopoulos (ABA, Genève, Suisse), Prof. S. Marchand-Maillet, Dr. Guido Bologna (co-directeur), Prof. T. Pun. Co-Lauréat du Prix Fondation Dalle Molle pour la qualité de la vie 2014.
- Farzad Farhazadeh, Information-Theoretic Analysis of Identification Systems in Large-Scale Databases, Febr. 2014
- Markonis, D. (2014). User-oriented medical image retrieval (co-supervision with Prof. H. Muller, HES Sierre, Wallis).
- Mohamed, H. (2014). Scalable approximate k-NN in multidimensional big data.

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] C. Mühl, B. Allison, A. Nijholt, G. Chanel, «Affective brain-computer interfaces», Special Issue Guest Editorial», *Brain-Computer Interfaces*, Vol. 1, No. 2, 2014, 63-65. DOI: 10.1080/2326263X.2014.913829
- [2] C. Mühl, B. Allison, A. Nijholt, G. Chanel, «A survey of affective brain computer interfaces: principles, state-of-the-art, and challenges», *Brain-Computer Interfaces*, Published online May 14 2014. DOI: 10.1080/2326263X.2014.912881.
- [3] M. Soleymani, T. Pun and A. Nijholt, «Best of Affective Computing and Intelligent Interaction 2013 in Multimodal Interactions», Special Issue Guest Editorial, *Journal on Multimodal User Interfaces*, Springer, July 2014. DOI 10.1007/978-3-319-014-0163-2.
- [4] J. Gomez, G. Bologna, T. Pun, «See CoLoR: An extended sensory substitution device for the visually impaired», *J. of Assistive Technologies*, Vol. 8, No. 2, 2014, 77-94. DOI: 10.1108/JAT-08-2013-0025
- [5] M. Soleymani, M. Larson, T. Pun, A. Hanjalic, «Corpus development for affective video indexing», *IEEE Trans. on Multimedia*, 16, 4, June 2014.
- [6] C. Maria Keet, Agnieszka Lawrynowicz, Claudia d'Amato, Alexandros Kalousis, Phong Nguyen, Raul Palma, Robert Stevensg, Melanie Hilario, «The Data mining Optimization Ontology», *J. of Web Semantics: Science, Services and Agents on the World Wide Web*, 2015, doi:10.1016/j.websem.2015.01.001
- [7] P. Nguyen, M. Hilario and A. Kalousis (2014) «Using Meta-mining to Support Data Mining Workflow Planning and Optimization», Volume 51, pages 605-644, doi:10.1613/jair.4377
- [8] F. Farhazadeh and S. Voloshynovskiy, Active content fingerprinting, *IEEE Transactions on Information Forensics & Security*, Volume 9, Number 6, pp. 905-920, 2014.
- [9] Mohamed, H., & Marchand-Maillet, S. (2014). Distributed media indexing based on MPI and MapReduce. *Multimedia Tools and Applications*, 69(2).

- [10] Marchand-Maillet, S., & Hofreiter, B. (2014). Big Data Management and Analysis for Business Informatics. *Enterprise Modelling and Information Systems Architectures (EMISA)*, 9.
- [11] Marchand-Maillet, S., Lambert, P., Merialdo, B., & Benois, J. (2014). Introduction to the special issue on content-based image retrieval. *Multimedia Tools and Applications*, 69(2).

Full refereed papers in Conference Proceedings

- [12] S. Cloix, G. Bologna, V. Weiss, T. Pun, D. Hasler, «Descending stair detection for low-power sensors», *ACVR 2014 - 2nd Workshop on Assistive Computer Vision and Robotics*, in conjunction with *ECCV 2014* (6-12 Sep. 2014), 12 Sept. 2014, Zürich, Switzerland.
- [13] V. Weiss, G. Bologna, S. Cloix, T. Pun, «Walking behavior change detector for a «smart» walker», *6th Int. Conf. on Intelligent Human-Computer Interaction, IHCI 2014*, Evry, France, December 8-10, 2014. In: *Procedia Computer Science* 39, Patrick Horain, Amine Chellali and Malik Mallem, Eds., 2014, 43 – 50. doi: 10.1016/j.procs.2014.11.008.
- [14] G. Molinari, M. Bétrancourt, G. Chanel, T. Pun, «Le partage des émotions dans la collaboration à distance médiatisée par ordinateur», *28ème Congrès Ass. Int. de Pédagogie Universitaire (AIPU)*, 18-22 mai 2014, Mons, Belgium.
- [15] D. Cereghetti, G. Molinari, G. Chanel, T. Pun, M. Bétrancourt, «Visual processing of emotions during a computer-mediated collaborative task: An eye tracking study», *2014 joint Special Interest Group Meeting of EARLI SIG 6 (Instructional Design) and SIG 7 (Learning and Instruction with Computers)*, August 27-29, 2014, Rotterdam, The Netherlands.
- [16] S. Cloix, V. Weiss, G. Bologna, T. Pun, D. Hasler, «Obstacles and objects detection using sparse 3D information for a smart walker», *VISAPP 2014*, 9th Int. Conf. on Computer Vision Theory and Applications, 5-8 January 2014, Lisbon, Portugal.
- [17] V. Weiss, S. Cloix, G. Bologna, T. Pun, D. Hasler, «A robust, real-time ground change detector for a «smart» walker», *VISAPP 2014*, 9th Int. Conf. on Computer Vision Theory and Applications, 5-8 January 2014, Lisbon, Portugal.
- [18] F. Farhazadeh, F. Willems and S. Voloshynovskiy, Information Theoretical Analysis of Identification based on Active Content Fingerprinting, *WIC'14, Information and Communication Theory Symposium 2014*, May 12-13, 2014, Eindhoven, The Netherlands.
- [19] D. Kostadinov, S. Voloshynovskiy and M. Diephuis, Visual information encoding for face recognition: sparse coding vs vector quantization, *WIC'14, Information and Communication Theory Symposium 2014*, May 12-13, 2014, Eindhoven, The Netherlands.
- [20] S. Ferdowsi and S. Voloshynovskiy, Content Identification: machine learning meets coding, *WIC'14, Information and Communication Theory Symposium 2014*, May 12-13, 2014, Eindhoven, The Netherlands.
- [21] D. Kostadinov, S. Voloshynovskiy and M. Diephuis, Robust face recognition by group sparse representation that uses samples from list of subjects, *International Conference on Artificial Intelligence and Soft Computing, ICAISC'14*, June 1-5, 2014, Zakopane, Poland.

- [22] S. Ferdowsi, S. Voloshynovskiy, M. Gabryel and M. Korytkowski, Multi-class Classification: A Coding Based Space Partitioning, International Conference on Artificial Intelligence and Soft Computing, ICAISC'14, June 1-5, 2014, Zakopane, Poland.
- [23] R. Grycuk, M. Gabryel, M. Korytkowski, R. Scherer, S. Voloshynovskiy, From single image to list of objects based on edge and blob detection, International Conference on Artificial Intelligence and Soft Computing, ICAISC'14, June 1-5, 2014, Zakopane, Poland.
- [24] S. Voloshynovskiy, M. Diephuis, T. Holotyak, Privacy-preserving Content Identification in Bag-of-words Cloud Systems: How to Turn out the Weakness into the Strength?, IEEE International Workshop on Cloud Computing for Signal Processing, Coding and Networking in conjunction with IEEE International Conference on Cloud Engineering (IC2E), March 11-13, 2014, Boston, The USA, invited talk.
- [25] S. Voloshynovskiy, M. Diephuis, T. Holotyak, Performance analysis of bag-of-features based content identification systems, 2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Florence, Italy, May 4-9, 2014.
- [26] S. Voloshynovskiy, M. Diephuis, D. Kostadinov, F. Farhadzadeh and T. Holotyak, On accuracy, robustness and security of bag-of-words search systems, IS&T/SPIE Electronic Imaging 2014, Media Watermarking, Security, and Forensics 2014, February 2-6, 2014, San Francisco, California, United States.
- [27] M. Diephuis, S. Voloshynovskiy, T. Holotyak, N. Standardo, B. Keel, A framework for fast and secure packaging identification on mobile phones, IS&T/SPIE Electronic Imaging 2014, Media Watermarking, Security, and Forensics 2014, February 2-6, 2014, San Francisco, California, United States. (nominated for the best paper award)
- [28] S. Ferdowsi, S. Voloshynovskiy, D. Kostadinov, Content Identification: Binary Content Fingerprinting versus Binary Content Encoding, IS&T/SPIE Electronic Imaging 2014, Media Watermarking, Security, and Forensics 2014, February 2-6, 2014, San Francisco, California, United States. (nominated for the best paper award)
- [29] D. Kostadinov, S. Voloshynovskiy, S. Ferdowsi, Robust human face recognition based on locality preserving sparse over complete block approximation, IS&T/SPIE Electronic Imaging 2014, Media Watermarking, Security, and Forensics 2014, February 2-6, 2014, San Francisco, California, United States.
- [30] Heravi, B., Morrison, D., Khare, P., & Marchand-Maillet, S. (2014). Where is the news breaking? Towards a location-based event detection framework for journalists. In Proceedings of the 20th Anniversary International Conference on MultiMedia Modeling (MMM 2014), Dublin, Ireland.
- [31] Rangel, E. R., & Marchand-Maillet, S. (2014). Automatic Removal of Visual Stop-Words. In Proceedings of the 34th International ACM Multimedia Conference (ACM Multimedia 2014), Orlando, FL.
- [32] Roman-Rangel, E., & Marchand-Maillet, S. (2014). HOOSC128: A More Robust Local Shape Descriptor. In Proceedings of the 6th Mexican Conference on Pattern Recognition (MCPR2014), Cancun, Mexico.
- [33] Gatica-Perez, D., Pallan, C., Marchand-Maillet, S., Odozbe, J., Roman Rangel, E., & Grube, N. (2014). The MAAVA Project: Multimedia Analysis and Access for Documentation and Decipherment of Maya Epigraphy. In Digital Humanities (DH 2014), Lausanne, Switzerland.
- [34] Osipyan, H., Morton, A., & Marchand-Maillet, S. (2014). Fast Interactive Information Retrieval with Sampling-Based MDS on GPU Architectures. In Proceedings of the 7th Information Retrieval Facility Conference (IRFC 2014), Copenhagen, DK.
- [35] Mohamed, H., Osipyan, H., & Marchand-Maillet, S. (2014). Fast Large-Scale Multimedia Indexing and Searching. In Proceedings of the International Workshop on Content-Based Multimedia Indexing (CBMI 2014), Klagenfurt, Austria.
- [36] Mohamed, H., Osipyan, H., & Marchand-Maillet, S. (2014). Multi-Core (CPU and GPU) For Permutation-Based Indexing. In Proceedings of the 7th International Conference on Similarity Search and Applications (SISAP2014), Los Cabos, Mexico.
- [37] Wang, J., Sun, K., Sha, F., Marchand-Maillet, S., & Kalouisis, A. (2014). Two-Stage Metric Learning. In Proceedings of the International Conference on Machine Learning (ICML 2014), Beijing, China.
- [38] Sun, K., Mohamed, H., & Marchand-Maillet, S. (2014). Sparsity on Statistical Simplexes and Diversity in Social Ranking. In Proceedings of the 6th Asian Conference on Machine Learning (ACML 2014), Nha Trang, Vietnam.
- [39] Sun, K., & Marchand-Maillet, S. (2014). An Information Geometry of Statistical Manifold Learning. In Proceedings of the International Conference on Machine Learning (ICML 2014), Beijing, China.
- [40] Sun, K., & Marchand-Maillet, S. (2014). Information Geometric Density Estimation. In Proceedings of the 34th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt2014), Amboise, France.
- [41] Marchand-Maillet, S. (2014). Digesting Large-scale Data. In Invited talk at the 11th French Information Retrieval Conference (CORIA 2014), Nancy, France.

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- T. Pun: Member of the Steering Committee of the Swiss Center for Affective Sciences..
- S. Marchand-Maillet, Member of the Steering Committee 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: Member of the Steering Committee of the IEEE Conference on Business Informatics
- S. Marchand-Maillet, Swiss representative at the Management Committee of the COST Action IC1002 MUMIA ("Multilingual and Multifaceted Interactive Information Access")
- S. Marchand-Maillet, Swiss representative at the Management Committee of the COST Action IC1302 KEYSTONE ("semantic KEYword-based Search on sTructured data sOurces")

INTERNATIONAL AND NATIONAL RESEARCH PROGRAMS COMMITTEES

- T. Pun: evaluator for EU ERC - European Research Council (Starting & Advanced Investigators Grants); Swiss SNF, Swiss HES-ISYS
- A. Kalousis: evaluator for Flandre National Science Foundation, National Commission for Scientific and Technological Investigation, Chile.
- S. Marchand-Maillet: Evaluator for National agencies of CH, UK, FR, NL, AT, CA, AU + EU (COST)

PHD THESIS COMMITTEES

Sviatoslav Voloshynovskiy:

- Univ. of Geneva (Switzerland): H. Mohamed (2014)
- Telecom-Lille (France): A. Thu Phan Ho (2014) (Principal reporter)
- Univ. of Geneva (Switzerland): F. Farhadzadeh (2014) (Head of jury)
- Univ. of Geneva (Switzerland): T. El Maliki (2014)
- Univ. of Geneva (Switzerland): X. Titi (2014)

Stéphane Marchand-Maillet:

- F. Farhadzadeh (2014, UNIGE)
- L. Wu (UNSW, AU, 2014)
- A. Znaidia (Centrale Paris, 2014)
- N. Mohammed (Monash, AU, 2014)
- Juan Diego Gomez Valencia (2014, UNIGE)

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- S. Marchand-Maillet: General Chair of the 16th IEEE Conference on Business Informatics, Geneva, July 2014 (<http://cbi2014.unige.ch>)

MEMBER OF CONFERENCE/WORKSHOP PROGRAM COMMITTEES

Thierry Pun:

- EUVIP 2014 (Paris, France);
- ICME 2014 - Multimedia Affective Computing (China)
- ICPR 2014 (Stockholm, Sweden)
- SSACI'2014 - Affective Computat. Intell. Wk. at IPMU 2014 (Montpellier, France)
- PhyCS - Int. Conf. Physiol. Computing Systems 2014 (Lisbon, PT);

Sviatoslav Voloshynovskiy:

- WIFS2014, IEEE Workshop on Information Forensics and Security 2014, Atlanta, The USA, December 3-5, 2014 (technical committee).
- 2nd ACM Information Hiding and Multimedia Security Workshop, Salzburg, Austria, June 11-13, 2014, (program committee).
- ICIP2014, IEEE International Conference on Image Processing, Paris, France, October 27-30, 2014 (technical committee).
- ICPRAM 2014, The International Conference on Pattern Recognition Applications and Methods 2014, Angers, France, March, 2014.
- ICASSP2014, IEEE International Conference on Acoustics, Speech and Signal Processing, Florence, Italy, May 4-9, 2014, (technical committee).
- ICAISC 2014, the 13th International Conference on Artificial Intelligence and Soft Computing ICAISC 2014, Zakopane, Poland, June 1-5, 2014, (Special session organizer on Machine Learning for Visual Information Analysis and Security and Chairman for the Keynote session).
- SPIE2014, Electronic Imaging 2014, Media watermarking, security and forensics 2014, San Francisco, USA, 2014, (program committee, chairman of Watermark session).



Figure 1: Similarity-based collection browser

Stéphane Marchand-Maillet:

- Area Chair for the ACM SIGIR 2014
- Domain Coordinator for IEEE CBI 2014
- Member of program committee for the main conferences in the domain, including ACM Multimedia, ACM ICMR, ACM SAC (IAR and MMV tracks)

Alexandros Kalousis:

- Neural and Information Processing Systems Conference (NIPS) 2014
- European conference on machine learning and knowledge discovery from data bases (ECML/PKDD) 2014

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:**

- 2014 - Associate editor, Frontiers in ICT / Human Media Interaction (Nature Publishing Group)
- 2009 - Editorial board, Advances in Multimedia (Hindawi)
- 2006 - Editorial board, EURASIP International Journal on Image & Video Processing (Springer)

Sviatoslav Voloshynovskiy:

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

S. Marchand-Maillet:

- Editorial Board: International Journal of Multimedia Information Retrieval (Springer)

EVENTS ORGANISED IN GENEVA

- IEEE CBI 2014, Geneva, July 2014 <http://cbi2014.unige.ch> (Stéphane Marchand-Maillet general chair)

CVML team, December 3rd, 2013

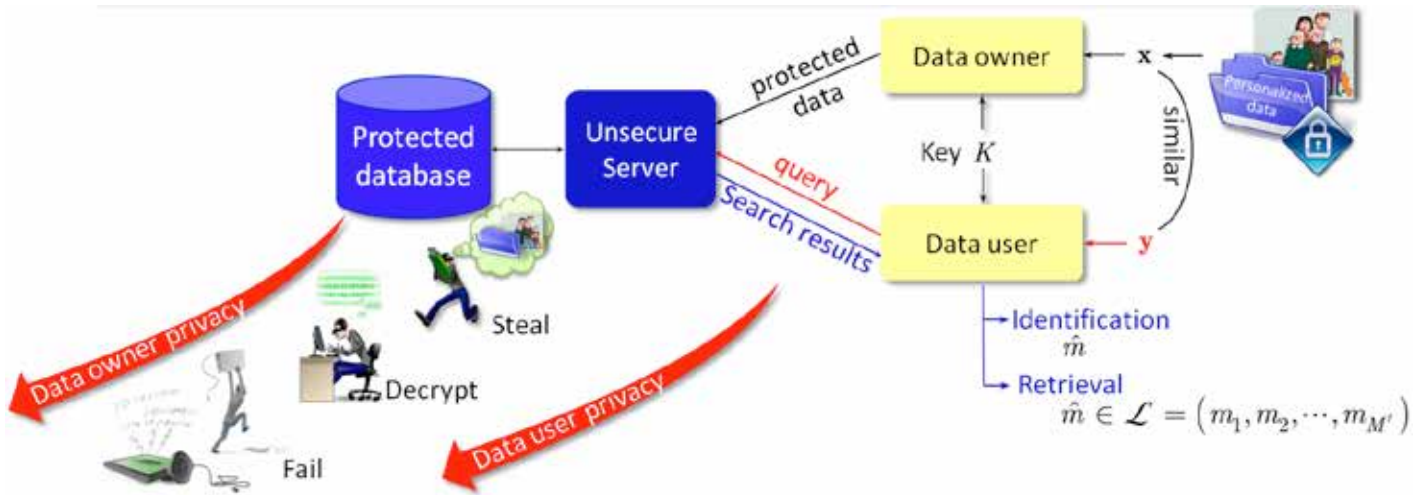


Tactile-sound interfaces would allow unsighted individuals accessing information of an image via touch. The idea underlying here is that a user can hear elements of the real world by pointing (or touching) them with the fingers, as shown in this figure. Ideally, the user needs only to sweep (explore) 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 discussed 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



INVITED TALKS

Thierry Pun:

- «Affective computing for human-human interaction: application to mediated remote cooperation», Invited talk, June 23, 2014, Emotions Laboratory, Univ. of Ulm, Germany

Guido Bologna:

- «An overview of non-invasive vision substitution systems», Invited talk, fifth European Workshop on Visual Information Processing (EUVIP'14), December 10-12 2014, Paris, France
- «The SeeColor Project», Invited Talk, Le son de la lumière et de l'invisible, IMERA, Inst. Méditerranéen d'Etudes Avancées, Univ. Aix-Marseille, France, Mercredi 2 avril 2014

Sviatoslav Voloshynovskiy:

- Digital security of physical objects, invited talk, Tampere University, Finland, December 11, 2014.
- Product security on mobile phones: theory and practice, invited talk, CSEM Center Suisse d'Electronique et de Microtechnique, Neuchâtel, April 16, 2014.
- Privacy-preserving multimedia processing in clouds, invited talk, IEEE international workshop on cloud computing for signal processing, coding and networking, Boston, Massachusetts, March 11, 2014.
- Content identification based on bag-of-words systems: performance, complexity and security, invited talk, Mitsubishi Electronics Research Labs (MERL), Boston, Massachusetts, March 12, 2014.
- Short codes in large-scale identification systems: theoretical and practical considerations, invited talk, Princeton University, Princeton, NJ, March 13, 2014

Stéphane Marchand-Maillet:

- Digesting Large-scale Data. Invited talk at the 11th Information Retrieval Conference (CORIA 2014), Nancy, 2014.

