Centre Universitaire d'Informatique

2015

Activity Report

Battelle building B works, 2012 Nov. 19th

UNIVERSITÉ DE GENÈVE

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CENTRE UNIVERSITAIRE
D'INFORMATIQUE

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

Foreword

Welcome to the CUI

CUI (Centre universitaire d'informatique) is the Computer Science Center of the University of Geneva. It is an interdisciplinary center, which brings together all the computer science professors of the University, no matter what faculty they belong to. As of 2015, five faculties participate to the center: Sciences, Humanities, Social sciences, Economics and management, Medicine. CUI now counts 26 scientists at the professor level, about 130 collaborators at various levels of seniority (from PhD candidates to senior researchers) assisted by an efficient staff of 8 administrative and technical collaborators.

2015, like previous years, has been an excellent year in terms of new projects and subsidies, with a total of approximately 5m. This is a clear sign of the excellence of the research conducted in our institution, as well as of its level of recognition. You will find the details of those projects in the following pages.

In 2015 CUI has undergone an important transformation, which allows it to be fully responsible for teaching curriculums. As a result, CUI is now in charge of the bachelor degree in information systems. Other programmes will be launched soon, in particular in the field of continuing education.

In July 2016 I will end my term as director of CUI. I would like to take the opportunity to express my sincere thanks to all my colleagues for their friendship and their collaboration, which made my task surprisingly easy and enjoyable. It is now my pleasure to welcome Giovanna di Marzo Serungendo as the new director and to wish her all the best in her new position. I have no doubt that CUI, under her leadership, will continue to be a center of excellence in computer science, both in research and in teaching.

Vive le CUI !

Prof. Eric Wehrli
Director of the CUI
University of Geneva

www.citizencyberlab.org

ccc

Citizen Cyberscience Centre

Battelle building B works, 2012 Dec. 5th

Citizen Cyberscience Centre

Domain activities

At Citizen Cyberlab, we are developing methods and studying motivations for new forms of public participation in research. We are researchers from a diversity of backgrounds – history, informatics, learning, linguistics, medicine, physics, psychology and more. Jointly, we initiate projects and organise events that encourage citizens and scientists to collaborate in new ways to solve big challenges. From online crowdsourcing to in-person hackathons, we are exploring and expanding the limits of citizen science and human computation.

Citizen Cyberlab is based on a partnership between the **European Particle Physics Laboratory, CERN**, the **UN Institute for Training and Research, UNITAR**, and the **University of Geneva**, where several teams in different faculties contribute to the lab's activity. In the following, we report activities, events and publications by or involving CUI members of the Cyberlab team.

Figure 1: GeoTag-X, developed with the UN Institute for Training and Reseearch, aims to help disaster relief efforts on the ground to plan a response by asking volunteers to analyse photos taken in disaster-affected areas.

Team

Director
François Grey
Full professor

Bruno Strasser
Full professor
@ Faculty of Sciences

Basile Zimmerman
Full professor
@ Institut Confucius

Senior advisors
Lars Bromley
Antoine Geissbuhler
Antoine Elahault
Nicolas Maire
Christian Pellegrini
Daniel Schneider
Ben Segal

Senior researchers
Dr. Jose Luis Fernandez-Marquez
Oula Abu-Amsha
Jérôme Baudry
Eleanor Cervigni
Ioannis Charalampidis
Dana Mahr
Céline Brockmann
Kostas Kampourakis
Laure Kloetzer
Daniel Lombraña Gonzàlez
Matteo Tarantino
Candice Yvon

Assistants
Ammar Halabi
Tania Messeli
Pierreck Porchet
Ozan Sahin
Gabriela Sanchez

Developers / Designers
Rosy Mondardini
Sharada Mohanty

Internship Fellow
Egle Marija Ramanauskaite

List of publications

Full refereed papers in international journals

[1] M. Ma, F. Grey, L. Shen, M. Urbakh, S Wu, J Z Liu, Y Liu and Q Zheng Water transport inside carbon nanotubes mediated by phonon-induced oscillating friction, Nature Nanotechnology 10, 692–695 (2015)

Full refereed papers in Conference Proceedings

[2] F. Grey, J. Li, Q. Shi, E. Doney, W. H. Chen and J Shen, Lifelong Learning Lab: Collaborative Design of Hands-on Science for Chinese Schools, Proc. 14th Int. Conf. Interaction Design and Children 383-386 (2015).