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

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

Active content fingerprinting for protection of digital media and physical objects

SNSF 200020-146379
 Principal investigator: Prof. S. Voloshynovskiy
 Period: April 2013 – September 2014

Hasler Foundation

EyeWalker: Ultralight lowcost clipable vision system for mobility aids

Nr. 11083
 Principal investigator: Prof. T. Pun
 Partners: CSEM Neuchatel (E. Franzi, D. Hasler), HEIG-VD Yverdon (M. Kocher).
 Period: May 2012 – April 2014

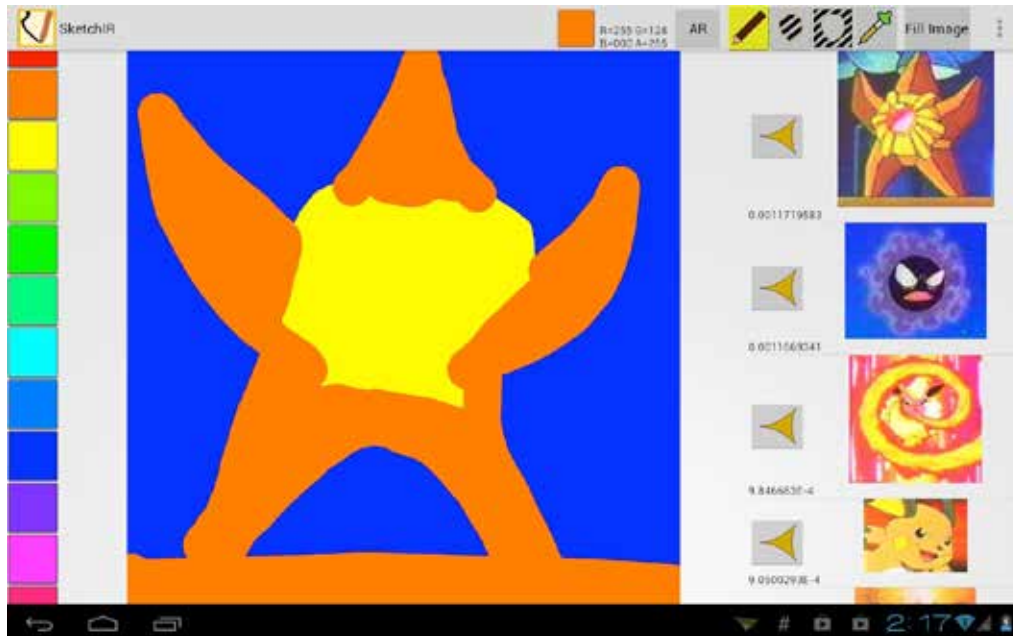


Figure 3: Tactile sketch-based image retrieval

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

Emotional and aesthetic highlights detection in movies

Leading House: University of Geneva, Prof. K. Sherer
 Principal investigators: Dr. Guillaume Chanel, Dr. Patrizia Lombardo and Prof. T. Pun
 Period: April 2014 - March 2016

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 – March 2015

TECHNOLOGY TRANSFER

- **Spin-off: Anteleon Imaging S.A.R.L.** (founded August 2003, <http://www.anteleon.com/>), specialized in multimedia documents protection and management, watermarking, authentication and tamper proofing as well as brands protection.
- **U-nica Sytems, AG** (Malans) (<http://www.u-nica.com>) according to Collaborative and Research Agreement between the University of Geneva and U-nica Systems in the domain of physical object protections against counterfeiting based on the University of Geneva patented technology.

OTHERS

- Juan Diego Gomez Valencia: Co-Laureat Prize of Dalle Molle Foundation for quality of life 2014. Thesis on See-Color, see PhD Thesis section for more information.
- G. Chanel and colleagues, «EmoTris - Emotive Tetris», part of the 1 year long exhibition «Emotions, Une histoire naturelle», Natural History Museum, Neuchâtel, Switzerland, Nov. 30, 2014 to Nov. 29, 2015.
- Massimo Brero: Prix Ardit (computer Science): “Système de visualisation, d’annotation et de transcription des manuscrits numérisés de Ferdinand de Saussure”

TEACHING

- **Human-computer interaction** (Affective computing and multimodal interaction part), Master, with Profs. G. Falquet et L. Moccozet. 56h practical work, approx. 10 - 15 students. 8 ECTS.
- **Digital image processing and synthesis**, Computer Science, 3rd year Bachelor, T. Pun, optional for Master and postgraduate students, 56h. course and 56h. practical work, approx. 20 students. 8 ECTS.
- **Introduction to algorithms**, Computer Science, 1st year Bachelor, 56h. course, 28h exercises and 56h. lab work, approx. 30-40 students, T. Pun
- **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 and privacy**, 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. 8 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**, 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.
- **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, 3rd year Bachelor, 1st year of Master in Statistics, 30 hours course and 30 hours lab. Approximately 10 students.



Figure 4: GameEmo is an example of affective game developed in our laboratory, where the speed of the falling bricks is varied according to the user's feelings. If the person is too stressed, the speed decreases, while it increases when the user gets bored, all this resulting in an increase in the sense of flow and pleasure. In the photograph, one sees that the player is equipped with a non-intrusive Galvanic Skin Resistance sensor on two of the left-hand fingers; these are used to provide a real-time estimate of the stress level. That game has also been developed into a real arcade game currently part of a year-long exhibition at the Muséum of Natural History, Neuchâtel (<http://www.museum-neuchatel.ch/>). Developing such affective, engaging games is one example of affective computing.

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ISS

**Institute of
Information
Service
Science**



Emblematic inside and outside wall of Battelle building A

Institute of Information Service Science

TEAM

Senior Researchers

Dr. Michel Deriaz
 Dr. Jose Luis Fernandez-Marquez
 Dr. Jacques Guyot
 Dr. Verena Kantere
 Dr. Abdelaziz Khadraoui
 Dr. Niels Nijdam
 Dr. Mehdi Snene

Scientific Collaborators

Marlène Arevalo-Poizat
 Nedjma Cadi-Yazli
 Michael Mesfin
 Dr. Markus Valle-Klann

Assistants / PhD Students

Grigorios Anagnostopoulos
 Lazhari Assassi
 Carlos Ballester Lafuente
 Matthias Becker
 Maher Ben Moussa
 Andra Chincisan
 Hon Fai Choi
 Anastasija Collen
 Francesco De Angelis
 H el ene De Ribaupierre
 Marios Fanourakis
 Meghdad Farahmand
 Maxim Filatov
 Nizar Ghoula
 Mattia Gustarini
 Giorgia Ionescu
 Panagiotis Kostopoulos
 J er ome Marchanoff
 Javier Martin de Valmaseda
 Carlos Martinez de la Osa
 Alexandre Mollard
 Tiago Nunes
 Sabrina Nwatchouck A Koul, Aman
 Wanda Opprecht
 Gerardo Pinar Loriente
 Arianna Religi
 Simon Senecal
 Manel Sghir
 Aikaterini Stamou
 Camille Tardy
 Yvain Tisserand
 Christiana Tsiourti
 Assane Wade

Nadia Magnenat-Thalmann
 Honorary professor



Katarzyna Wac
 Invited professor



Claudine M etral
 MER



Laurent Moccozet
 MER



Jolita Ralyt e
 MER



Jean-Marc Seigneur
 MER



Developpers / Designers (PAT)

Mauricio Togneri
 Jody Hausmann
 Jonathan Guislain
 Kevin Salvi
 Xavier Titi

Giovanna Di Marzo
 Serugendo
 Full professor



Dimitri Konstantas
 Full professor



Eleni Christodoulou
 Associate professor



Gilles Falquet
 Associate professor



Jean-Henry Morin
 Associate professor



Michel L eonard
 Honorary professor



Visiting Academic Guests

Anne-Fran oise Cutting-Decelle
 Jean-Pierre Hurni
 Alain Junger

Administration

Lara Broi
 Marie-France Culebras

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 Information Service Science is an inter-faculty research lab of CUI. Its members are part of the Geneva School of Economics and Management and of the Geneva School of 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, data science and predictive analysis, collective intelligence. Application domains include transdisciplinary business services, Ambient Assisted Living, services for mobile users, traveling 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. 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 2014:

- Two open development days
- Transparency & Block Chain Hackathon
- BAFS
- JS15-Clusis

Giovanna Di Marzo Serugendo - Autonomous Adaptive Systems

Research activities concentrate on the engineering of adaptive autonomous systems and adaptive information services. Application domain include privacy by design embedded in digital documents, large-scale information dissemination and flows, as well as spatial services that spread across physical environment exploiting or activating connected objects in diverse settings (intelligent buildings, interactive events, or smart cities). The heart of this research is based on a set of self-organising mechanisms inspired from Nature (e.g chemical reactions, social insects or human behaviours, biological processes, etc.) expressed as algorithms and used in the engineering of adaptive services. These mechanisms favor robustness, decentralised interactions and emergent behaviour produced by collective intelligence.

Figure 1: Fasoo Usage Tracer dashboard (Exception Management)



Jean-Henry Morin - Digital Rights & Policy

As our society and economy continues to move towards interwoven digital services and systems, blending the real and the artificial world, 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 our digital society. Specific projects and activities cover topics in :

- Exception management in DRM environments (Enterprise and Media sectors)
- Information 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
- Information and data marketplaces

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. The first results of the projects are expected by the end of 2012.

Gilles Falquet, Laurent Moccozet and Claudine Métral - Knowledge Engineering

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 with a focus on enriched 3D city models.
- 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)

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 immersed 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 2014, MIRALab was working on the following projects: ANINEX, EMC2, ITN-DCH, MULTISCALEHUMAN and REPLAY.

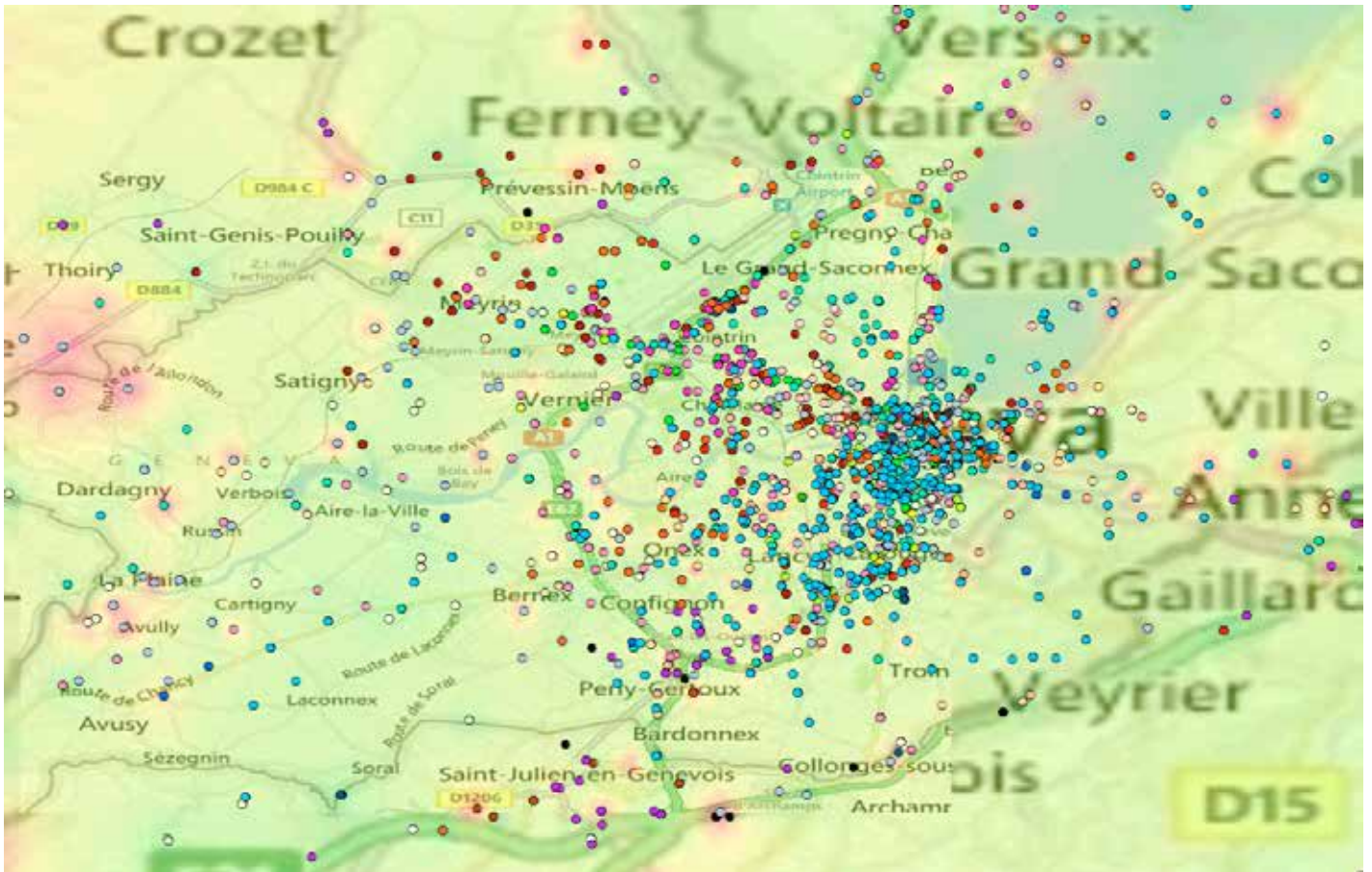


Figure 3: Quality of operator networks in Geneva Area (Dec. 2012, qosis.net project)

PHD THESIS

- Wanda Opprecht, Conceptual framework for the steering of information systems evolution, March 2014.
- Nizar Ghoula, An Ontology Based Repository for Combining Heterogeneous Knowledge Resources, November 2014.
- Katerina Stamou. Systematic service level agreement (SLA) Data Management, September 2014.
- H el ene de Ribaupierre, Precise information retrieval in semantic scientific digital libraries, September 2014.
- Xavier Titi, QoS/QoE-Based Wi-Fi Network Trust and Reputation, March 2014.
- Tewfiq El-Maliki, Security adaptation in highly dynamic wireless networks, August 2014.
- Niels Nijdam, 3D rendering for User-Centric Pervasive Collaborative computing environments, January 2014

LIST OF PUBLICATIONS

Refereed papers in international journals

Jolita Ralyt e:

- [1] R ebecca Deneck ere, Elena Kornysheva, Jolita Ralyt e, (2014). Famille de m ethodes: la flexibilit e au c oeur du processus de construction de m ethode. *Revue Ing enierie des Syst emes d'information*, Lavoisier, Vol. 19 (1) : 67-95. DOI:10.3166/ISI.19.1.67-95

Katarzyna Wac and the team:

- [2] Selim Ickin, Markus Fiedler, Katarzyna Wac, Patrik Arlos, Canberk Temiz, Khadija Mkocho, VLQoE: Video Quality of Experience Instrumentation on the Smartphone, *Multimedia Tools and Applications Journal*, Special Issue on Advances in Tools, Techniques and Practices for Multimedia QoE, Springer, April 2014.

- [3] Katarzyna Wac, Christiana Tsiourti, Ambulatory Assessment of Affect: Survey of Sensor Systems for Monitoring of Autonomic Nervous System's Activation in Emotion, *IEEE Transactions on Affective Computing*, Special Issue: Technologies for Affect and Wellbeing, 5(3): 251-272, June 2014.

Giovanna Di Marzo Serugendo and the team:

- [4] S. Dobson, M. Viroli, J. L. Fernandez-Marquez, Franco Zambonelli, G. Stevenson, G. Di Marzo Serugendo, S. Montagna, D. Pianini, J. Ye, G. Castelli, and A. Rosi. Spatial awareness in pervasive ecosystems. *Knowledge Engineering Review*, 2015.
- [5] Franco Zambonelli, Andrea Omicini, et al. Developing Pervasive Multi-Agent Systems with Nature-Inspired Coordination. *Pervasive and Mobile Computing Journal*. (2014). (Q1 Computer Science)
- [6] Pedro Ferrera, Ivan de Prado, Eric Palacios, Jose Luis Fernandez-Marquez, Giovanna Di Marzo Serugendo: Tuple MapReduce and Pangool: an associated implementation. *Knowledge and Information Systems* 41(2): 531-557 (2014) (Q1 computer Science)

Jose Luis Fernandez-Marquez:

- [7] Jose Luis Fernandez-Marquez, Mirko Viroli, Gabriella Castelli: Best ACM SAC Articles on Coordination and Self-Adaptation. *TAAS* 9(2): 6 (2014) (Q1 Computer Science)

Nadia Magnenat-Thalmann:

- [8] Z. Zhang, A. Beck, and N. Magnenat Thalmann, Human-like Behavior Generation based on Head-arms Model for Robot Tracking External Targets and Body Parts, *IEEE Transaction on Cybernetics*, vol. 10, no. 2, September 2014

- [9] Z. Yumak, J. Ren, N. Magnenat Thalmann, and J. Yuan, Modelling Multi-party Interactions among Virtual Characters, Robots and Humans, MIT Presence: Tele-operators and Virtual Environments (Presence) (IF: 0.912), vol. 23, no. 2, August 4, 2014
- [10] H. F. Choi, A. Chincisan, M. Becker and N. Magnenat Thalmann, Multimodal Composition of the Digital Patient: a Strategy for the Knee Articulation, The Visual Computer (IF: 1.073), vol. 30, no. 6-8, pp. 739-749, June 2014
- [11] M. Elgendi, F. Picon, N. Magnenat Thalmann and D. Abbott, Arm Movement Speed Assessment via a Kinect Camera: A Preliminary Study in Healthy Subjects, BioMedical Engineering Online 2014 (IF: 1.746), doi:10.1186/1475-925X-13-88, June 27, 2014
- [12] J. Hou, L.-P. Chau, N. Magnenat Thalmann and Y. He, Compressing 3D Human Motions via Keyframe based Geometry Videos (KGVs), IEEE Transactions on Circuits and Systems for Video Technology (IF: 2.259), May 13, 2014
- [13] Z. P. Bian, J. Hou, L. P. Chau, and N. Magnenat Thalmann, Fall Detection Based on Body Part Tracking Using a Depth Camera, IEEE Journal of Biomedical and Health Informatics (IF: 1.98), April, 2014
- [14] J. Hou, L.-P. Chau, N. Magnenat Thalmann and Y. He, Scalable and Compact Representation for Motion Capture Data Using Tensor Decomposition, IEEE Signal Processing Letters (IF: 1.639), vol. 21, no. 3, March 2014
- [15] J. Hou, L.-P. Chau, M. Zhang, N. Magnenat Thalmann and Y. He, A Highly Efficient Compression Framework for Time-Varying 3D Facial Expressions, IEEE Transactions on Circuits and Systems for Video Technology (TCSVT) (IF: 2.259), February 2014
- [21] Grigorios G. Anagnostopoulos and Michel Deriaz, Accuracy Enhancements in Indoor Localization with the Weighted Average Technique, in Proceedings of the Eighth International Conference on Sensor Technologies and Applications (SENSORCOMM), Lisbon, Portugal, November 2014.

Katarzyna Wac and the team:

- [22] Christiana Tsiourti, Emilie Joly, Maher Ben Moussa, Cindy Wings-Kolgen, Katarzyna Wac, Virtual Assistive Companion for Older Adults: Field Study and Design Implications, 8th International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth), Oldenburg, Germany, May 2014.
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Jean-Marc Seigneur and the team:

- [24] Swiss Innovation Online Reputation Case Study, J.-M. Seigneur, in Proceedings of i-Society the International Conference on Information Society, 2014.
- [25] Les MOOCs, la bataille de l'e-réputation contre les formations universitaires ?, J.-M. Seigneur and C. Jeannette, in Proceedings of the Colloque «Le Numérique pour enseigner autrement», Fondation Paris-Dauphine, 2014.
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- [29] Collaborative Wireless Access to Mitigate Roaming Costs, C. Ballester Lafuente and J.-M. Seigneur, Proceedings of the 10th International Conference on Networking and Services, IARIA, 2014.