Research and technical reports

[3] F. Grey Creativity Unleashed, Nature Nanotechnology 10, 480 (2015)

Funded research projects

Participation to European projects

CCL

EC Citizen Cyberlab Project
Period: October 2012 - December 2015.
Partners: University of Geneva, CERN, UN Institute for Training and Research, Universite Paris Descartes, University College London, Imperial College, The Mobile Collective
Web site: http://citizencyberlab.eu/

Figure 2: For the "CERN Public Computing Challenge 2015", Citizen Cyberlab invited volunteers to contribute their spare computing power to help CERN scientists simulate billions of particle collisions, in order to compare theoretical models with experimental results from CERN's Large Hadron Collider and other particle colliders.

Figure 3: CItizen Cyberlab partners on hackathons in Geneva organised by The Port, an independent association. In The Port hackathons, involving interdisciplinary teams to solve humanitarian and health challenges with state-of-the-art science, cutting–edge technology and abundant creativity.

Others

Refeereeing

- Science
- Journal of Applied Physics

Editorial responsibilities

- Board Member, Citizen Science, Theory and Practice (http://theoryandpractice.citizenscienceassociation.org/about/editorialteam/)
- Advisory Board, Journal of Human Computation (http://hcjournal.org/ojs/index.php?journal=jhc&page=pages&op=view&path[]=advisory-board)

Invited talks

- 3rd International Open Data Conference 2015, Open Data, Citizen-Generated Data and the SDGs, Ottawa, Canada, 29 May 2015

Events organized in Geneva

- Citizen Cyberlab Summit, Confucius Institute, University of Geneva , 17-18 September 2015, http://citizencyberlab.eu/2015/10/the-citizen-cyberlab-summit-exploring-learning-and-creativity-in-citizen-science-projects/
- Health Hackathon, Campus Biotech University of Geneva, 2-4 October 2015, http://theport.ch/home/the-port-2015-campus-biotech/

Participation in TV and Radio Programs

- RTS – CQFD, Crowdcrafting... ou la science citoyenne , 27 January 2015, http://www.rts.ch/play/radio/cqfd/audio/crowdcrafting-ou-la-science-citoyenne?id=6452700

Press Release

- UNIGE, Service de Communication Just shake and pour: crowdsourced computing reveals how to make better water filters with nanotubes, 9 July 2015, http://www.unige.ch/communication/press-release/2015/CdP150706-en.html
- IBM News Release IBM's Virtual Supercomputer Finds Clean Water Clue, 6 July 2015, http://www-03.ibm.com/press/us/en/pressrelease/47261.wss

Others

- Science X Kickstarter - first-of–kind hackathon where scientists work with designers, makers and writers to develop compelling crowdfunding campaigns for their projects, 28 February – 1 March 2015, https://itp.nyu.edu/sigs/news/event-science-x-kickstarter-hackathon/
- Open Seventeen Challenge – Launch of an Online Coaching for Crowdsourcing Sustainable Development, June-December 2015, http://openseventeen.org/
- CERN Public Computing Challenge 2015 - asking volunteers to contribute their spare computing power to help CERN scientists simulate billions of particle collisions, November 2015

Teaching

- **Citizen Science on the Web**, Computer Science, Master, 2 ECTS, 96 hours, 9 students
- **Open Science**, Computer Science, Bachelor, 2 ECTS, 96 hours, 12 students