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Jolita Ralyté:

- [16] Wanda Opprecht, Jolita Ralyté, Michel Léonard, (2014) Towards a Framework for Enterprise Information System Evolution Steering. In: Frank, U. et al. (eds.) The Practice of Enterprise Modeling, 7th IFIP WG 8.1 Working Conference PoEM 2014, Manchester, UK.
- [17] Jolita Ralyté, Laurent Biggel, (2014). Implementing Novel IT Products in Small Size Organizations: Technology-Driven Requirements Engineering. In: Proceedings of the 16th International Conference on Enterprise Information Systems – ICEIS 2014, SCITEPRESS.
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- [19] Jody Hausmann, Kevin Salvi, Jérôme Van Zaen, Adrian Hindle and Michel Deriaz, User Behaviour Recognition for Interacting with an Artistic Mobile Application, in Proceedings of the 4th International Conference on Multimedia Computing and Systems (ICMCS), Marrakesh, Morocco, April 2014.
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Figure 4: QoSIS: Quality of Service-Information System predicts and prescribes the best networking option for a mobile service user

Giovanna Di Marzo Serugendo and the team:

- [30] J. L. Fernandez-Marquez, F. L. De Angelis, G. Di Marzo Serugendo, G. Stevenson, G. Castelli. The ONE-SAPERE Simulator: A Prototyping Tool for Engineering Self-Organisation in Pervasive Environments. IEEE Int. Conf. on Self-Adaptive and Self-Organizing Systems (SASO), London, UK, 2014.
- [31] F. L. De Angelis, J. L. Fernandez-Marquez, G. Di Marzo Serugendo. Self-Organising and Context-Aware Data Flows. IEEE Int. Conf. on Self-Adaptive and Self-Organizing Systems (SASO), London, UK, 2014.
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- [33] Jose Luis Fernandez-Marquez, Giovanna Di Marzo Serugendo, Graeme Stevenson, Juan Ye, and Simon Dobson, Franco Zambonelli. Self-Managing and Self-Organising Mobile Computing Applications: a Separation of Concerns Approach. ACM Symposium on Applied Computing (SAC 2014), Korea, 2014.
- [34] Francesco L. De Angelis, Jose Luis Fernandez-Marquez, Giovanna Di Marzo Serugendo. Self-composition of services with chemical reactions. ACM Symposium on Applied Computing (SAC 2014), Korea, 2014.

Gilles Falquet and Claudine Métral:

- [35] de Ribaupierre, H., Falquet, G. (2014) Un modèle d’annotation sémantique centré sur les utilisateurs de documents scientifiques : cas d’utilisation dans les études genre. Actes des 25ème journées d’Ingénierie des Connaissances (IC 2014), Mai 2014, Clermont-Ferrand, France.
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Jean-Henry Morin:

- [37] Stamou, A., Kantere, V., Morin, J.-H. and M. Georgiou, M. (2014). SLA Information Management through Dependency Digraphs: The Case of Cloud Data Services. in proceedings of the 2014 47th Hawaii International Conference on System Sciences (HICSS 47), 2014, IEEE Computer Society, 6-9 Jan. 2014.
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Nadia Magnenat-Thalmann:

- [39] Z. Yumak, J. Ren, N. Magnenat Thalmann, and J. Yuan, Tracking and Fusion for Multiparty Interaction with a Virtual Character and a Social Robot, SIGGRAPH Asia 2014 Autonomous Virtual Humans and Social Robot for Telepresence, Shenzhen, China, December 3, 2014
- [40] N. Magnenat Thalmann, Z. Zhang, Social Robots and Virtual Humans as Assistive Tools for Improving Our Quality of Life, The 5th International Conference on Digital Home (ICDH 2014), Guangzhou, China, November 28-30, 2014
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- [42] M. Becker and N. Magnenat Thalmann, Muscle Tissue Labeling of Human Lower Extremities in Multi-Channel mDixon MR Imaging: Concepts and Applications, 2014 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2014), Belfast, UK, November 2-5, 2014
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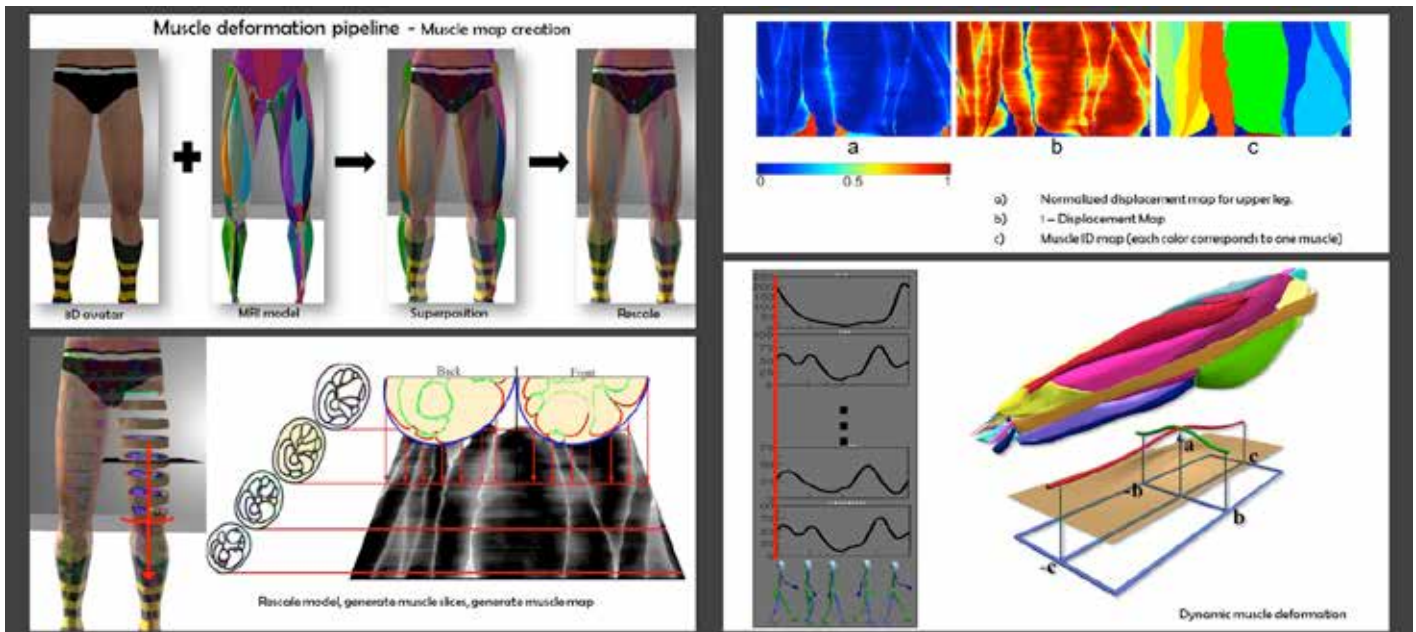


Figure 5: Muscle deformation pipeline:
Muscle map creation, rescale model, Generate muscle slices and maps, Dynamic muscle deformation
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Figure 6: Augmented reality with FoxyTour

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Jolita Ralyté:

- [53] Brian Henderson-Sellers, Jolita Ralyté, Pär Ågerfalk, Matti Rossi. Situational Method Engineering. Springer, 2014, ISBN: 978-3-642-41466-4, DOI: 10.1007/978-3-642-41467-1
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Giovanna Di Marzo Serugendo and the team:

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Katarzyna Wac and the team:

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Claudine Métral:

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Jean-Henry Morin:

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Articles in Professional Journals

Jean-Henry Morin:

[66] L'humain au coeur d'approches plus responsables et durables de la sécurité? SWITCH, Rapport annuel 2013, June, 2014

Research and technical reports

Nadia Magnenat-Thalmann:

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

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

Jolita Ralyté:

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

Giovanna Di Marzo Serugendo:

- Committee Member (2014-2018) – Commission Consultative en matière de protection des données, transparence et archives publiques (CCPDTA)
- Committee Member (2014-) – Association Suisse de la Sécurité de l'Information (CLUSIS)
- Member (2014) – Commission de nomination Hepia

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)

Figure 7: Muscle deformation results © MIRALab





Figure 8: Simulating traditional participative sports © MIRALab

INTERNATIONAL AND NATIONAL RESEARCH PROGRAMS COMMITTEES

Giovanna Di Marzo Serugendo:

- National Center for Science and Technology Evaluation Ministry of Education and Science Astana, Republic of Kazakhstan, NCSE Kazakhstan - project reviewer, November 2014
- IWT Innovation Funding Agency, Flemish (Belgian) Government - project reviewer, October 2014
- ERC Consolidator Grants – project reviewer, October 2014
- CHIST-ERA expert reviewer, April 201
- Member (2011-): Comité de Direction, CADMOS
- Member (2011-): Programme Doctoral Romand d'Informatique (CUSO)
- Member (2012-2014): Commission de renouvellement HEC, Faculty of Economic and Social Sciences, University of Geneva
- Programme Director (2011-): MSc in Management - Option Information Systems and Management
- Programme Director (2011-): 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:

- 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.

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:

- Evaluator for the French National Research Agency (ANR), France

Gilles Falquet:

- Evaluator for the French National Research Agency (ANR), France
- Evaluator for the Wiener Wissenschafts-, Forschungs- und Technologiefonds, Austria

PHD THESIS COMMITTEES

Giovanna Di Marzo Serugendo:

- Carlos Ballester Lafuente. A fully decentralized trust management and cooperation incentives framework for wireless user-centric networks, University of Geneva, Jury's president. December 2014.
- Nizar Ghoula. An Ontology Based Repository for Combining Heterogeneous Knowledge Resources, University of Geneva, Jury's president. November 2014.
- Baudoin Dafflon, Modèle multi-agents d'inspiration physique pour la prise de décision – Application à la conduite en convoi, Belfort-Montbéliard, Examiner, France, Septembre 2014.
- Katerina Stamou. Systematic SLA Data Management, University of Geneva, Jury's president. September 2014.
- Hélène de Ribaupierre. Precise information retrieval in semantic scientific digital libraries, University of Geneva, Jury's president. September 2014.
- Xavier Titi. QoS/QoE-Based Wi-Fi Network Trust and Reputation. University of Geneva, Jury's president. March 2014.
- Tewfiq El-Maliki. Security adaptation in highly dynamic wireless networks. University of Geneva, Jury's president. August 2014.

Katarzyna Wac:

- Harm op den Akker, University of Twente, the Netherlands, October 2014

Claudine Métral:

- Nizar Ghoula. An Ontology Based Repository for Combining Heterogeneous Knowledge Resources, University of Geneva, Jury's member. November 2014.

Jean-Henry Morin:

- Wanda Opprecht, "Conceptual framework for the steering of information systems evolution", PhD jury member, March 2014.



Figure 9: Context-aware information flow

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

Jose Luis Fernandez Marquez:

- Co-organisers: International Workshop on Autonomic High Performance Computing (AHPC 2014). As part of The International Conference on High Performance Computing & Simulation (HPCS 2014), Bologna, Italy, 2014
- Special track co-chair on Visual Perception and Robotic Systems: 10th International Symposium on Visual Computing (ISVC 2014)
- Invited session co-chair: Self-organizing multi-agent systems: Technologies and applications. Invited session at 8th International KES Conference on Agents and Multi-agent Systems – Technologies and Applications (KES-AMSTA2014).
- Track co-chair: CM2014: Coordination Models, Languages and Applications. Special Track on the 29th ACM Symposium on Applied Computing (SAC2014).

Jean-Henry Morin:

- Co-chair of the Secure Cloud Computing minitrack, Hawaii International Conference on System Sciences, HICSS-47, Hawaii, January, 2014.

Jolita Ralyté:

- 16th IEEE Conference on Business Informatics - CBI 2014, Program Chair, Geneva, Switzerland, 14-17 July 2014.
- 32ème Congrès Informatique des Organisations et Systèmes d'Information et de Décision - INFORSID 2014, Program Chair, Lyon, France, May 20-23, 2014.
- 20th International Working Conference on Requirements Engineering: Foundation for Software Quality - REFSQ 2014, Empirical Track Chair, Essen, Germany, 7 - 10 April 2014.

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:

- 1st International Workshop on Enhanced Living Environments (ELEMENT-2014) at the 6th International Conference on Mobile Networks and Management (MONAMI 2014)
- SSH: «Service Science for e-Health» 2nd workshop at the IEEE International Conference on e-Health Networking, Application and Services (HealthCom), Dr. Wac is a Program Chair
- 8th International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth), Dr. Wac is a Short Papers and Posters Chair and a Session Chair

Gilles Falquet:

- Ingénierie des Connaissances 2014
- Extraction et Gestion des Connaissances

Claudine Métral:

- 3D GeoInfo International Conference

Nadia Magnenat-Thalmann:

- Dec 2014 Course Organizer, SIGGRAPH ASIA 2014, Shenzhen, China
- May 2014 Conference Co-chair, 27th International Conference on Computer Animation and Social Agents (CASA 2014), Houston, Texas, USA

MEMBER OF CONFERENCE PROGRAM COMMITTEES

Giovanna Di Marzo Serungendo:

- IEEE International Conference on Self-Adaptive and Self-Organising Systems, London, 2014 (SASO'14)
- ERCIM Workshop on Software Engineering for Resilient Systems, Kiev, Ukraine, September 2013 (SERENE'14)
- 10th European Dependability Computing Conference (EDCC'14)
- 13th International Conference on Autonomous Agents and Multi-Agents Systems, Demo Tracks (AAMAS'14-Demo track)
- International Conference on Ubiquitous Computing and Ambient Intelligence (UCAmI 2015)
- Workshop on Synergies between Multiagent Systems, Machine Learning, and Complex Systems (TRI'2015)
- Antifragility Workshop (2014-2015)
- ACM Symposium on Applied Computing (SAC'2015)

Jose Luis Fernandez-Marquez:

- SASO2014: 8th IEEE International Conference on Self-Adaptive and Self-Organizing Systems.
- SASO-POSTER2014: 8th IEEE International Conference on Self-Adaptive and Self-Organizing Systems
- AAMAS-DEMO2014: 13th International Conference on autonomous agents and multi-agent systems (AAMAS2014)
- IBERAMIA2014: 14th edition of the Ibero-American Conference on Artificial Intelligence (IBERAMIA2014).
- OptMAS-DCR 2014: International Joint Workshop on Optimisation in Multi-Agent Systems and Distributed Constraint Reasoning (AAMAS2014) .
- SCW2014. 7th Spatial Computing Workshop (AMAAS2014)
- PAAMS2014: 12th Conference on Practical Applications of Agents and Multi-Agent Systems

Jean-Henry Morin:

- PC member of the 13th Annual Security Conference, May 22-24, 2014, Las Vegas, NV, USA.
- PC member of the Ninth International Conference on Internet Monitoring and Protection, ICIMP 2014, July 20-24, 2014, Paris, France.

- PC member of the Ninth International Conference on Internet Internet and Web Applications and Services ICIW 2014, July 20-24, 2014, Paris, France.
- PC member of the 6th International Conference on Knowledge Management and Information Sharing, KMIS 2014, Oct. 21-24, 2014, Rome, Italy.
- PC member of the 5th International Conference on Exploring Service Science, IESS 2014, Feb. 4-6, 2014, Geneva, Switzerland.

Jolita Ralyté:

- 26th International Conference on Advanced Information Systems Engineering - CAiSE'14, Thessaloniki, Greece, June 16-20, 2014.
- 33rd International Conference on Conceptual Modeling - ER 2014, Atlanta, USA, October 27-30, 2014.
- 20th Working Conference on Requirements Engineering: Foundation for Software Quality - REFSQ 2014, Essen, Germany, April 7-10, 2014.
- 8th IEEE International Conference on Research Challenges in Information Science - RCIS 2014, Marrakesh, Morocco, May 28-30, 2014.
- International Conference on Exploring Modeling Methods in Systems Analysis and Design - EMMSAD 2014, Thessaloniki, Greece, June 16-17, 2014.
- 16th International Conference on Enterprise Information Systems - ICEIS 2014, Lisbon, Portugal, April 27-30, 2014.
- 5th International Conference on Exploring Services Science - IESS 2014, Geneva, Switzerland, February 7-8, 2014.
- 7th IFIP WG8.1 Working Conference on The Practice of Enterprise Modeling - PoEM 2014, Manchester, UK, November 12-13, 2014.
- 9th International Conference on Software Paradigm Trends - ICSOFT-PT 2014, Vienna, Austria, August 29-31, 2014.
- 7th International Workshop on Evolutionary Business Processes - EVL-BP 2014, Ulm, Germany, September 1-2, 2014.
- 10th Asia-Pacific Conference on Conceptual Modelling - APCCM 2014, Auckland, New Zealand, January 20-23, 2014.
- 6th International Workshop on Service-oriented Enterprise Architecture for Enterprise Engineering - SoEA4EE 2014, Ulm, Germany, September 1-2, 2014.

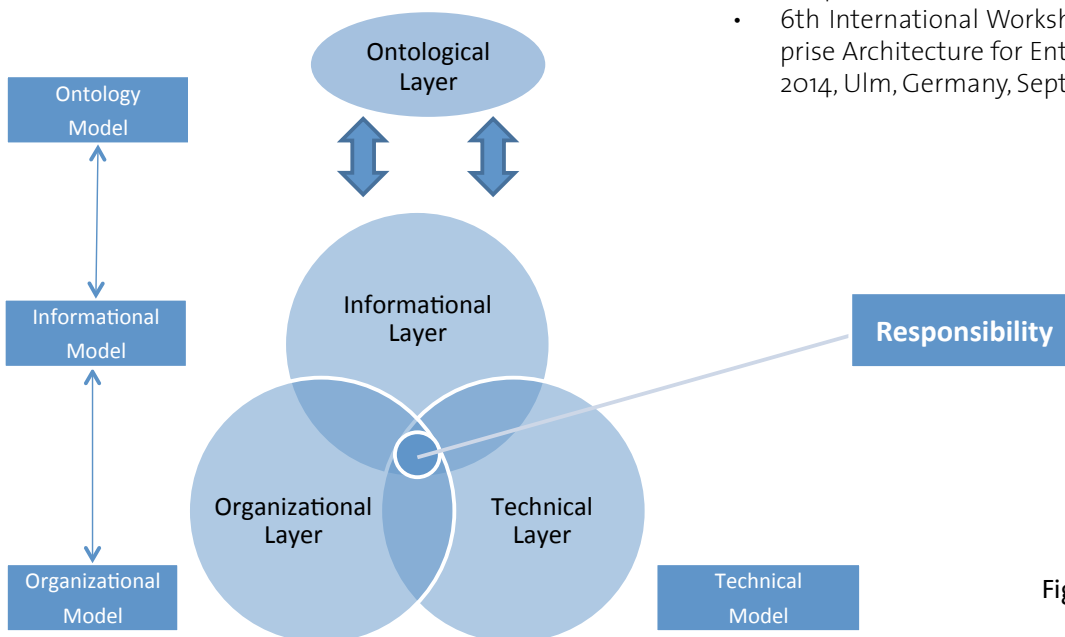


Figure 10: Responsibility Aspects in Service engineering

“ Can I use the data from my clients / users at the end of the surveys? ”



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

- 9th International Workshop on BUSiness/IT Alignment and Interoperability - BUSITAL 2014, Thessaloniki, Greece, June 16-20, 2014.
- 1st International Workshop on Advances in Services Design based on the Notion of Capabiliy - ASDENCA 2014, hessaloniki, Greece, June 16-20, 2014.
- 1st International Workshop on Conceptual Modeling in Requirements and Business Analysis - MReBA, Co-located with ER 2014, Atlanta, USA, October 27-30, 2014.

Jean-Marc Seigneur:

- 5th Augmented Human International Conference, ACM, Kobe

Katarzyna Wac:

- 8th International Conference on Pervasive Computing Technologies for Healthcare (Short Papers and Posters Chair at PervasiveHealth 2014
- Reviewer for the ACM CHI Conference on Human Factors in Computing Systems (CHI 2014
- 5th International Wireless Health Conference (Wireless-Health 2014)
- International Workshop On Wireless Solutions For Healthcare Applications (Concerto 2014)
- Global Telehealth 2014 Conference (GT 2014)
- COST Action WINEMO (ICoGo06) book - Wireless Networking for Moving Objects: Models, Approaches, Techniques, Protocols, Architectures, Tools, Applications and Services
- E-Health Track of the Selected Areas in Communications Symposium at IEEE GLOBECOM (GC-eHealth 2014)
- Association for the Advancement of Artificial Intelligence (AAAI) Spring Syposium Series, theme «Big data becomes personal: Knowledge into meaning» (AAAI 2014)
- Reviewer for the Careum Congress 2014 - 2nd European Network on Patient Empowerment (ENOPE) Conference, theme «The power of patients 3.0: Patients are changing the face of health care» (Careum Congress 2014)

- Reviewer for the 14th IEEE/IFIP Network Operations and Management Symposium (IEEE NOMS 2014)
- International Workshop on Enhanced Living Environments (ELEMENT 2014) at the 6th International Conference on Mobile Networks and Management (MONAMI 2014)

Gilles Falquet:

- Ingénierie des Connaissances 2014
- Extraction et Gestion des Connaissances

Nadia Magnenat-Thalmann:

- SGAVH 2014, SIGGRAPH ASIA 2014 International Workshop on Autonomous Virtual Humans and Social Robot for Tele-presence, Shenzhen, China, December 2014
- VRST 2014, The 20th ACM Symposium on Virtual Reality Software and Technology, The University of Edinburgh, UK, November 2014
- ICMI 2014, The 16th ACM International Conference on Multimodal Interaction, Istanbul, Turkey, November 2014
- MIG 2014, The 7th International ACM SIGGRAPH Conference on Motion in Games 2014, Los Angeles, USA, November 2014
- ICIP 2014, IEEE International Conference on Image Processing, Paris, France, October 2014
- CW 2014, International Conference on Cyberworlds 2014, Santander, Spain, October 2014
- ICDVRAT 2014, The 10th International Conference on Disability, Virtual Reality and Associated Technologies, Gothenburg, Sweden, September 2014
- RO-MAN 2014, The 23rd IEEE International Symposium on Robot and Human Interactive Communication, Scotland, UK, August 2014
- BioVis 2014, The 4th Symposium on Biological Data Visualization, Boston, USA, July 2014
- ISMICT 2014, The 8th International Symposium on Medical Information and Communication Technology, Florence, Italy, April 2014

- ICAART 2014, The 6th International Conference on Agents and Artificial Intelligence, Angers, France, March 2014
- GRAPP 2014, The 9th International Conference on Computer Graphics Theory and Applications, Lisbon, Portugal, January 2014
- MMM 2014, The 20th Anniversary International Conference on MultiMedia Modeling Dublin, Ireland, January 2014

INVITED TALKS

Giovanna Di Marzo Serugendo:

- Auto-protection des données - une approche basée sur le contexte – CLUSIS Conference, Geneva, April 2014
- Services for Smart Cities and QoL, JRC, Ispra, Italy, February 2014

Michel Deriaz:

- CREG, 2014-01-22: Security Audits
- CREG, 2014-02-18: SSD
- CREG, 2014-03-26: VMware
- CREG, 2014-05-21: Connected watch & smartwatch
- CREG, 2014-09-17: MapsWithMe Pro
- SEA, 2014-12-03: Innovation
- CREG, 2014-12-16: «Se faire offrir ses R&D»

Jolita Ralyté:

- Fundamentals and Challenges of Situational Method Engineering. Invited talk, 16th IEEE Conference on Business Informatics – CBI 2014, 14 – 17 July, Geneva, Switzerland.

Jean-Henry Morin:

- Responsabilité Numérique: Restaurer la confiance à l'ère du numérique, Conférence Planète Ouverte, ISG Business School, Paris, May 7, 2014.
- Panelist on Cyber administration and digital identity, at the 3ème eGovernment Symposium Romand, Genève, May 9, 2014
- Keynote speech on Digital Responsibility at graduation ceremony of Ecole Supérieure d'Informatique de Gestion (ESIG), Genève, Oct. 15, 2014.
- Masterclass on Design Thinking, Korea University Business School, Seoul, South Korea, Nov. 4, 2014
- Global e-Policy e-Government Institute seminar on Digital Responsibility: restoring trust in the digital age, Graduate School of Governance, Sungkyunkwan University, Nov. 6, 2014
- Panelist at the Global Forum 2014, Session 9 on The power of Data & the Internet of Things: Social Things, Data in a Digitally Responsible Society, CICC, Geneva, Nov. 18, 2014.
- Panelist sur la Transparence de l'Etat et médias : quelles attentes pour les genevoises et les genevois ?, PPDT, Genève, Nov. 26, 2014
- Colloque sur le Droit à l'Oubli, Droit à l'Oubli: Perspective Technologique, Centre du droit de l'Entreprise (CEDI-DAC), Université de Lausanne, Nov. 20, 2014.

Katarzyna Wac:

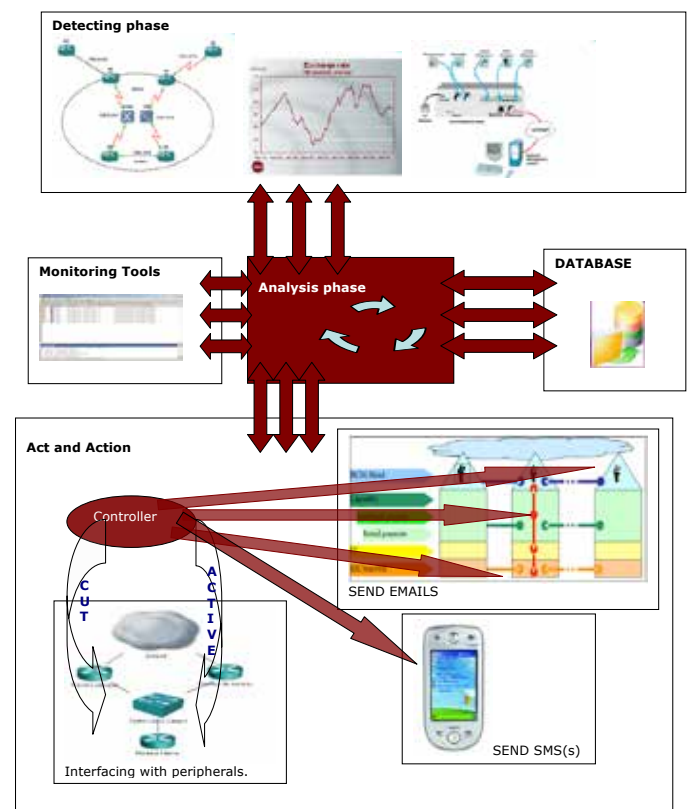
- From Quality of Service (QoS) via Quality of Experience (QoE) to Quality of Life (QoL) Technologies (and Back), Measuring, Monitoring and Analysis of Quality of Life and its Complexity (QoLexity) - Seminar Series, University of Florence and the Italian National Institute of Statistics, Florence, Italy, Nov 2014

- Assuring User Experience of Personal Health Informatics Systems, Department of Computer Science, Catholic University of Leuven, Belgium, Oct 2014
- Mobile Interaction: What Matters for Users?, Faculty of Sciences, University of Fribourg, Switzerland, Sep 2014
- QuantifiedSelf - A Carrot and a Stick of the Insurance Industry?, Swiss Reinsurance Company Ltd, Switzerland, Jun 2014
- Mobile Information Systems and Services: What Matters for Users?, Department of Computer and Information Science, Faculty of Sciences, University of Konstanz, Germany, Jun 2014
- User-Experience Driven Mobile and Pervasive Computing, Department of Computer Science, Electrical and Space Engineering, Lulea University of Technology, Sweden, May 2014
- Assuring User Experience of Mobile Interactive Services, Department of Computer Science, University of Copenhagen, Denmark, May 2014
- User-Experience Driven Mobile Health Applications and Services, Department of Information Systems, University of Maryland, Baltimore County, USA, Feb 2014
- Assuring User Experience of Mobile Interactive Services: A Big-Data Approach, Department of Information Systems, University of Lausanne, Switzerland, Feb 2014 Web
- Understanding User Experience of Socio-Technical Systems, Department of Computer Science, Vrije University Amsterdam, the Netherlands, Jan 2014
- Causerie du jeudi: Quantified Self, Observatoire Technologique du Canton de Genève (OT Lab), Jan 2014.

Gilles Falquet:

- Workshop on Historical Document Analysis in Switzerland, Uni Fribourg

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



Nadia Magnenat-Thalmann:

- [Keynote speech at International Workshop in SIG-GRAPH Asia 2014, Modelling Awareness and Social Behaviour of Virtual Humans and Social Robots, Shenzhen, China, December 3, 2014 (<http://conference.ntu.edu.sg/sgavh2014/Pages/program.aspx>)
- Keynote speech at 5th International Conference on Digital Home (ICDH 2014), Social Robots and Virtual Humans as Assistive Tools for Improving Our Quality of Life, Guangzhou, China, November 28-30, 2014 (<http://icdh.sysu.edu.cn/key>)
- Keynote speech at International Conference on Contemporary Computing and Informatics (IC3I 2014), Assistive Social Robots for People with Special needs, Mysore, India, November 27-29, 2014 (<http://ic3i.org/keynote.html>)
- Overview talk at 2014 IEEE International Workshop on Multimedia Signal Processing (MMSP 2014), Autonomous Virtual Humans and Social Robots in Telepresence, Jakarta, Indonesia, September 22, 2014 (<http://mmsp2014.ilearning.me/357-2/>)
- Invited talk at the 31st Computer Graphics International (CGI 2014), The digital Patient : from the modelling to the simulation of patient specific articulations, Sydney, Australia, June 11, 2014 (<http://sydney.edu.au/engineering/it/~cgi14/program/keynotespeakers.php>)
- Invited talk at International Symposium on Human-centered Interaction for Coexistence, New trends in 3D Telepresence: BeingThere through Social Robots and Virtual Humans, CHIC FORUM 2014, Korea Institute of Science and Technology, Korea, May 16, 2014 (http://imi.ntu.edu.sg/AboutIMI/DirectorOfIMI/Documents/CHIC_FORUM_2014_poster.pdf)
- Invited talk at ADSC/I2R Workshop on Immersive Telepresence and Adaptive Streaming, Past, Present and Future of Immersive Telepresence : Case studies with "Anyone for Tennis" and the BeingThere Centre, A*Star Institute for Infocomm Research, Fusionopolis, Singapore, March 18, 2014 (<http://bookwhen.s3.amazonaws.com/assets/documents/7330/original.pdf?1393487746>)
- Invited talk at The 2nd EMBO Conference on Visualizing Biological Data (VIZBI 2014), Human Anatomy, Heidelberg, Germany, March 7, 2014 (<http://www.vizbi.org/2014/Program/>)
- Invited talk at American Association for the Advancement of Science - AAAS 2014 Annual Meeting, Predicting Hip Deformations Through Computer Modeling and Simulation, Chicago, USA, February 14, 2014 (<http://aaas.confex.com/aaas/2014/webprogram/Session7006.html/>)

REFEREEING**Giovanna Di Marzo Serungendo:**

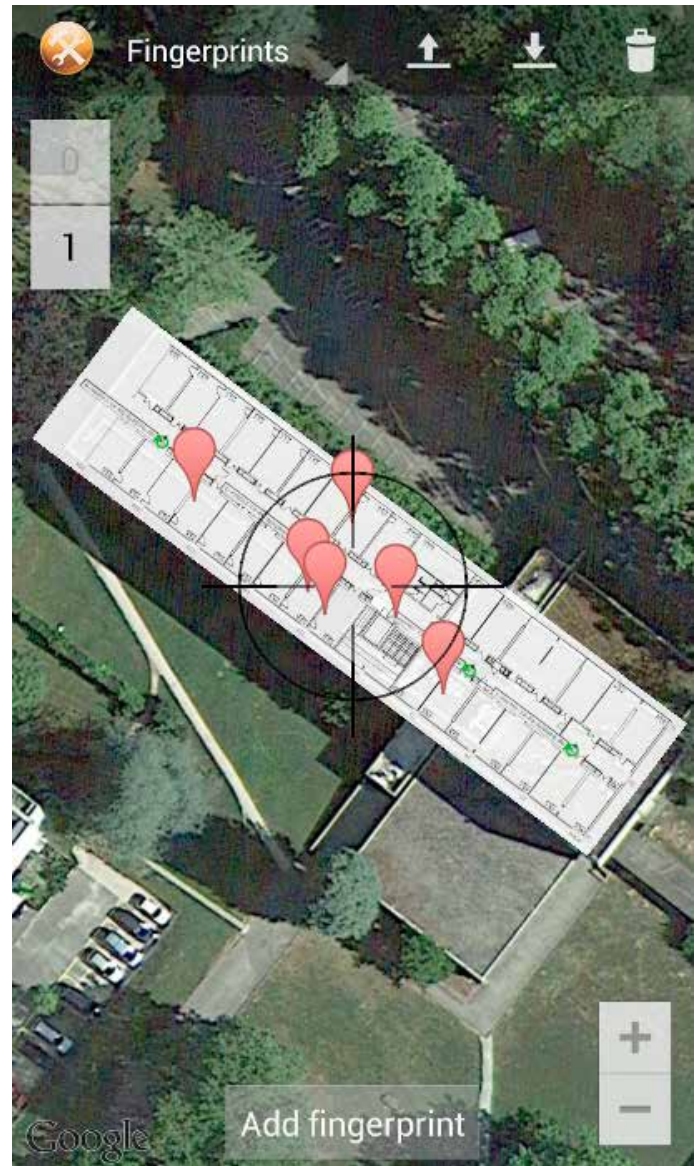
- TAAS
- ROBOTICS

Jean-Henry Morin:

- IEEE Transactions on Cloud Computing, TCCSI.
- IEEE Multimedia Magazine

Jolita Ralyté:

- IJISMD – International Journal of Information Systems Modeling and Design

**Figure 13: Indoor geolocation**

- IJISMS – International Journal of Information Systems in the Service Sector
- IST – Information and Software Technology
- APJIS – Asia Pacific Journal of Information Systems
- RE – Requirements Engineering Journal
- ISI – Revue Ingénierie des Systèmes d'Information

Katarzyna Wac:

- IEEE Transactions on Mobile Computing
- IEEE Pervasive Computing
- IEEE Communications Magazine
- IEEE Transactions on Network and Service Management
- IEEE Journal of Biomedical and Health Informatics (previously IEEE Transactions on Information Technology in Biomedicine)
- IEEE Journal of Translational Engineering in Health and Medicine
- IEEE Transactions on Affective Computing

- Pervasive and Mobile Computing (Elsevier)
- ACM Computing Surveys
- Sensors (MDPI)
- Interacting with Computers (Oxford)
- Behavior Research Methods (Springer)
- Personal and Ubiquitous Computing (Springer)
- Journal of Medical Internet Research (JMIR Publications Inc.)
- International Journal of Medical Informatics (Elsevier)
- International Journal of Telemedicine and Applications (Hindawi)
- European Transactions on Telecommunications (Wiley)
- IET Communications Journal
- Plos ONE (Public Library of Science)
- Human-Computer Interaction (Frontiers ICT)

Gilles Falquet:

- Advances in Knowledge Discovery and Management (EGC)
- Journal of Digital Earth (Taylor & Francis)
- Data and Knowledge Engineering (Elsevier)
- International Journal of Information Technology & Decision Making (World Scientific)
- Information Retrieval (Springer)
- Transactions in GIS (Wiley)

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 Intel-

ligence), 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
- Guest Co-editor (2014). Special issue on Self-Organising Coordination in Science of Computer Programming (SCP)

Jose Luis Fernandez-Marquez & Giovanna Di Marzo Serugendo:

- Guest Co-editor (2014). Special issue on Self-Organising Coordination in Science of Computer Programming (SCP)
- Guest Editor (2014). ACM Transactions on Autonomous and Adaptive Systems journal (TAAS), 2014.
- Editorial Board Member (2014-). ACM–Applied Computing Review.

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.

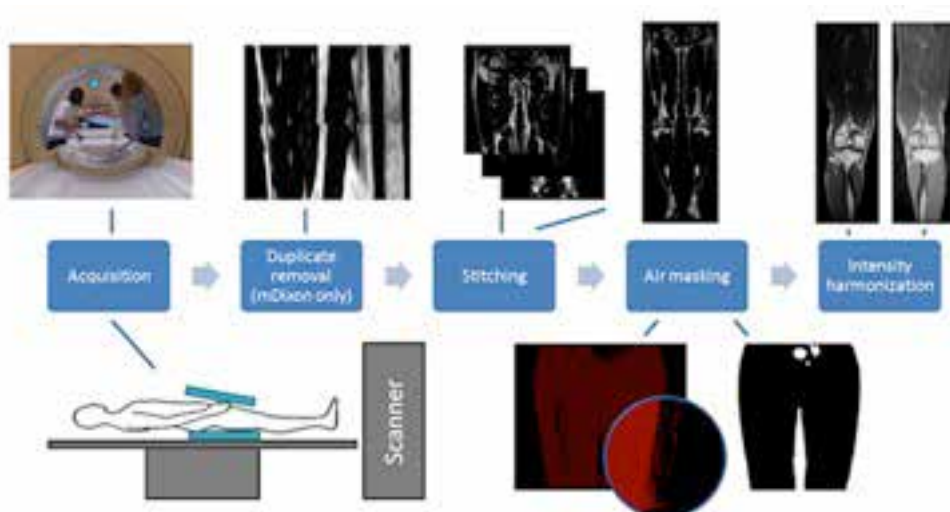


Figure 14: Efficient extraction of musculoskeletal structures - processing © MIRALab

- Associate Editor of the Asia Pacific Journal of Information Systems (APJIS), ISSN 2288-5404, Since 2014.
- 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: Franch, X. and Ralyté, J. Special Issue on Advanced Information Systems Engineering. Information Systems, Vol. 43, p.65. Elsevier, 2014.

Nadia Magnenat-Thalmann:

- Since 2014 Associate Editor, Frontiers in Robotics, Nature Publisher
- Since 2010 Editorial Adviser of the journal of Graphical Models published by Elsevier
- Since 2000 Editor-in-Chief of the Journal The Visual Computer published by Springer Verlag, Germany
- Since 2000 Editor of the Journal of Computational Geometry published by Elsevier, Holland
- Since 1990 Co-founder and Co-editor-in-chief, Journal of Visualization and Computer Animation, John Wiley and Sons.

Katarzyna Wac:

- Swiatek, P., Wac, K., Martini, M., Patrick, K., Special Issue on Service Science for e-Health, IEEE Journal of Biomedical and Health Informatics, 18(5):1515-1517, September 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:

- Co-founder and board member of the Cloud Security Alliance (CSA) Swiss chapter, responsible for academic relations, Since April 2013.

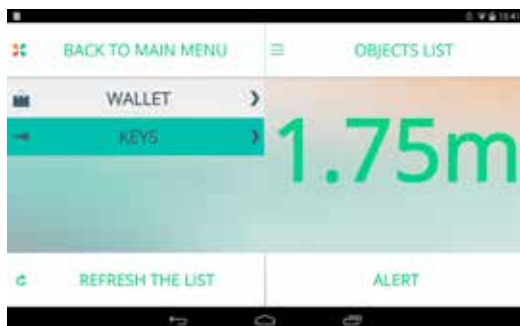


Figure 16: Object localisation - EDLAH project

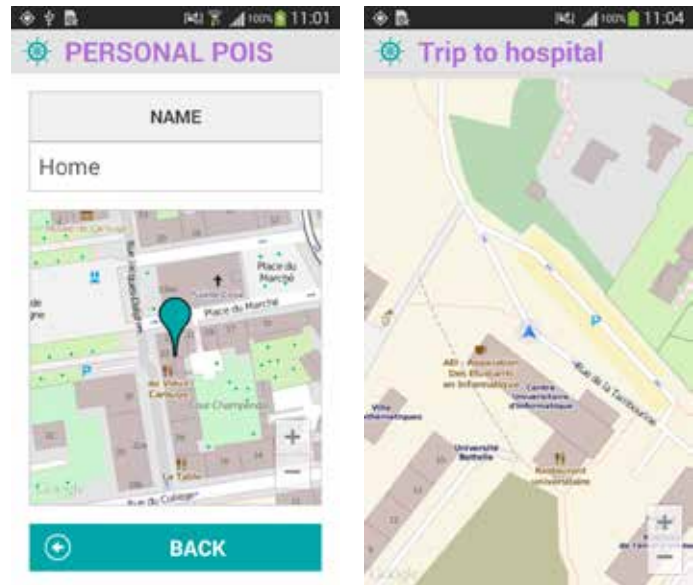


Figure 15: Indoor positioning & Navigation adapted to seniors - Virgilius project

- Co-founder and President-Elect of the Association for Information Systems (AIS) Swiss chapter, Since June 2013.
- Membre du Conseil Scientifique de La Muse, Fondation pour la Créativité Entrepreneuriale (FCE), Genève.
- Co-founder and President of ThinkServices, Think(do) Tank on Services Science and Innovation, Geneva, Since 2010. Leader of the ThinkGroup on Data, Society and Transparency, initiator of ThinkData (<http://thinkdata.ch/>)
- Member of the Researchers cooperative cooperation Social-IN3
- Swiss Representative to the IFIP TC14 on Entertainment Computing

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:

- Dr Wac is an Associate Expert of the International Telecommunication Union (ITU) European Regional Initiative for mHealth (since 2012).
- Co-Chair of Interest Group on Multimedia Communication Systems, IEEE Multimedia Communication Technical Committee (2014-2016)

EVENTS

Jean-Henry Morin:

- Liquid Democracy as a Service (LDaaS), Lift14 Workshop, Feb. 5, 2014, Geneva, Switzerland.
- Privacy & Data Protection conversations : how might we reinstate trust in a global digital society?, Lift14 Workshop, Feb. 6, 2014, Geneva, Switzerland.
- 1ère Journée du Développement Contributif. Imagerie numérique et réalité augmentée : patrimoine commun pour géomatique, forensique & éducation, CUI, Université de Genève, March 12, 2014, Geneva, Switzerland
- 2ème Journée du Développement Contributif. Imagerie numérique et réalité augmentée : patrimoine commun pour géomatique, forensique & éducation, CUI, Université de Genève, Sept 10, 2014, Geneva, Switzerland.
- TEDxCERN simulcast at CUI Open Innovation Lounge (CUI-OIL), Sept. 24, 2014, Geneva, Switzerland.
- Transparency & Block Chain Hackathon : Rebooting Public Administration & Democracy, with Ethereum team, CUI-OIL, Geneva, Nov. 26, 2014.