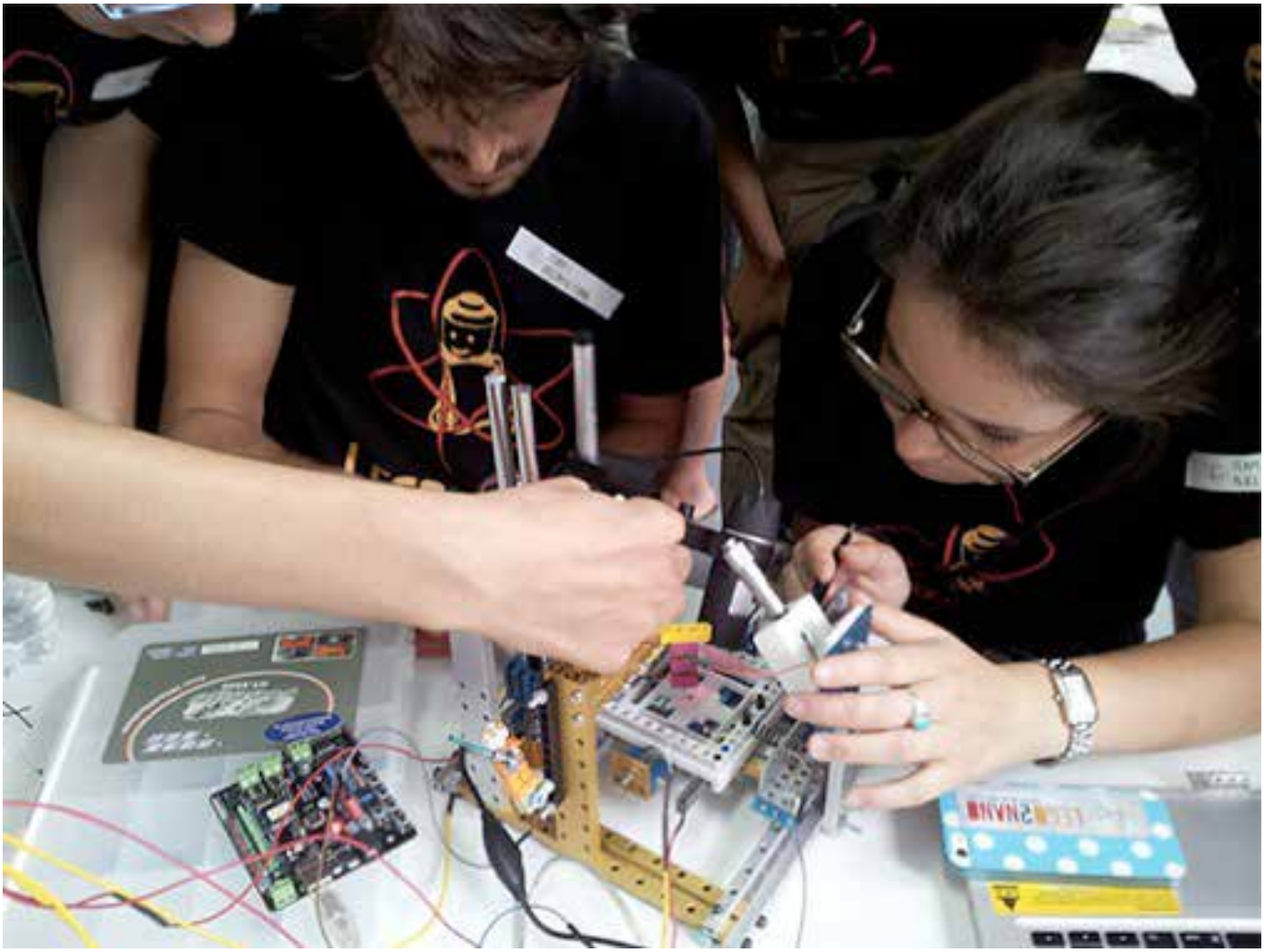


Figure 4: "LEGO2NANO" Hands-on Summer School with Tsinghua University, where students from China and Europe collaborate to build an open source atomic force microscope.

clcl.unige.ch

CLCL

Computational Learning and Computational Linguistics

Battelle building B works, 2013 Feb. 11th

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 skills by information technology employers. We apply it to language problems using very large amounts of multi-lingual data.

Our current research includes two strands, spanning the more theoretical aspects of computational linguistics and the technological side, called natural language processing.

On the computational linguistics side, we investigate language variation and language universals on a large scale. One of the main goals of the study of language is to discover the invariants that hold for every human language, irrespective of vast differences in surface variation. One easily observable aspect of language variation is the order of words. We study the invariant formal properties of languages as diverse as Chinese and French, and many more, using computational models and large amounts of textual data. We study, for example, minimization effects of relations between words, which explain surface variation, typological distributions and historical change. These effects also inform technological aspects of language processing. In human and machine natural language processing, it is often claimed that parsing free order languages is more difficult than parsing fixed-order languages.

On the technologial side, we develop 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 helped develop the next generation of spoken dialogue systems, using statistical modelling to make them more robust and natural. Our work related to this project focuses on understanding spoken language in novel domains, using large amounts of unlabelled data.

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. Sarah Ouwayda
Dr. Majid Yazdani

Assistants (PhD students)
Kristina Gulordava
Nikhil Garg

Administration
Eva Capitao

PhD Thesis

- Nikhil Garg. November 9, 2015, Generative Models for Syntactic and Semantic Structure Prediction using Latent Variables

List of publications

Full refereed papers in international journals

[1] Paola Merlo, Predicting Word Order Universals, Journal of Language Modelling, Volume 3, number 2, 2015.