Jolita Ralyté and Giovanna Di Marzo Serugendo:

- Local Organisers: Changing Change: Babok 3.0. 2eme Edition du Symposium on Business Analyse, Uni-Mail, July 2014.

Giovanna Di Marzo Serugendo and Jose Luis Fernandez-Marquez:

- CUSO Seminar Spatial Computing, Dr Jake Beal, BBN Technologies, MIT, University of Iowa, CUI, May 2014

Giovanna Di Marzo Serugendo:

- ISS Seminar, Design errors in medical user interfaces,
- Dr. Paolo Masci, Queen Mary University of London, United Kingdom, CUI, 2014
- CLUSIS Campus – Scientific Day on Security issues, Uni-Mail, January 2015

Michel Deriaz:

- MobileMonday, Geneva, 1st of December 2014

PARTICIPATION IN TV AND RADIO PROGRAMS

Katarzyna Wac:

- Médecine digitale: La santé connectée, RTS 36.9, Consulté: Dr. K. Wac, April 2014.

Jean-Marc Seigneur:

- “Chasseurs de Rumeurs”, RTS, TV5 Monde, Téléjournal Février 2014

PRESS RELEASE

Michel Deriaz:

- Tribune de Genève, “Avec Tango, Google lorgne l'intérieur des maisons”, http://tam.unige.ch/assets/documents/md/press/20140301_TdG.pdf
- Tribune de Genève, “L'Uni développe une supermontre pour protéger les séniors”, http://tam.unige.ch/assets/documents/md/press/20140721_TdG.pdf
- Campus, “La montre qui ne laisse pas tomber les aînés”, http://tam.unige.ch/assets/documents/md/press/20140923_Campus.pdf
- Le Matin Dimanche, “Peu d'entreprises s'intéressent aux seniors”, http://tam.unige.ch/assets/documents/md/press/20141116_LeMatinDimanche.pdf

Katarzyna Wac:

- Les applications qui fluidifient le trafic sont toujours plus pointues, Tribune de Genève, June 2014.

- Comment l'Open Data facilite notre vie, LeTemps, January 2014.
- QuantifiedSelf. Empowering patients, are we getting there?, Reflections on Careum Congress 2014 by Dr. K. Wac, August 2014.
- Cette année, je me quantifie: Mieux se connaître soi-même par les chiffres, LeTemps, Invitée: Dr. K. Wac, Janvier 2014

Jean-Henry Morin:

- La Liberté, Restaurer la confiance, July 21, 2014. <http://www.laliberte.ch/news/magazine/multimedia/restaurer-la-confiance-250504#.VQJFZYu8lid>
- Le Point.fr, Twitter, les internautes et le bon sens, August 21, 2014. http://www.lepoint.fr/high-tech-internet/twitter-les-internautes-et-le-bon-sens-21-08-2014-1855540_47.php
- Le Temps, La Démocratie du futur sera digitale et collaborative, Feb. 5, 2014. http://www.letemps.ch/Page/Uuid/6de170c2-8e82-11e3-80bf-7b13dc15ce7e/La_démocratie_du_futur_sera_digitale_et_collaborative

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, Honfai Choi, Andra Chincisan, Matthias Becker:

- Best Overall Paper Award at IEEE BIBM 2014 for Muscle Tissue Labeling of Human Lower Extremities in Multi-Channel mDixon MR Imaging: Concepts and Applications, 2014 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2014), Belfast, UK, November 2-5, 2014 (with M. Becker)
- Best Paper Award at MICCAI 2014 for A Collective Approach for Reconstructing 3D Fiber Arrangements in Virtual Musculoskeletal Soft Tissue Models, Computational Biomechanics for Medicine IX workshop (MICCAI 2014), MIT, Boston, USA, September 14, 2014 (with H.F. Choi, A. Chincisan)

OTHER ACHIEVEMENTS

Giovanna Di Marzo Serugendo:

- Invited Professor, University Claude Bernard Lyon 1, 2013-2014

Jean-Henry Morin:

- Lancement du ThinkGroup ThinkServices sur Cloud Societal Responsibility. <http://tg-csr.org/>

Katarzyna Wac:

- QoL got a Google Award worth 5000 USD (2014)
- QoL is part of the The Institute for Computer Sciences, Social Informatics and Telecommunications Engineering (ICST), European Alliance for Innovation (EAI), AgeingWell Network, mHealth Alliance, HIMSS Europe, as well as European Network of Living Labs (ENoLL), European research network Emanics Lab.

TECHNOLOGY TRANSFER

Jean-Henry Morin:

- www.MobileThinking.ch start-up originated in ISS in 2014 (2 funders from QoL, 1 funder from the Augmented Human Trust research group); technology transfer to Jody Hausmann (QoL: 2010-2012)

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>

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>

Cameli

Care Me for Life

AAL project

Partners: Siemens, UniGe, Orbis, IPN, NetUnion, Viva, Noldus, Citard

Period: April 2013 – November 2015

Website: <http://cameli.eu>



Figure 18: Crowd Steering



Figure 17: Confidential channel over MANET

StayActive

AAL project

Partners: TeamNet (Romania), eLearning Studios (UK), HILberia (Spain), RGB Medical Devices (Spain), CETEMMSA (Spain), Ana Aslan International Foundation (Romania), Université de Genève (Switzerland)

Period: 2014 - 2016

Website: <http://stay-active.net>

CogniWin

Cognitive Support for Seniors

AAL project (AAL-2013-6-114)

Partners: University of Geneva (Coordinator), Microsoft, ArgYou Ltd, Instituto Pedro Nunes, Orbis Medisch en Zorgconcern, Austrian Institute of Technology, ISOIN, Citard Services Ltd

Period: May 2014 - December 2016

Website: <http://cogniwin.eu>

SpONSOR

SOLutioN for Supporting occupation in the life of Older adults

AAL project

Partners: Luxembourg Institute of Science and Technology (Luxembourg), Coherent Streams (Switzerland), Fondation Suisse pour les Téléthèses (Switzerland), University of Geneva ISS (Switzerland), InTech (Luxembourg), Consiglio Nazionale delle Ricerche (Italy), I+ S.r.l. (Italy), Netwell Centre and Casala, Dundalk Institute of Technology (Ireland)

Period: May 2014 - October 2016

Website: <http://sponsor-aal.eu/Home>

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

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

ENERGIC

European Network Exploring Research into Geospatial Information Crowdsourcing: software and methodologies for harnessing geographic information from the crowd
EU COST Action IC1203
Partners: Claudine Métral, Gilles Falquet (management committee members)
Period: December 2012 - December 2016
Web site: <http://vgibox.eu/>

KEYSTONE

Semantic keyword-based search on structured data sources
EU COST Action IC1302
Partners: Gilles Falquet, Stéphane Marchand-Maillet (mgt committee and working group members)
Period: October 2013 - October 2017
Web site: <http://www.keystone-cost.eu>

ASAP

Architectures, Algorithms and Platforms for Enhanced Living Environments
EU FP7-ICT Grant 619706
Partners: Université de Genève, Institute of Communication and Computer Systems (Greece), Queen's University Belfast (UK), Internet Memory Research (France), WIND Telecomunicazioni (Italy), weblyzard technology (Austria)
Period: March 2014 - February 2017
Web site: <http://www.asap-fp7.eu/>

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>

ANIMATE

Ambient Assisted Living project «intergenerational community for company knowledge Transfer»
EU COST Action, AAL-ANIMATE
Partners: HI iberia, IRB, UniGe, Thurrock Council, eLearning Studios
Period: May 2014 - November 2016
Web site: <http://www.qol.unige.ch/research/animate.html>

MiraculousLife

Miraculous Life for elderly Independent Living
EU FP7-ICT project Grant 611421
Partners: AIT, UniGe, UCY, ORBIS, Fh-IGB, Noldus, Citard, Zoobe, MRPS
Period: February 2014 - February 2017
Web site: <http://miraculous-life.eu/>

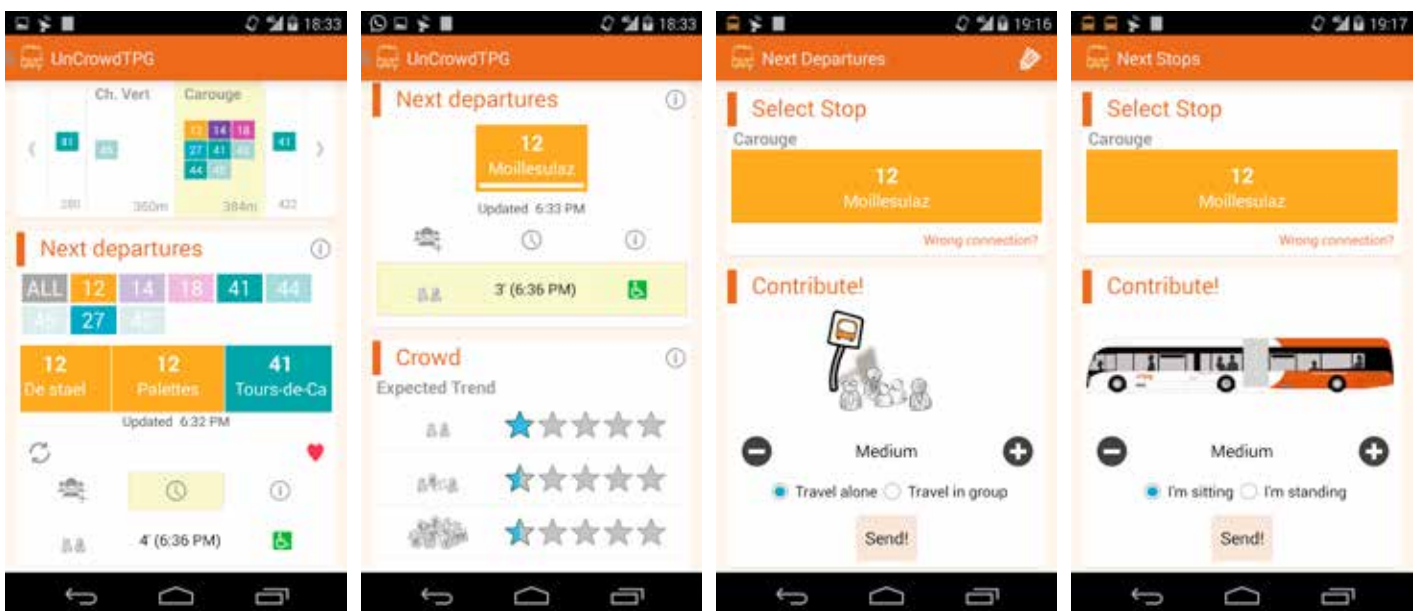


Figure 19: UnCrowdTPG is a TPG open data API contest winner. It is a smartphone application that let people know which are the less crowded trams and buses for a more comfortable commute. It is based on the collaboration between people to engage them and be part of the general society and family of TPG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

MUSES

Multiplatform Usable EndpointSecurity

EU FP7 project

Partners: S2 Grupo de Innovación en Procesos Organizativos SL, Universidad de Granada, 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>

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/>

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/>

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 Jaurilaritza-Gobierno Vasco – Spain, Vicon Motion Systems Limited – United Kingdom

Period: March 2013 - February 2016

Web site: <http://www.fp7-replay.eu/>

ITN-DCH

Initial Training Network for Digital Cultural Heritage: Projecting our Past to the Future

EU FP7 project

Partners: MIRALab, University of Geneva - Switzerland, 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 Softwareentwicklung Gmbh - Germany, 7Reasons Medien Gmbh - Germany, The University of Warwick – United Kingdom

Period: October 2013 - September 2017

Web site: <http://www.itn-dch.org/>

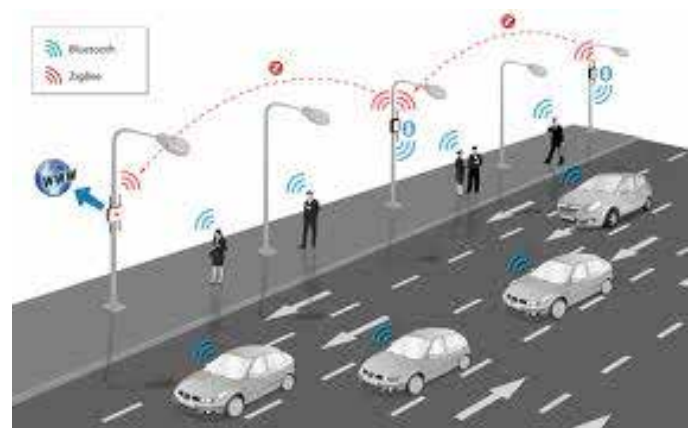


Figure 20: Spatial Services

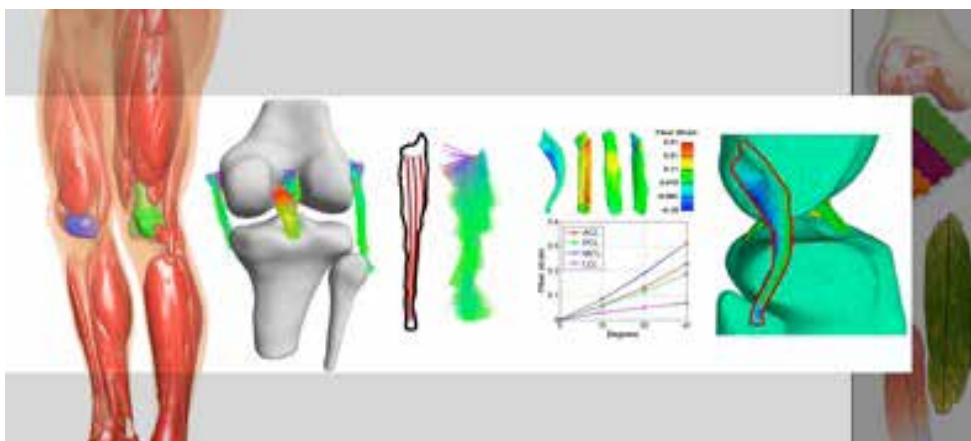


Figure 21: Multimodal knee articulation model © MIRALab



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

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

PRedict Solar Uv Exposure (PuRSUE)

Ground UV irradiance and 3D rendering techniques to predict anatomical solar UV exposure in Skin cancer research and prevention

SNF project 152803

Institute for Work and Health, Lausanne University Hospital, MeteoSwiss

Period: August 2014 - July 2017

Website:

<http://p3.snf.ch/Project-152803>

eGov.STICS

Service Tangibilization Interactive Compliance System

Fonds privé, CTI project, Etat de Genève

Period: September 2011 – December 2014

An Open Market for Cloud Data Services

SNF project 146603

Period: October 2013 - September 2014

Website: <http://p3.snf.ch/project-146603>

CreAct

Création d'un acteur virtuel en temps réel

CTI project

Chèque d'innovation de CHF 7'500.- du Département fédéral de l'économie, de la formation et de la recherche DEFR, Commission pour la technologie et l'innovation CTI Confédération suisse (juin 2013 - juin 2014)

F2D

Period: 2014 - 2015

Website: <http://tam.unige.ch/projects/f2d.html>

MoveYourStory

Period: 2013 - 2014

Website: <http://tam.unige.ch/projects/moveyourstory.html>

PCS-OBEY

Enabling People-Centric Sensing by Overcoming the privacy Barrier

SNF project 149591

Period: 2013 - 2015

Website: <http://p3.snf.ch/project-149591>

MIQ

SNF project

Model accepted but to be transferred to UCPH

LACE HPC – Language acquisition from comparable corpora using high performance computing (CADMOS)

Partners: B. Chopard and G. Falquet (UNIGE), M. Rajman (EPFL), T. Della Senta (UNDL Foundation)

Period: 2011 - 2014

TEACHING

Giovanna Di Marzo Serugendo:

- **Introduction à la pensée informatique**, ISS, Bachelor course, 3 ECTS, 42 hours, 40 students
- **Bases de données**, ISS, Bachelor course, 6 ECTS, 14 hours, 30 students
- **Services foundation**, ISS, Master course, 3 ECTS, 42 hours, 4 students
- **Contextualisation et Qualité des Services**, ISS, Bachelor course, 6 ECTS, 84 hours, 15 students
- **Social and Legal Issues in Informatics**, ISS, Master course, 3 ECTS, 84 hours, 25 students
- **Design Science Research**, ISS, Master course, 3 ECTS, 84 hours, 20 students

Giovanna Di Marzo Serugendo and Jose Luis Fernandez-Marquez:

- **Self-adaptive systems**, ISS, Master course, 4 ECTS, 42 Hours, 6 students

Jose Luis Fernandez-Marquez:

- **Tutorial: From Self-Organizing Mechanisms to Design Patterns to Engineering Self-Organizing Applications.** Self-Organising. 7th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO2013).

Abdelaziz Khadraoui:

- **Service Strategies**, ISS, Master course, 6 ECTS, 56 hours, 8 students



ISS team in 2013



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

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 science 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, 50 students
- Design Science, ISS, Bachelor course, 6 ECTS, 56 hours, 14 students

- Systèmes d'Information d'Entreprise, ISS, Bachelor course, 6 ECTS, 56 hours, 10 students
- Informatique et Systèmes d'Information I, Public Management, ISS, Master course, 3 ECTS, 28 hours, 20 students
- Selected Topics, Advanced Seminar on Industrial & Emerging issues, ISS, Master course, 3 ECTS, 28 hours, 16 students
- Service Innovation Lab, ISS (shared with Laurent Moccozet), 3 ECTS, 28 hours, 9 students
- DRM Technologies, ISS, Continuous education, 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, 70 students
- Design Science & Design Thinking, CUSO Doctoral Program in Computer Science, in cooperation with Prof. Yves Pigneur, University of Lausanne, 5 days program, 35 hours, 12 students

Jolita Ralyté:

- Analyse des objectifs, ISS, Bachelor course, 3 ECTS, 26 hours, 200 students
- Gestion de projets, ISS, Bachelor course, 3 ECTS, 26 hours, 70 students
- Modélisation et réalisation des services, ISS, Bachelor course, 6 ECTS, 26 hours, 15 students
- Bases de données, ISS, Bachelor course, 6 ECTS, 14 hours, 30 students

Visualization of enrichment information in enriched 3D city models

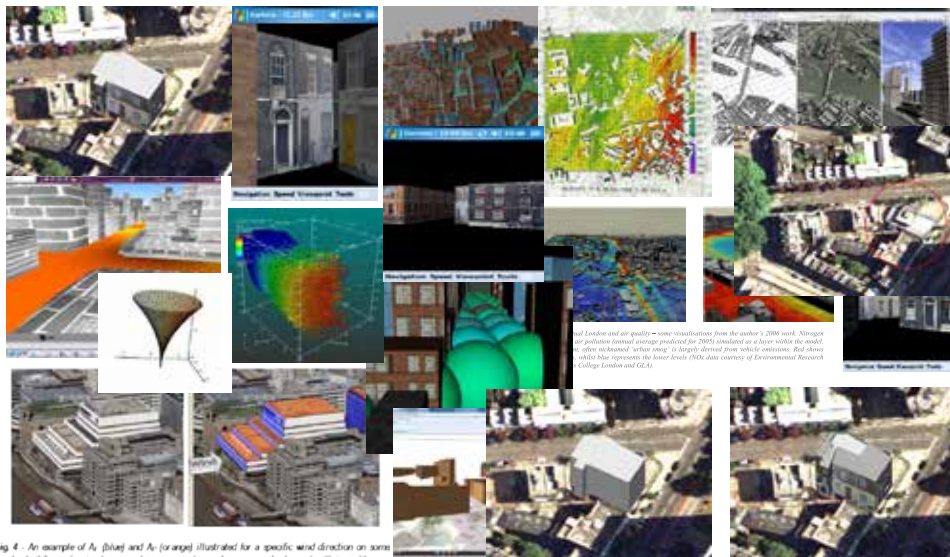


Fig. 4 - An example of A_1 (blue) and A_2 (orange) illustrated for a specific wind direction on some London buildings, showing how an urban area can be much more complex to work with in reality.