Full refereed papers in Conference Proceedings

[2] Kristina Gulordava, Paola Merlo (2015) "Structural and lexical factors in adjective placement in complex noun phrases across Romance languages". Proceedings of the Nineteenth Conference on Computational Natural Language Learning. July, 2015. Beijing, China. (CONLL'15).

[3] Kristina Gulordava, Paola Merlo, Benoit Crabbé (2015). "Dependency length minimisation effects in short spans: a large-scale analysis of adjective placement in complex noun phrases". Proceedings of the 53rd Annual Meeting of the Association for Computational Linguistics and the 7th International Joint Conference on Natural Language Processing (Volume 2: Short Papers). July, 2015. Beijing, China. (ACL'15).

[4] Kristina Gulordava, Paola Merlo (2015). "Diachronic Trends in Word Order Freedom and Dependency Length in Dependency-Annotated Corpora of Latin and Ancient Greek". Proceedings of the International Conference on Dependency Linguistics. August, 2015. Uppsala, Sweden

[5] Paola Merlo, ''Evaluation of Two-level Dependency Representations of Argument Structure in Long-Distance Dependencies", International Conference on Dependency Linguistics, Uppsala, 2015.

[6] Majid Yazdani, Meghdad Farahmand, and James Henderson (2015). «Learning Semantic Composition to Detect Noncompositionality of Multiword Expressions». In Proc. 2015 Conf. on Empirical Methods in Natural Language Processing (EMNLP 2015), Lisbon, Portugal.

[7] Majid Yazdani and James Henderson (2015). «A Model of Zero-Shot Learning of Spoken Language Understanding». In Proc. 2015 Conf. on Empirical Methods in Natural Language Processing (EMNLP 2015), Lisbon, Portugal.

[8] Will Radford, Xavier Carreras and James Henderson (2015). «Named entity recognition with document-specific KB tag gazetteers». In Proc. 2015 Conf. on Empirical Methods in Natural Language Processing (EMNLP 2015), Lisbon, Portugal.

[9] Majid Yazdani and James Henderson (2015). «Incremental Recurrent Neural Network Dependency Parser with Search-based Discriminative Training». In Proc. 19th Conf. on Computational Natural Language Learning (CoNLL 2015), Beijing, China.

Research and technical reports

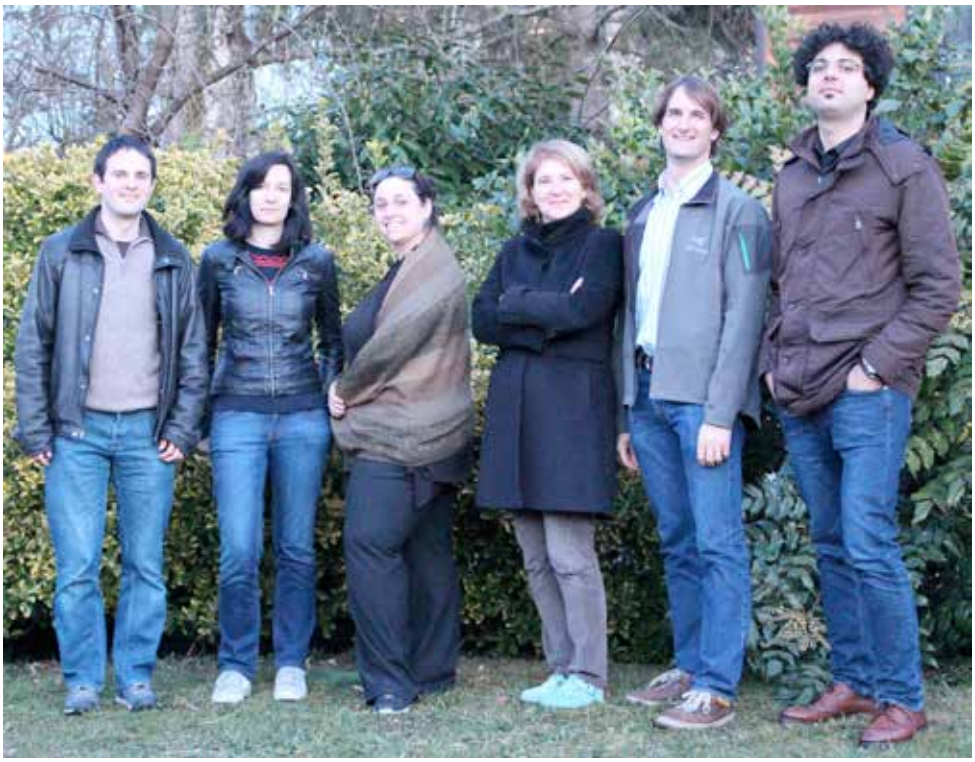
[10] Majid Yazdani, Catherine Breslin, Pirros Tsiakoulis,Steve Young, James Henderson D1.3 On-line adaptation of ASR and SLU Technical report, Parlance Project, 2015. https://www.dropbox.com/s/1yw24vdkibgnrg8/D1.3.pdf?dl=0

International and national advisory committees

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

Member of conference program committees

- James Henderson: Conf. on Computational Natural Language Learning (CoNLL), Beijing, 2015.
- James Henderson : 53rd Meeting of the Association for Computational Linguistics (ACL), Beijing, 2015.
- James Henderson: Conf. on Empirical Methods in Natural Language Processing (EMNLP), Lisbon, 2015.
- James Henderson: Neural Information Processing Systems (NIPS), Montreal, 2015.



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/parlanceprojectoffi-cial/

Participation to National projects

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

Deep Neural Network Dependency Parser for Context-aware Representation Learning
Hasler Foundation
Principal Investigator: James Henderson
Period: May - December 2015

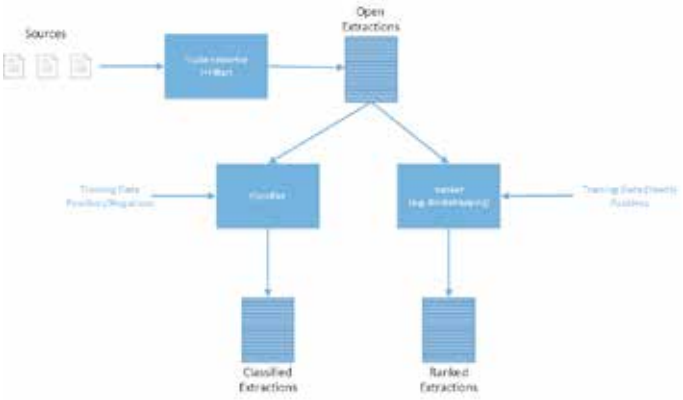


Figure 1: Architecture of information extraction system

Others

Refeereeing

- James Henderson: Computational Linguistics
- James Henderson: Transactions of the Association for Computational Linguistics
- Majid Yazdani: IEEE Signal Processing Letters

Editorial responsibilities

- Paola Merlo: Editor-in-chief of the journal Computational Linguistics, MIT Press.

Invited talks

- Paola Merlo: Linguistic Issues in Multilingual NLP, Linguistics, Stanford University, January 2015.
- Paola Merlo, The Quest for Language Universals: Multilingual Computational Results and Methods, Keynote talk at the Second Italian Conference for Computational Linguistics, December, 2015.

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, winter 2014-2015.
- James Henderson: Visiting Researcher at Xerox' Palo Alto Research Center (PARC).

Teaching

- **Projet METL: Encadrement personnalisé**, 2 ECTS, 56 hours, 1 student
- **Traitement automatique du langage: approches linguistiques et approches statistiques**, 56 hours, 25 students
- **Empirical Methods in Natural Language Processing**, 56 hours, 3 students
- **Web Development**, TPs, Bachelor, 6 ECTS, 72 hours, 27 students
- **Artificial Intelligence: Principles and methods**, Bachelor, 4 ECTS, 56 hours, 28 students