Figure 23: Data and knowledge visualization techniques in urban models

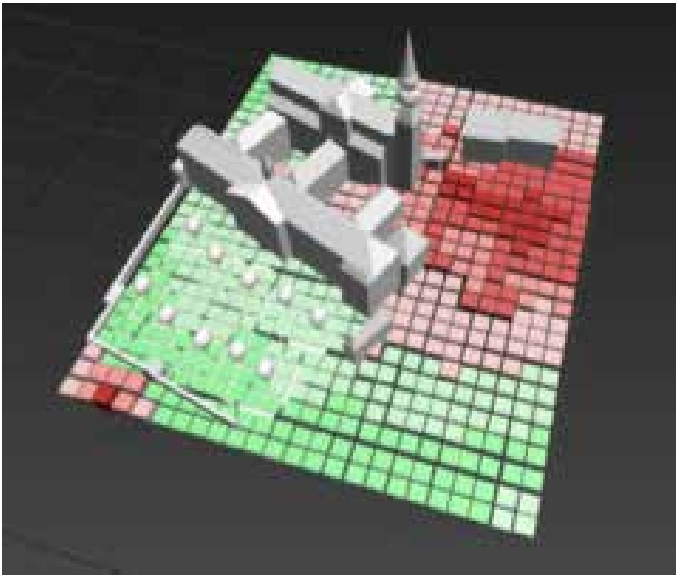


Figure 24: A visualization technique for air quality in a 3D city model

- **Sécurité des systèmes d'information**, ISS, Bachelor course, 3 ECTS, 26 hours, 40 students
- **Service Models and Design**, ISS, Master course, 6 ECTS, 28 hours, 18 students
- **CAS MATIS-GPSI**, Continuous education, 10 ECTS, 38 hours, 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 et Trust Management**, ISS, Continuous education, Medi@LAB, 24 hours, 15 students
- **e-Commerce**, ISS, Continuous education, Medi@LAB, 12 hours, 15 students
- **Web Marketing et e-Réputation**, ISS, Master Journalisme et Communication, 3 ECTS, 14 hours, 36 students
- **Géolocalisation**, ISS, Master Journalisme et Communication, 5 ECTS, 14 hours, 10 students
- **Information Stratégique, Veille et Recherche d'Information**, ISS, Master Journalisme et Communication, 3 ECTS, 28 hours, 20 students

Gilles Falquet:

- **Semantic Web technologies**, KE, Master, 6 ECTS, 56 hours, 20 students, participation for 28 hours
- **Knowledge organisation systems**, KE, Master, 6 ECTS, 56 hours, 14 students, participation for 28 hours
- **Systèmes d'information de l'environnement**, Master en sciences de l'environnement (MUSE) course, 6 ECTS, 10 hours, 55 students, participation for 4 hours

Claudine Métrol:

- **Semantic Web technologies**, KE, Master, 6 ECTS, 56 hours, 20 students, participation for 28 hours
- **Knowledge organisation systems**, KE, Master, 6 ECTS, 56 hours, 14 students, participation for 28 hours
- **Systèmes d'information de l'environnement**, Master en sciences de l'environnement (MUSE) course, 6 ECTS, 10 hours, 55 students, participation for 4 hours
- **GEOTOOLS-DB: Modélisation des bases de données spatiales**, Certificat complémentaire en géomatique, Service course, 3 ECTS, 28 hours, 30 students
- **Space-City: Modèles urbains 3D**, Master en sciences de l'environnement (MUSE), Service course, 3 ECTS, 28 hours, 12 students

Nadia Magnenat-Thalmann:

- ACM SIGGRAPH ASIA 2014 Course on Multimodal Human-Machine Interaction including Virtual Humans and Social Robots, Shenzhen, China, December 4, 2014 (<http://sa2014.siggraph.org/en/attendees/courses.html?view=session&type=courses&sessionid=29>)

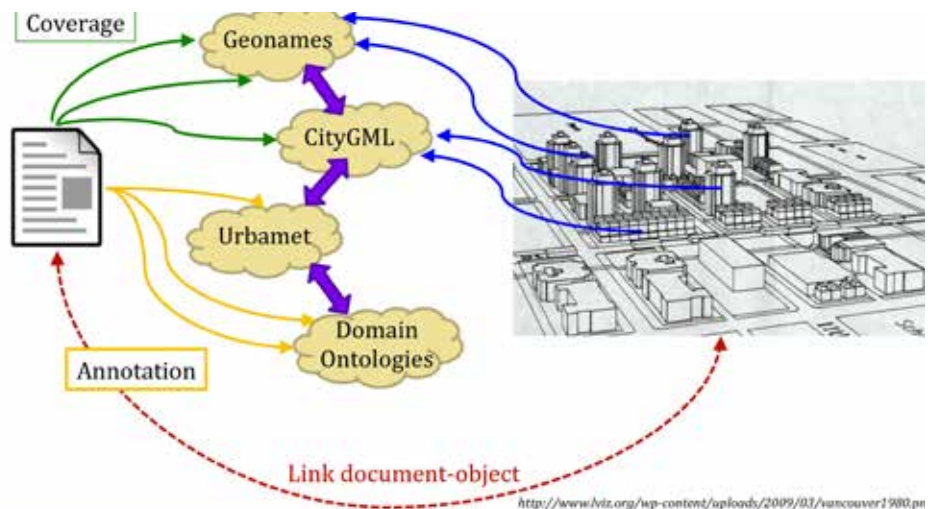


Figure 25: Connecting documents and city objects through ontologies



latl.unige.ch

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 (Romanian, Greek, Japanese). In 2014 the LATL launched the development of a parser for Portuguese. 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 Univ. of Zurich (Figure 2)
- on speech-to-speech translation : Siwis project in partnership with IDIAP, ETH and University of Edinburgh (Figure 3)

In collaboration with the Knowledge Engineering group, the LATL works on a project of digital edition of Ferdinand de Saussure's manuscripts. A system for visualizing, annotating and transcribing Saussure's manuscripts is already completed.

TEAM

Director

Eric Wehrli
Full professor



Senior researchers

Dr. Alexis Kauffmann
Dr. Yves Scherrer
Jean-Philippe Goldman
Luka Nerima

Assistants (PhD students)

Asheesh Gulati
Maria Ivanova
Sharid Loaiciga
Kamel Nebhi
Lorenza Russo

Administration

Lara Broi
Eva Capitaio

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

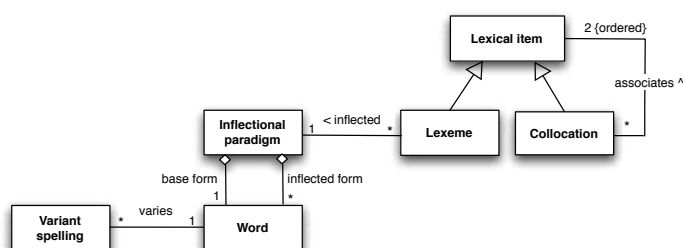


Figure 2: VoiceApp Interface for dialect prediction based on automatic speech recognition.



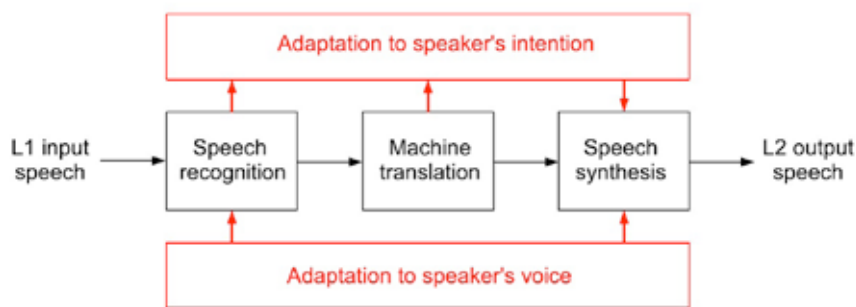


Figure 3: General concept of speech-to-speech machine translation, with SIWIS adaptations in red.

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] Massimo Brero, "A system for visualizing, annotating and transcribing Saussure's manuscript", in *Cahiers Ferdinand de Saussure*, volume n°67, Librairie Droz, Geneva, 2014.
- [2] Garner, P.N., R. Clark, J.-P. Goldman, P.-E. Honnet, M. Ivanova, A. Lazaridis, H. Liang, B. Pfister, M. S. Ribeiro, E. Wehrli, and J. Yamagishi, «Translation and prosody in Swiss languages», *Nouveaux cahiers de linguistique française* n°31, Geneva, 2014.
- [3] Auchlin, A., T. Prsir, J.-Ph. Goldman, 2014, «Avant-propos», *Cahiers de linguistique française* 31 : SWIP 3 - Swiss Workshop In Prosody, Proceedings - Actes des journées Genève septembre 2014, v-vi. <http://clf.unige.ch/num.php?numero=31>.
- [4] Goldman, J.-Ph., T. Prsir, G. Christodoulides, A. C. Simon, A. Auchlin, 2014, « Phonogenre Identification: A Perceptual Experiment with 8 Delexicalised Speaking Styles », *Cahiers de linguistique française* 31, 2014, 51-62. <http://clf.unige.ch/display.php?numero=31&idFichier=461>
- [5] Prsir T., J.-Ph. Goldman, A. Auchlin, 2014, "Prosodic features of situational variation across nine speaking styles in French", *Journal of Speech Science* 4 (1) 2014, 41-60. <http://www.journalofspeechsciences.org/index.php/journalofspeechsciences/article/download/89/68>
- [6] Simon A. C., A. Auchlin, J.-Ph. Goldman, G. Christodoulides (Accepted / In Press), *Tendances prosodiques de la parole radiophonique*, *Cahiers de Praxématique*.
- [7] Hove, I., A. Leemann, M.-J. Kolly, V. Dellwo, J.-P. Goldman (in press): *Swiss Voice App: "My voice – my dialect"*, in: Leemann, Adrian, Marie-José Kolly, Volker Dellwo, Stephan Schmid (eds.), *Trends in Phonetics and Phonology. Studies from German-speaking Europe*

Full refereed papers in Conference Proceedings

- [8] Loáiciga, Sharid, Meyer, Thomas & Andrei Popescu-Belis. (2014). *English-French Verb Phrase Alignment in Euro-parl for Tense Translation Modeling*. In *Proceedings of the 9th Conference on Language Resources and Evaluation*. Reykjavik, Iceland.
- [9] Yves Scherrer & Benoît Sagot (2014): *A Language-independent and fully Unsupervised Approach to Lexicon Induction and Part-of-Speech Tagging for Closely Related Languages*. LREC 2014, Reykjavik, Islande
- [10] Yves Scherrer, Luka Nerima, Lorenza Russo, Maria Ivanova & Eric Wehrli (2014): *SwissAdmin: a Multilingual Tagged Parallel Corpus of Press Releases* LREC 2014, Reykjavik, Island.

- [11] Wehrli, E., & Nerima, L., 2014. «When rules meet bigrams», In *proceedings of the 15th International Conference on Intelligent Text Processing and Computational Linguistics*, Kathmandu, Nepal, Springer Lecture Notes in Computer Science.
- [12] Goldman, J.-Ph., T. Prsir, G. Christodoulides, A. Auchlin, 2014, *Speaking style prosodic variation: an 8-hour 9-style corpus study*, in *Speech Prosody 2014*, Dublin. <http://speechprosody2014.org/>
- [13] Goldman, J.-Ph., T. Prsir, A. Auchlin, 2014, *C-PhonoGenre : a speech corpus in French 7-hours 7-speaking styles: relations between situational features and prosodic properties*, in *The 9th edition of the Language Resources and Evaluation Conference*, Reykjavik. <http://lrec2014.lrec-conf.org/en/>
- [14] Goldman, J.-Ph., T. Prsir, G. Christodoulides, A. C. Simon, A. Auchlin 2014, "Phonogenre Identification: A Perceptual Experiment with 8 Delexicalised Speaking Styles", *SWIP3 - Swiss Workshop In Prosody*, septembre 2014, Genève.
- [15] Goldman, J.-Ph., T. Prsir, A. Auchlin 2014, "C-PhonoGenre : a speech corpus in French 7-hours 7-speaking styles: relations between situational features and prosodic properties", in *The 9th edition of the Language Resources and Evaluation Conference*, Reykjavik. <http://lrec2014.lrec-conf.org/en/>
- [16] Kolly, M.-J., A. Leemann, V. Dellwo, J.-P. Goldman, I. Hove, I. Almajai (2014). *Voice App. A smartphone application for crowdsourcing Swiss German dialect data*. *Proceedings of Digital Humanities 2014*.

Full refereed papers in Workshops Proceedings

- [17] Wehrli, E. 2014. "The Relevance of Collocations for Parsing», *MWE workshop, EACL-2014*, Gothenburg, Sweden, pp. 26-32.
- [18] Yves Scherrer (2014): *Unsupervised adaptation of supervised part-of-speech taggers for closely related languages* *First Workshop on Applying NLP Tools to Similar Languages, Varieties and Dialects (VarDial)*, COLING 2014, Dublin, Irlande

Books and book chapters

- [19] Auchlin, A., T. Prsir, J.-Ph. Goldman, 2014, *Cahiers de linguistique française* 31 : SWIP 3 - Swiss Workshop In Prosody, Proceedings - Actes des journées Genève septembre 2014. <http://clf.unige.ch/num.php?numero=31>.
- [20] Wehrli, E. 2014. "Parsing Language-Specific Constructions: The case of French Pronominal Clitics» in J. Blochowiak, C. Grisot, S. Durrlemann, C. Laenzlinger (eds.), *Collection of papers dedicated to Jacques Moeschler*, Genève. <http://www.unige.ch/lettres/linguistique/moeschler/Festschrift/Festschrift.php>

INTERNATIONAL AND NATIONAL RESEARCH PROGRAMS COMMITTEES

- Yves Scherrer. Consultant for the MADAR (Multi-Arabic Dialect Applications and Resources) project, funded by the National Priority Research Program of the Qatar Research Foundation, 2014-2017.

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- Eric Wehrli, co-organizer of The 10th Workshop on Multiword Expressions (MWE 2014) at the 14th Conference of the European Chapter of the Association for Computational Linguistics (EACL), Gothenburg, Sweden, April 2014

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- Kamel Nebhi, program committee member, AI Mashup Challenge workshop, ESWC 2014.
- Kamel Nebhi, program committee member, Open Infrastructures and Analysis Frameworks for HLT workshop, COLING 2014.
- Luka Nerima, program committee member, TALN 2014, Marseille, France, juillet 2014.
- Yves Scherrer, program committee member, First Workshop on Applying NLP Tools to Similar Languages, Varieties and Dialects (VarDial), COLING 2014, Dublin, Irlande
- Yves Scherrer, program committee member, First Workshop on Computational Approaches to Code Switching, EMNLP 2014, Doha, Qatar

INVITED TALKS

Yves Scherrer

- Part-of-speech tagging for regional languages and dialects - A generic approach based on unsupervised learning, 8èmes Journées Suisses de la Linguistique, Zurich
- La traduction automatique de caractères - Ou comment abuser d'un outil de traduction automatique de façon créative, Conférence donnée à l'Université de Strasbourg, France
- Sandra Kellerhals, Yves Scherrer, Elvira Glaser & Robert Weibel (2014): The distribution of aggregated syntactic construction types compared with other linguistic levels - A dialectometrical analysis of Swiss German dialects, Methods in Dialectology XV, Groningen, Pays-Bas
- Yves Scherrer & Sandra Kellerhals (2014): Digitizing the linguistic atlas of German-speaking Switzerland, Methods in Dialectology XV, Groningen, Pays-Bas
- Yves Scherrer & Sandra Kellerhals (2014): Dialektometrische Analyse von schweizerdeutschen Dialekt Daten, 18. Arbeitstagung zur alemannischen Dialektologie, Tübingen, Allemagne

Sharid Loáiciga Sánchez

- Machine Translation of Verb Tenses. Talk at the weekly Research Seminar of the Linguistics Department, University of Geneva. November 4th, 2014.

Jean-Philippe Goldman

- "Speaking style prosodic variation: an 8-hour 8-style corpus study", 8èmes Journées suisses de linguistique 2014, 19.06.2014, Zürich.

FUNDED RESEARCH PROJECTS

Participation to European projects

PARSEME: Parsing and Multi-word Expressions

COST action IC 1207

Partners: 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/>

Phonogenre, Prosodic and linguistic characterisation of speaking styles: semi-automatic approach and applications

Swiss NSF project 134818

Principal Investigator: A. Auchlin, Employee: J.Ph. Goldman

Period: July 2011 - August 2014

Voice Äpp: your voice, your identity

Swiss NSF AGORA project

Principal Investigator: J.Ph. Goldman (UniGe) and A. Lee-mann (UZH)

Period: February 2013 - January 2015

Website: <http://www.voiceapp.ch>



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

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

- SWIP3 – Swiss Workshop in Prosody, Annual Swiss meeting on Prosody gathering 50+ people + 2 invited speakers, Place: University of Geneva, September 11-12 2014
- Massimo Brero, Winner of the Arditì prize for Computer Science 2014, for his Master's Thesis "A visualization, annotation and transcription system for the digitized Ferdinand de Saussure's manuscript", Faculty of science
- Kamel Nebhi: Swiss National Science Foundation Fellowship for Doctoral Students, NLP Research Group of the University of Sheffield. Février 2014 - Février 2015.
- Gilles Falquet and Luka Nerima, "Knowledge engineering techniques for the creation of a semantic digital edition of Saussure's manuscripts", presented at the Work-Shop on Historical Document Analysis in Switzerland, Fribourg, February, 2014.
- Yves Scherrer, Co-organizer of the weekly research seminar of the Department of Linguistics, University of Geneva

TEACHING

Eric Wehrli:

- **Informatics I - Web programming**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 25 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, 10 students
- **Natural language processing, linguistic approaches and empirical approaches**, Computer Science for the Humanities, Master, 4 ECTS, 56 hours, 20 students

Luka Nerima:

- **Databases**, Computer Science for the Humanities, Bachelor, 12 ECTS, 112 hours, 15 students
- **Informatics II - Java seminar**, Computer Science for the Humanities, Bachelor, 2 ECTS, 28 hours, 8 students
- **Informatics II - Object Oriented Project**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 3 students
- **Information and Communication Technology**, Computer Science for the Humanities, Bachelor, 12 ECTS, 112 hours, 8 students

Yves Scherrer:

- **Informatics I - Web programming**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 25 students
- **Informatics II - Data structures and Object Oriented Programming**, Computer Science for the Humanities, Bachelor, 4 ECTS, 42 hours, 10 students
- **Natural language processing, linguistic approaches and empirical approaches**, Computer Science for the Humanities, Master, 4 ECTS, 56 hours, 20 students
- **TAL et corpus – Outils d'alignement**, Cours et travaux pratiques, Computer Science for the Humanities, Master Linguistics, Informatics, Traduction, Université de Strasbourg, 5 students

SMV

Software Modeling and Verification



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

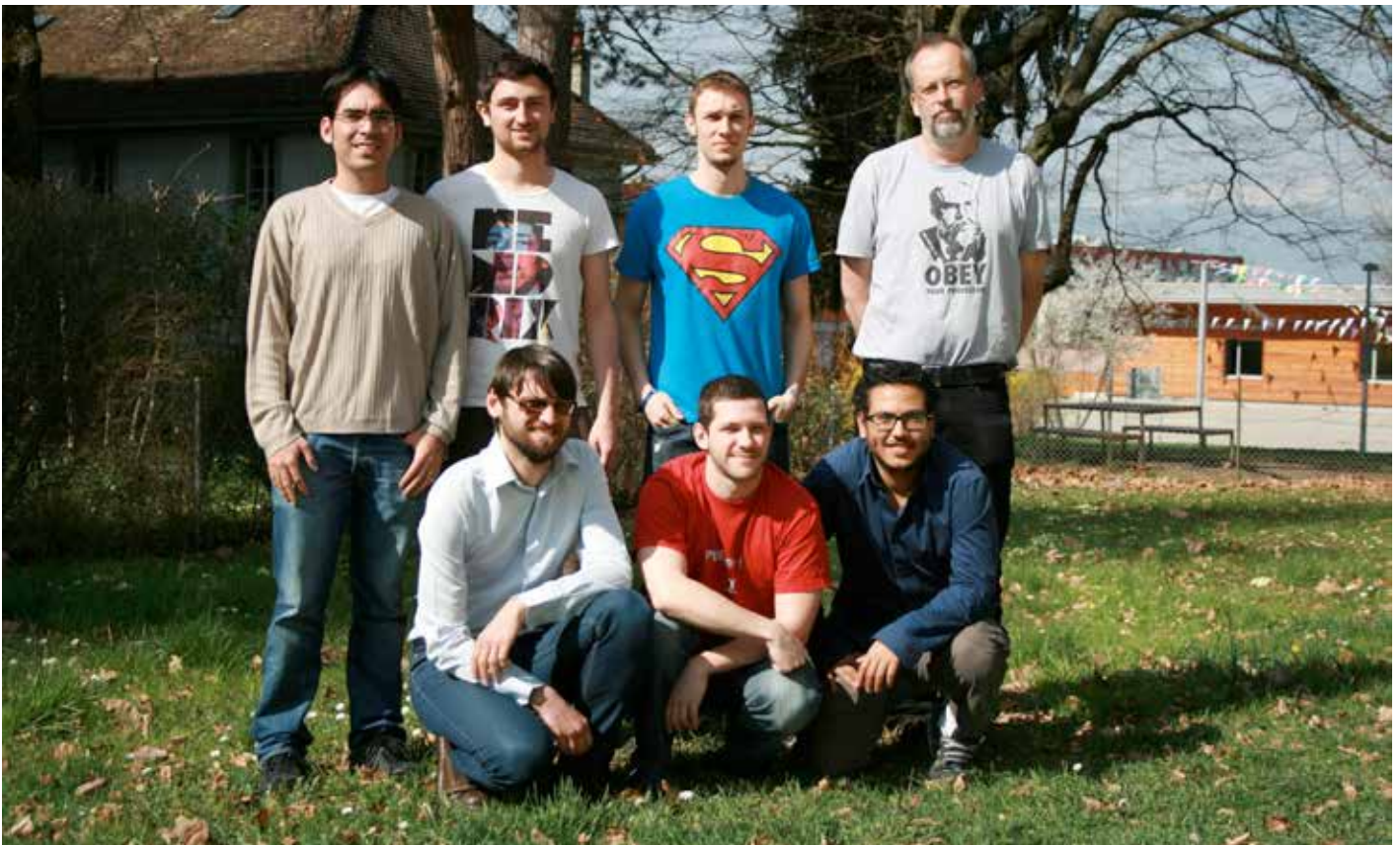
Dr. Maximilien Colange
Dr. Mihai-Lica Pura

PhD students

Javier Belmonte
Stefan Klikovits
David Lawrence
Edmundo Lopez
Dimitri Racordon

Administration

Maëlle Rübéli
Lara Broi



PHD THESIS

- Javier Belmonte, «Program Understanding Using Ontologies and Dynamic Analysis», December 2014

LIST OF PUBLICATIONS

Refereed papers in international journals

- Marechal, Alexis and Buchs, Didier, Generalizing the Compositions of Petri Nets Modules, *Fundamenta informaticae*, pp=, 2015, IOS Press.
- HTML results from the Model Checking Contest @ Petri Net (2014 edition), Kordon, F., Garavel H., Hillah L-M., Hulin-Hubard F., Linard A., Beccuti M., Evangelista S., Hamez A., Lohmann N., E. Bóbeda Lopez, et al., (2014)
- Mihai-Lica Pura, Didier Buchs: Using Symbolic Techniques and Algebraic Petri Nets to Model Check Security Protocols for Ad Hoc Networks, *PNSE Best Papers in TOPNOPC 2015*.

Refereed papers in Conference Proceedings

- 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.
- 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.
- 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.
- Mihai-Lica Pura, Didier Buchs: Using Algebraic Petri Nets for Testing the Models of Ad Hoc Secure Routing Protocols in Mobility Scenarios. *ICST Workshops 2014: 2-3*
- A General Approach for Symbolic Model-Checker Prototyping, Bóbeda, Edmundo López, Colange Maximilien, and Buchs Didier, *14th International Workshop on Automated Verification of Critical Systems (AVOCS)*, 09/2014, Enschede, Netherlands, (2014)
- Mihai-Lica Pura, Didier Buchs: Using Symbolic Techniques and Algebraic Petri Nets to Model Check Security Protocols for Ad Hoc Networks. *PNSE @ Petri Nets 2014: 91-110*

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- Program Committee of VOLT 2014, Verification Of Model Transformation, June 17, Budapest Hungary.
- Program Committee of PNSE'14, Petri Nets and Software Engineering, June 2014, Tunis, Tunisia.
- Program Committee of PN 2014, Petri Nets conference 2014, Tunis, Tunisia.
- Program Committee of SERENE 2014, Budapest, 2014.
- Program Committee of RSP 2014
- ICT COST Action IC1404
- Multi-Paradigm Modelling for Cyber-Physical Systems (MPM4CPS)
- COST action management committee

- Serene ERCIM working group Chairman
- Serene ERCIM 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 2014, June 2014, Tunis.

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

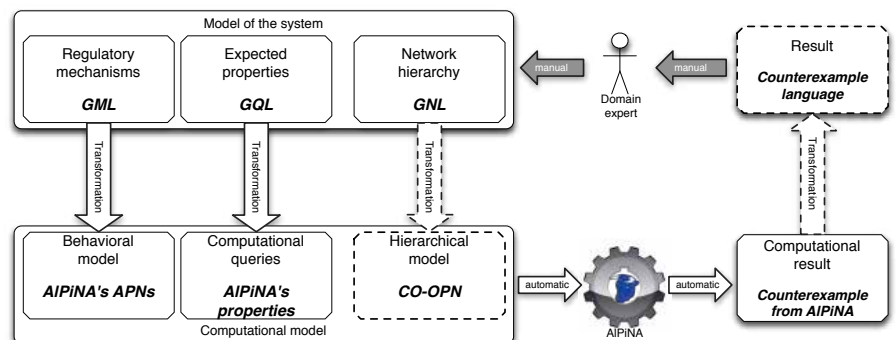
Partners: Didier Buchs (UNIGE), Prof. Nicolas Guelfi (University of Luxembourg)
Co-supervision: Yasir Khan
Period: 2010 - 2015

Participation to National projects

BRINTA 2

Fundamental issues in symbolic model checking techniques for Hierarchical high level modes
FNS Project 144'453
Period: October 2012 - September 2014

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



ESTATE

Embedded SysTEM Automatic TESTING, support by Honeywell international
 Partners: 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

SCIEX-RO - SARPOT

Secure ad hoc routing protocol based on a web-of-trust 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 responsibilities

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

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, 12 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 Prof. Stéphane Marchand-Maillet
- **Compilateurs et interprètes**, Computer Science, 3rd year Bachelor, 6 ECTS, 56 hours

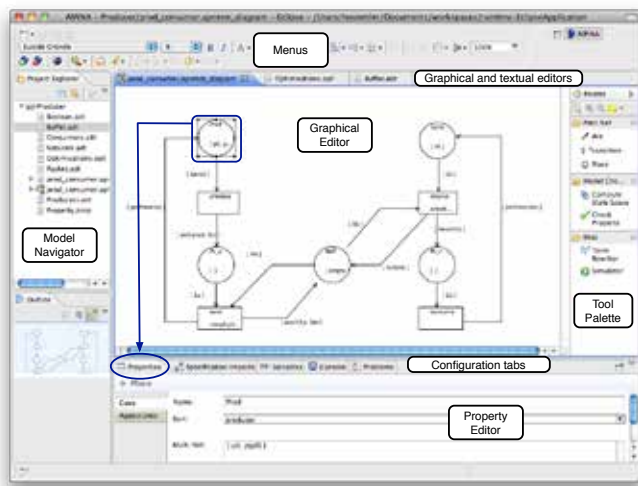


Figure 2: Graphical interface of AIPiNA, a model checker for algebraic Petri nets

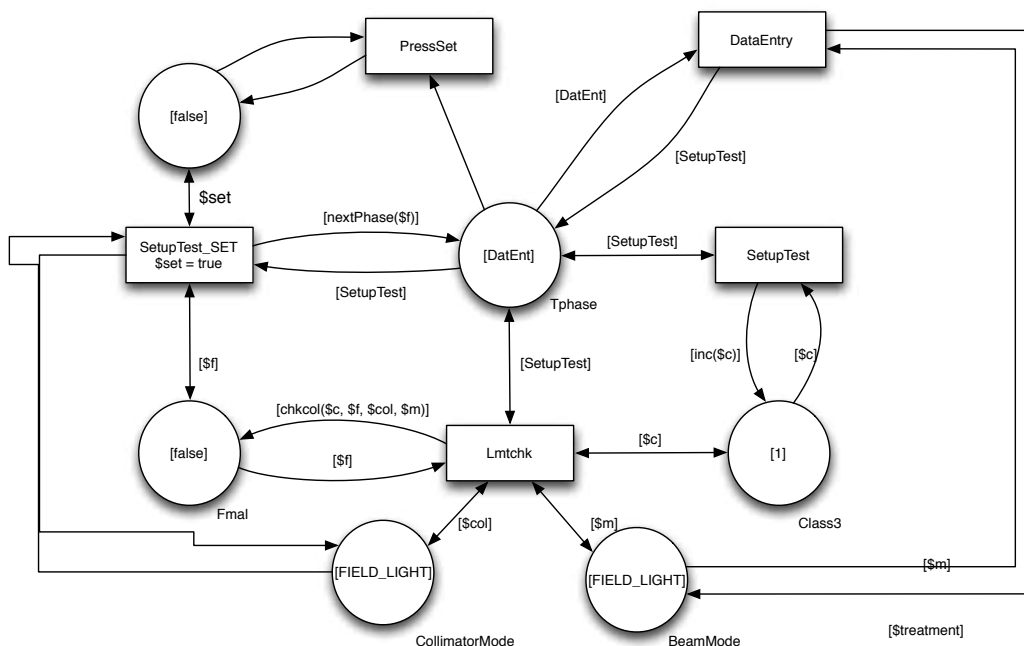
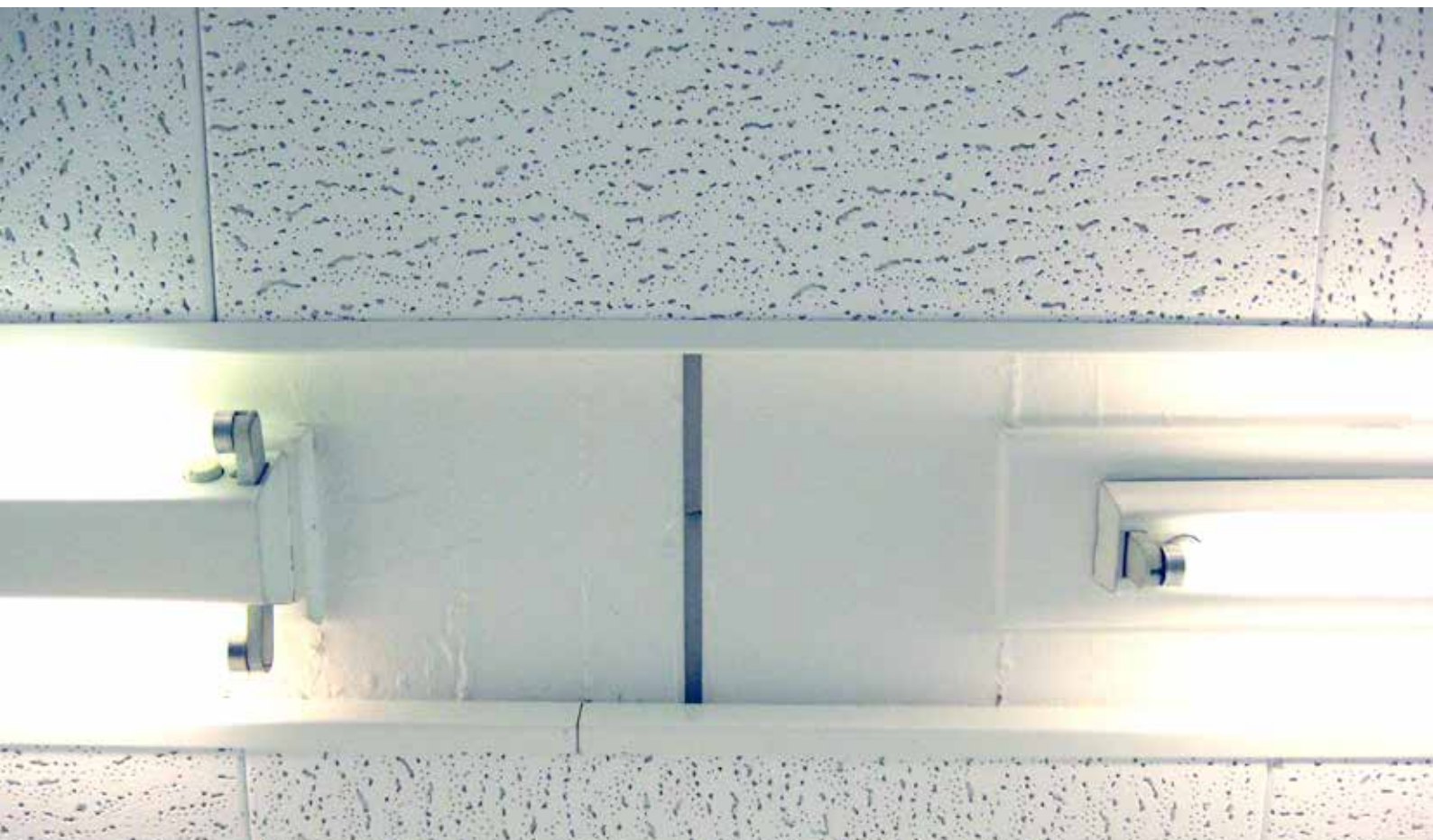


Figure 3: Algebraic Petri net describing the critical module of the famous case of the Therac-25, a radiation therapy machine that caused at least 3 fatal accidents between 1985 and 1987

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 these 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 project Sophocles. We study the way information is processed in complex systems. The results are applied to simple dynamical systems, but also to financial and twitter data.

Within the European MARINET project, we provide a numerical simulation of a wave energy converter. Within the SystemX project EpiPhysiX, in collaboration with M. Milikovitch of the Biology section, we are developing a cell-based numerical model of epithelia subject to mechanical constraints. Other activities concern the development of new, massively parallel algorithms for phylogeny (FNS project in collaboration with N. Salamin, UNIL).

The PASC project „Optimal deployment of multiscale applications on a HPC infrastructure“ is a Swiss national project aimed at designing advance scientific platform for High Performance Computing. Within a collaboration with the Earth Science Department at UNIGE and the HESSO, we are deploying a distributed multiscale methodology and environment on the CSCS HPC machines. As a test application we are developing and integrating models for a volcanic plume and the transport of volcanic ashes, their aggregation and sedimentation on the ground.

TEAM

Director

Bastien Chopard
Full professor



Senior researchers

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

PhD students

Christophe Charpillot
Ranaivo Razakanirina
Mohamed Ben Belgacem
Gregor Chliamovitch
Daniel Lagrava
Aziza Merzouki
Xavier Meyer

Visiting Academic Guests

Prof. François Grey

Administration

Anne-Isabelle Giuntini

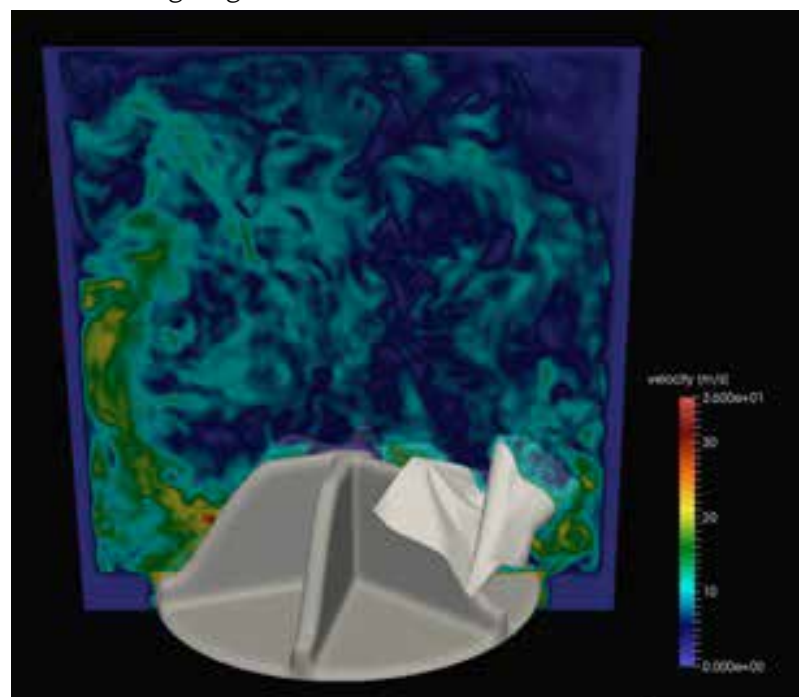


Figure 1: simulation of a cloth in a washing machine.
Palabos software, Jonas Latt

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] Kae Tsunematsu, Bastien Chopard, Jean-Luc Falcone, Costanza Bonadonna. A numerical model of ballistic transport with collisions. *Computers & Geosciences*, Vol. 63, pp 62-60, 2014
- [2] Toshiyuki Hayase, Makoto Ohta, Hitomi Anzai, Bastien Chopard and Jean-Luc Falcone. Design Optimization of a Flow Diverter Stent Using Several Arterial Configurations. *Journal of Biomechanical Engineering*, 2014
- [3] Hitomi Anzai, Bastien Chopard and Makoto Ohta, Combinational optimization of strut placement for intracranial stent using a realistic aneurysm. *Journal of Flow Control, Measurement & Visualization*, 2014
- [4] J. Borgdorff, M. Ben Belgacem, C. Bona-Casas, L. Fazen-deiro, D. Groen, O. Hoenen, A. Mizeranschi, J. L. Suter, D. Coster P.V. Coveney, W. Dubitzky, A. G. Hoekstra, P. Strand and B. Chopard. Performance of Distributed Multiscale Simulations. *Phil. Trans R. Soc. A*, 372:20130407 2014. <http://dx.doi.org/10.1098/rsta.2013.0407>
- [5] Alfons Hoekstra, Bastien Chopard and Peter Coveney. Multiscale Modelling and Simulation: a position paper. *Phil. Trans R. Soc. A*, 372, *Phil. Trans R. Soc. A*, 372:20130377 2014.
- [6] Christophe Charpilloz, Anne-Lise Veuthey, Bastien Chopard and Jean-Luc Falcone. Motifs tree: a new method for predicting post-translational modifications. *Bioinformatics*, 2014.
- [7] Sophie A. Montandon, Athanasia C. Tzika, Antonio F. Martins, Bastien Chopard and Michel C. Milinkovitch. Two Waves of Anisotropic Growth Generate Enlarged Follicles in the Spiny Mouse. *EvoDevo*, 5:33, 2014. DOI: 10.1186/2041-9139-5-33

Full refereed papers in Conference Proceedings

- [8] Mingzi Zhang, Hitomi Anzai, Bastien Chopard and Makoto Ohta. An Optimization Method of FD Stent for Cerebral Aneurysm facing the Stent Design and Manufacturing Needs} 4th Japan-Switzerland Workshop on Biomechanics (<http://biomech.web.nitech.ac.jp/JSB2014/>), 2014
- [9] Gregor Chliamovitch, A Dupuis and Bastien Chopard. On the Dynamics of Multi-information in Cellular Automata. J. Was, G.C. Sirakoulis, and S. Bandini (Eds.): ACRI 2014, LNCS 8751, pp. 87–95, 2014.

Books and book chapters

- [10] Alfons G. Hoekstra, Bastien Chopard, Pat Lawford. Multiscale Modelling and Simulation. In *Computational Medicine: modelling the human body*, chapter 7. Peter Coveney, Vanessa Diaz-Zuccharini, Peter Hunter and Marco Viceconti Edts. Oxford University Press, 2014.
- [11] Multi-scale systems in fluids and soft matter: approaches, numerics and applications. Serguey Karabassov, Dmitry Nerukh, Alfons Hoekstra, Bastien Chopard and Peter Coveney Edts. *Phil. Trans. Royal Soc. A*. Vol 372, no 2021. 2014

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 Faculty of Sciences

PHD THESIS COMMITTEES

- Hitomi Anzai, University of Tohoku, Japan, Jan 16, 2014 - Study of Stent design based on blood flow simulation, rapporteur
- J. Borgdorff, University of Amsterdam, 3 juillet 2014 Distributed Multiscale Computing, rapporteur
- Y Wang INSA-Lyon 25 juillet 2014 Study of the lattice Boltzmann method application to cerebral aneurysm segmentation. Rapporteur
- Dina Vishnyakova, Oct 1st UNIGE: Text Mining Strategies to Support Literature-based Biocuration. Co-director with P. Ruch HESSO

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- Speedup 2014, Chair, UNIGE, Sept 4-5, 2014
- CADMOS Day Oct 7, UNIL co-chair
- CADMOS Activity Days 10-12 Sept, Château d'Oex. Jonas Latt & J.-L. Falcone, chairs

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- DSFD Discrete Simulation of Fluid Dynamics, Paris July 2014
- ACRI 2014, Krakow, Sept 2014

FUNDED RESEARCH PROJECTS

Participation to European projects

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, Covallia

Web Site: <http://www.thrombus-vph.eu>

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 Multi-layer Cellular Automata on Graph

FN - 200020-140975

Period: April 2012 - February 2014

Optimal deployment of multiscale applications on a HPC infrastructure

PACS Project

Coordinator: Bastien Chopard (UNIGE)

Partners: Co-PIs: Costanza Bonadonna (UNIGE), Paul Albuquerque (HES)

Period: July 2014 - December 2016

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 advanced codon models of natural selection

CR3213_1437 68/1

Partners: Nicolas Salamin, M Robinson-Rechavi (UNIL)

Period: April 2013 - December 2015

OTHERS

Refereeing

- Referee for many international 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

- Speedup 2014, Uni-Bastion Sept 4-5, 2014 (www.speedup.ch)

Invited talks

- SFNR April 3rd, Paris
- CMACS 2014, Ifran Morocco, May 30
- ICS 2014, June 4th, Zurich

Participation in TV and Radio Programs

- Participation à CQFD, RTS, émission scientifique sur la multi-disciplinarité

TEACHING

- **Méthodes Heuristiques d'apprentissage et d'optimisation**, Computer Science, Master, 6 ECTS, 70 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 parallèles/probabilistes**, Computer Science, Master, 4 ECTS, 56 hours, 6 students
- **Modélisation et simulation de phénomènes naturels**, Computer Science, Master, 4 ECTS, 56 hours, 15 students

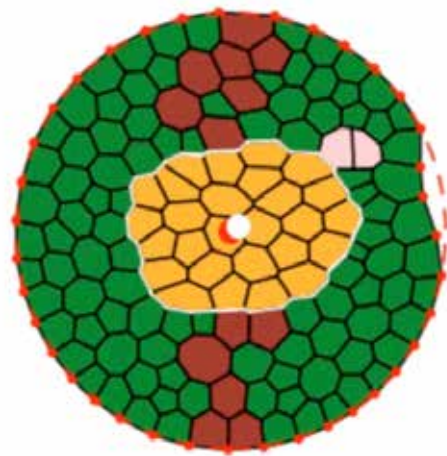


Figure 2: Simulation of the competition between two type of growing cells, for the case of the Acomys mouse. Projet EpiPhysiX, image A. Merzouki.

SUPERVISION OF BACHELOR & MASTER THESIS

- Grigorios G. Anagnostopoulos, Jan 22, 2014 : On the effect of self citations on the bibliometric h-index.
- Ian Krause, January 31, 2014 : Advection-diffusion anisotropic model for platelet transport in intracranial saccular aneurysms
- Yann Thorimbert, 20 mai 2014 (majeur Physique/ mineur Info) : Simulation d'un convertisseur d'énergie des vagues par la méthode de Boltzmann sur réseaux
- Bruno Barbieri, Sept 9 : Prediction du trafic avec une méthode décentralisée.
- Lino Velasquez, Nov 18 : Complexité : propriété locale ou globale.

tcs.unige.ch

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 .

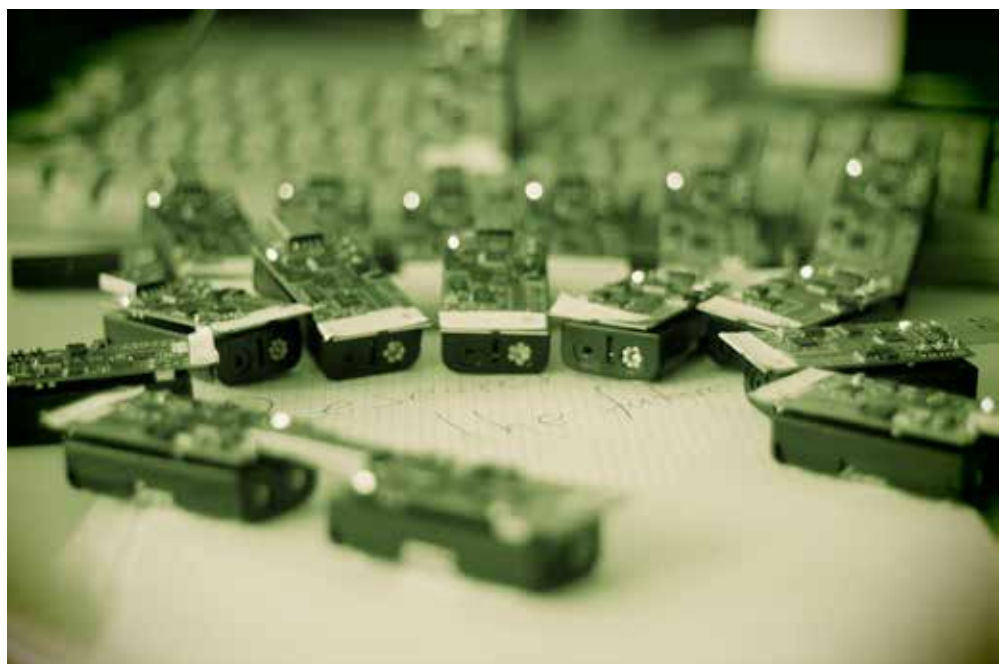
Research on designing a geographic routing algorithm for large scale networks, which is an extension to the Virtual Raw Anchor Coordinate localization based geographic routing. The goal is to perform routing in wireless ad-hoc network in a hierarchical manner, where in the top level routing is done between 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.

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



TEAM

Director

José Rolim
Full professor



Senior researchers

Dr. Pierre Leone (MER)
Dr. Christoforos Raptopoulos
Dr. Constantinos Marios Angelopoulos
Dr. Ricardo Wehbe
Dr. Marios Karagiannis

Lecturer

Eduardo Solana

Assistants (PhD students)

Anthony Gasperin
Napoleon-Orestis Evangelatos
Konstantinos Chantzis
Kasun Wijesiriwardana Samarasinghe
Cristina Muñoz
Ali Fakheri
Eugenio Noto

Administration

Lara Broi

PHD THESIS

- Chantzis, Konstantinos. A real time locating system for Wireless Sensor Networks. Diss. University of Geneva, Feb. 2014.
- Gasperin, Anthony. Through Group Theory and Topology, a Contribution to Computation and Complexity Theory, July 2014

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] Chantzis, Konstantinos, Ioannis Chatzigiannakis, and Jose Rolim. «Design and evaluation of a real-time locating system for wireless sensor networks.» *Journal of Location Based Services* 8.2 (2014): 97-122.
- [2] Leone P, Wijesiriwardana K. “Geographic Routing on Virtual Raw Anchor Coordinate Systems”, Submitted to *Journal of Theoretical Computer Science*
- [3] Cristina Muñoz and Pierre Leone, “Design of a Novel Network Architecture for Distributed Event-Based Systems Using Directional Random Walks in an Ubiquitous Sensing Scenario.” In *Intl. Journal on Advances in Networks and Services*, vol 7 nr 3-4, pages 252-264, 2014.
- [4] Constantinos Marios Angelopoulos, Sotiris E. Nikolettseas, Theofanis P. Raptis: Wireless energy transfer in sensor networks with adaptive, limited knowledge protocols. *Computer Networks* 70: 113-141 (2014)
- [5] Athanasios Kinalis, Sotiris E. Nikolettseas, Dimitra Patroumpa, José D. P. Rolim: Biased sink mobility with adaptive stop times for low latency data collection in sensor networks. *Information Fusion* 15: 56-63 (2014)

Full refereed papers in Conference Proceedings

- [6] Cristina Muñoz, Pierre Leone, A Network Architecture for Distributed Event-Based Systems in an Ubiquitous Sensing Scenario. In the proceedings of Future computing 2014, best paper award.
- [7] Cristina Muñoz, Pierre Leone, Design of an Unstructured and Free Geo-Coordinates Information Brokerage System for Sensor Networks using Directional Random Walks. *SENSORNETS 2014*: 205-212
- [8] Leone P, Wijesiriwardana K., Combinatorial Approach for Geographic Routing With Delivery Guarantees, *SENSORNETS 2014*: 195-204.
- [9] Konstantinos Chantzis, Dimitrios Amaxilatis, Ioannis Chatzigiannakis, José D. P. Rolim. «SCLD-ATP: Symmetric Coherent Link Degree, Adaptive Transmission Power Control for Wireless Sensor Networks.» *SENSORNETS. 2014*.
- [10] Konstantinos Chantzis, Dimitrios Amaxilatis, Ioannis Chatzigiannakis, José D. P. Rolim. «Symmetric Coherent Link Degree, Adaptive Throughput-Transmission Power for Wireless Sensor Networks.» *Distributed Computing in Sensor Systems (DCOSS), 2014 IEEE International Conference on. IEEE, 2014*.
- [11] Constantinos Marios Angelopoulos, Sotiris E. Nikolettseas, Theofanis P. Raptis, José D. P. Rolim: Characteristic utilities, join policies and efficient incentives in Mobile Crowdsensing Systems. *Wireless Days 2014*: 1-6
- [12] Rafael Aguado and Eduardo Solana. Security Study on SDR Tactical Terminals. *Proceedings of the Winncomm Europe Conference 2014. Wireless Innovation Forum. 4-6 November 2014 • Rome, Italy.*

Books and book chapters

- [13] Klaus Jansen, José D. P. Rolim, Nikhil R. Devanur, Christopher Moore: Approximation, Randomization, and Combinatorial Optimization. *Algorithms and Techniques, APPROX/RANDOM 2014, September 4-6, 2014, Barcelona, Spain. LIPIcs 28, Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik 2014, ISBN 978-3-939897-74-3*

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

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS 2014) Marina Del Rey, California, USA, , May 26 to Wednesday, May 28 2014. Steering committee chair: Jose Rolim
- 17th. International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX’2014), 4-6 September 2014 Barcelona., general chair: Jose Rolim
- 18th. International Workshop on Randomization and Computation (RANDOM’2014) 4-6 September 2014 Barcelona. General chair: Jose Rolim
- Symposium on Experimental Algorithms (SEA 2014). 29 June – 1 July 2014. Copenhagen, Denmark. Steering committee chair: Jose Rolim
- 28th IEEE International Parallel & Distributed Processing Symposium - May 19-23, 2014 Arizona Grand Resort PHOENIX (Arizona) USA - Steering Committee: Jose Rolim

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- The Eighth International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies UBICOMM 2014 August 24 - 28, 2014 - Rome, Italy, pierre leone
- The 12th ACM International Symposium on Mobility Management and Wireless Access MOBIWAC 2014 September 21 - 26, 2014, Montreal, Canada, pierre leone
- The Eighth International Conference on Sensor Technologies and Applications SENSORCOMM 2014 November 16 - 20, 2014 - Lisbon, Portugal, pierre leone
- The thirteenth International Conference on Ad-Hoc, Mobile and Wireless Networks AdHocNow 2014, June 29-July 02 2015 - Athens – Greece pierre leone
- The Sixth International Conference on Future Computational Technologies and Applications FUTURE COMPUTING 2014 May 25 - 29, 2014 - Venice, Italy pierre leone
- 3rd International Conference on Theory and Practice in Modern Computing TPMC 2014, Lisbon, Portugal, 15 - 17 July 2014 pierre leone
- IEEE 10th International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP), Singapore, 7-9 April 2015
- IEEE International Conference on Communications (ICC) 2015, London UK, 8-12 June 2015
- 35th IEEE International Conference on Distributed Computing Systems (ICDCS), Columbus, Ohio, USA, June 29 – July 2, 2015

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

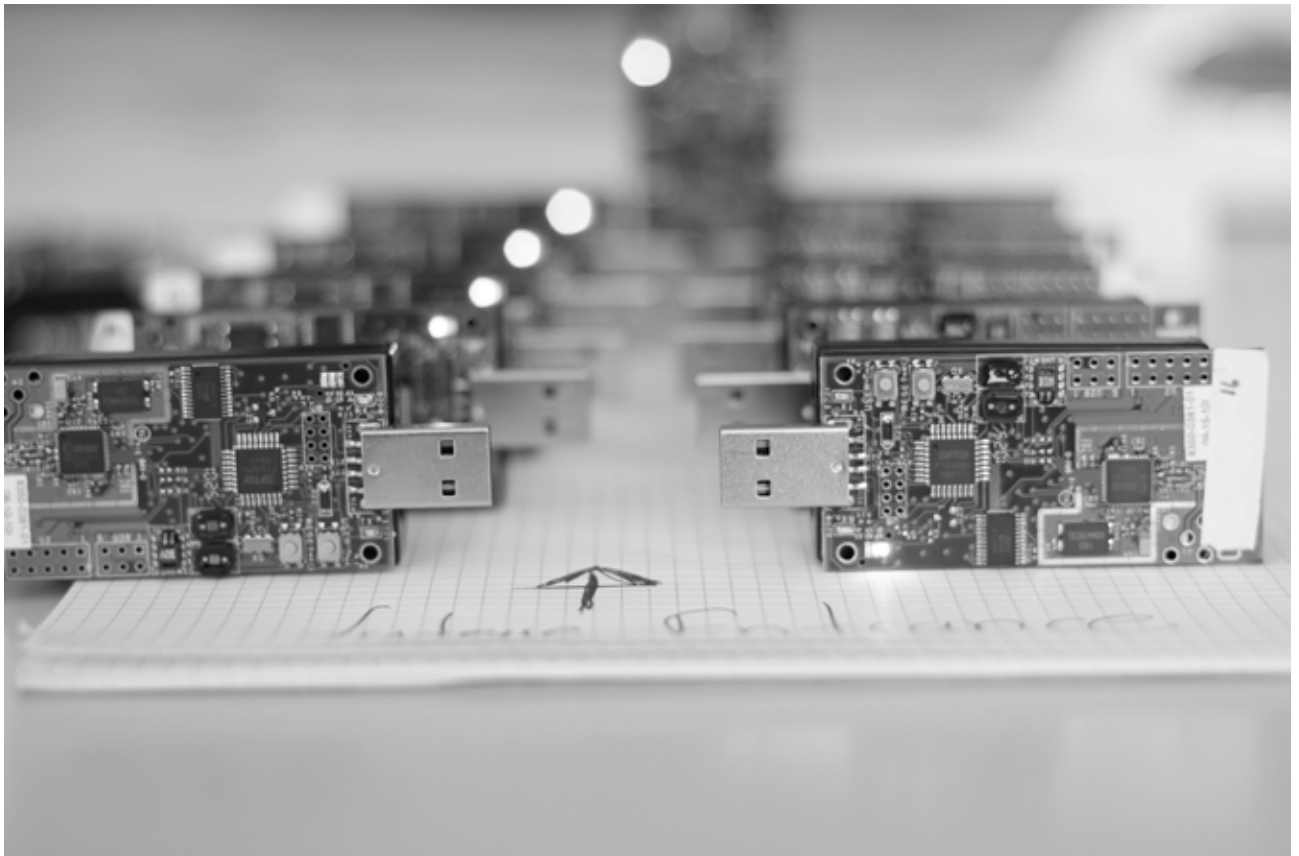
FP7-ICT project, grant 610477

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 University 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/>

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



Participation to National projects

Dynamic and Evolutionary Networks ; Modeling, Complexity and Algorithms

FNSR

Principal Investigator: José Rolim

Global Virtual Raw Anchor Coordinates Routing in Sensor Networks

FNSR

Principal Investigator: Pierre Leone

Period: December 2013 - December 2015

POPWIN

Parallel Object Remote Programming for Heterogeneous Wireless Networks over IPv6

Hasler Stiftung

Pierre Leone

OTHERS

Refereeing

- Journal of Theoretical Computer Science (TCS)
- IEEE Transactions on Mobile Computing
- Journal of Ad Hoc and Sensor Wireless Networks
- Elsevier Computer Networks (COMNET)
- Elsevier Simulation Modelling Practice and Theory (SIM-PAT)
- Transactions on Computers (TC)

Editorial responsibilities

- Member of the Editorial Board of the Journal Ad Hoc & Sensor Wireless Networks (Sector Editor), <http://www.oldcitypublishing.com/AHSWN/AHSWN.html> - PL
- Member of the Editorial Board of the journal Algorithm letters, <http://scik.org/index.php/al> - PL
- Member of the Editorial Board of the journal ISRN Sensor Networks, www.isrn.com/journals/sn/ - PL
- Member of the Editorial Board of the journal Algorithms, <http://www.mdpi.com/journal/algorithms> - PL
- Member of the Editorial board of the journal Computer Science Review. Jose Rolim

Invited talks

- Eduardo Solana. CISO Europe 2014. Chief Information Security Officer Summit. Homomorphic Encryption: Myth or Panacea? Latest Trends on Cloud Cryptography. Berlin, June 12th 2014.

Press Release

- Eduardo Solana. MIGROS Magazine. Les virus s'attaquent aux smartphones. <http://www.migrosmagazine.ch/a-votre-service/science-et-technologie/article/les-virus-s-attaquent-aux-smartphones>.
- Eduardo Solana. MIGROS Magazine. La Suisse, coffre-fort numérique. <http://www.migrosmagazine.ch/a-votre-service/science-et-technologie/article/la-suisse-un-coffre-fort-numerique>

Events organized in Geneva

- TCS participated in the event: "La nuit de la science 2014" demonstrating the AIRWISE: An Airborne Wireless Sensor Network for Ambient Air Pollution Monitoring"

Best Student Paper Award

- Lisbon 2014 SENSORNETS conference, January 2014, SCLD-ATP, Symmetric Coherent Link Degree Adaptive Transmission Power for WSNs

Best Paper Award

- Cristina Muñoz, Pierre Leone, A Network Architecture for Distributed Event-Based Systems in an Ubiquitous Sensing Scenario. In the proceedings of Future computing 2014.

TEACHING

- **Distributed Algorithms for Wireless Sensor Networks**, Computer Science, Master
- **Network Optimisation**, Computer Science, Master (Option), 4 ECTS, 56 hours, 20 students
- **Complexité et calculabilité**, 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 des 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
- **Programmation concurrente et distribuée**, Computer Science, Bachelor (Option), 56 hours
- **Cryptographie et sécurité**, Computer Science, Bachelor, 56 hours, 15 students
- **Logiciels et Réseaux Informatiques**, Computer Science, Bachelor, 56 hours, 10 students
- **Sécurité des Systèmes d'Information**, Computer Science, Master

Administrative Staff





Lara Broi



Marie-France Culebras



Anne-Isabelle Giuntini



Maëlle Rümbeili

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 Rümbeili** 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 university 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 specificities in its field. Its current collection contains approximately 10'000 books and 25 specialized print journals.

- **Amélia Bossard** is head librarian;
- **Jérôme Napoléon** is librarian.



Amélia Bossard



Jérôme Napoléon

Financial Report

CUI	
Staff	CHF 861'039.-
• Academic	CHF 282'673.-
• Administrative and Technical	CHF 420'389.-
• Employer's social contributions	CHF 157'977.-
Operating costs - Investment	CHF 100'000.-
Operating costs - Others	CHF 190'060.-
Library	CHF 0.-
CUI SUBTOTAL	CHF 1'151'099.-
FACULTY OF SCIENCES (COMPUTER SCIENCE DEPARTMENT)	
Staff	CHF 3'171'369.-
• Academic	CHF 2'442'633.-
• Administrative and Technical	CHF 170'181.-
• Employer's social contributions	CHF 558'555.-
Operating costs - Investment	CHF 76'145.-
Operating costs - Others	CHF 33'860.-
SCIENCES SUBTOTAL	CHF 3'281'374.-
FACULTY OF ECONOMICS AND MANAGEMENT (ISS)	
Staff (estimation)	CHF 1'990'102.-
• Academic, incl. Charges (estimation)	CHF 1'580'510.-
• Administrative and Technical, incl. Charges (estimation)	CHF 37'740.-
• Employer's social contributions (estimation)	CHF 371'852
Operating costs - Investment	CHF 0.-
Operating costs - Others	CHF 0.-
ECONOMICS AND MANAGEMENT SUBTOTAL	CHF 1'990'102.-
FACULTY OF HUMANITIES (UNIT OF COMPUTER SCIENCE FOR THE HUMANITIES)	
Staff - Academic, incl. Charges (estimation)	CHF 781'227.-
Operating costs	CHF 20'000.-
HUMANITIES SUBTOTAL	CHF 801'227.-

TOTAL BUDGET CHF 7'223'802.-

EXTERNAL FUNDING OBTAINED BY THE PROFESSORS**CREDIT** **CUI**

Swiss-funded Projects
CUI SUBTOTAL

CHF 32'680.-
CHF 32'680.-

 **FACULTY OF SCIENCES (COMPUTER SCIENCE DEPARTMENT)**

UE-funded Projects
Swiss-funded Projects
SCIENCES SUBTOTAL

CHF 434'102.-
CHF 1'145'894.-
CHF 1'579'996.-

 **FACULTY OF ECONOMICS AND MANAGEMENT (ISS)**

UE-funded Projects
Swiss-funded Projects
ECONOMICS AND MANAGEMENT SUBTOTAL

CHF 2'986'637.-
CHF 397'210.-
CHF 3'384'847.-

 **FACULTY OF HUMANITIES (UNIT OF COMPUTER SCIENCE FOR THE HUMANITIES)**

Swiss-funded Projects
HUMANITIES SUBTOTAL

CHF 333'947.-
CHF 333'947.-

TOTAL CREDIT**CHF 5'330'470.-**



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