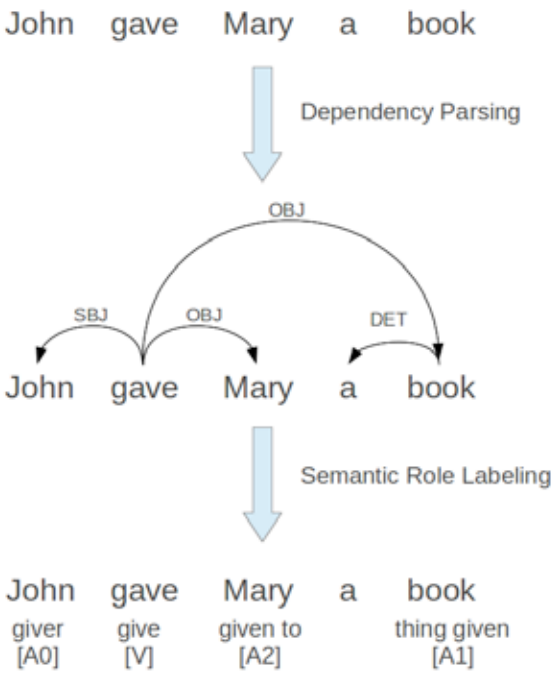


Figure 2: Data flow of syntactic-semantic parsing

cvml.unige.ch

CVML

Computer Vision and Multimedia Laboratory

Battelle building B works, 2013 Jul. 11th

Computer Vision and Multimedia Laboratory

Domain activities

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

Information Retrieval and Machine Learning group (Viper, Prof. S. Marchand-Maillet, http://viper.unige.ch): develops strategies for the efficient indexing retrieval and exploration of large-scale information sets. The group studies fundamental machine learning strategies to provide efficient and accurate access to large-scale collections of complex data. Research themes include information, retrieval, recommendation systems, data analytics and exploration. Applications are directed towards multimedia in cultural heritage, 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: Professor, 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)
Lionel Blondé
François Bogacz
Séverine Cloix
Mauritz Diephuis
Sohrab Ferdowsi
Magda Gregorova
Dimche Kostadinov
Amina Mollaysa
Hisham Mohamed
Michal Muszinsky
Jason Ramapuram
Pablo Strasser
Ke Sun
Viviana Weiss

Administration
Lara Broi
Maëlle Rümbeli

PhD Thesis

- Ke Sun. December 2015, Information Geometry and Data Manifold Representations. Unpublished PhD Thesis.
- Alba Garcia Seco De Herrera. April 2015, Use-case oriented medical visual information retrieval & system evaluation. Unpublished PhD Thesis.

List of publications

Refereed papers in international journals

[1] G. Chanel, C. Mühl, «Connecting brains and bodies: Applying physiological computing to support social interaction», Interacting with Computers, Special issue in Human Factors and Interaction Design for Critical Systems, H. Gamboa, H. Plácido da Silva, K. Gilleade, S. Bermúdez i Badia, S. Fairclough, Eds., 2015.

[2] Chanel, G., Pichon, S. J. A., Conty, L., Berthoz, S., Chevallier, C., & Grèzes, J. (2015). Classification of autistic individuals and controls using cross-task characterization of fMRI activity. NeuroImage: Clinical.

[3] M. Soleymani, Yi-Hsuan Yang, Go Irie, A. Hanjalic. «Guest Editorial: Challenges and Perspectives for Affective Analysis in Multimedia», IEEE Transactions on Affective Computing 3 (2015): 206-208.

[4] M. Soleymani, S. Asghari Esfeden, Yun Fu, M. Pantic, «Analysis of EEG signals and facial expressions for continuous emotion detection», IEEE Transactions on Affective Computing 3 (2015).

[5] S. Voloshynovskiy, T. Holotyak, F. Beekhof, Soft content fingerprinting with bit polarization based on sign-magnitude decomposition, IEEE Transactions on Information Forensics & Security, Volume 10, Number 10, pp. 2033-2047, October, 2015.

[6] Roman-Rangel, E., & Marchand-Maillet, S. (2015). Shape-based detection of Maya hieroglyphs using weighted bag representations. Pattern Recognition, 48(4), 1161-1173.

[7] Mohamed, H., & Marchand-Maillet, S. (2015). Quantized Ranking for Permutation-Based Indexing. Information Systems(52), 163-175.

[8] Weng, L., Amsaleg, L., Morton, A., & Marchand-Maillet, S. (2015). A Privacy-Preserving Framework for Large-Scale Content-Based Information Retrieval. IEEE Transactions on Information Forensics and Security, 10(1).

[9] Hu, R., Can, G., Gayol, C. P., Krempel, G., Spotak, J., & Vail, G., Vail, Marchand-Maillet, S., Odobez JM, and Daniel Gatica-Perez. (2015). Multimedia Analysis and Access of Ancient Maya Epigraphy: Tools to support scholars on Maya hieroglyphics. IEEE Signal Processing Magazine, 32(4), 75-84.

Full refereed papers in Conference Proceedings

[10] T. Kostoulas, G. Chanel, M. Muszinski, P. Lombardo, T. Pun, «Dynamic time warping of multimodal signals for detecting highlights in movies», Interpersonal@ICMI 2015, First International Workshop on Modeling INTEPERsonal SynchrONy, 17th ACM Int. Conference on Multimodal Interaction, Nov. 9-13, 2015, Seattle, USA.

[11] M. Soleymani, «The quest for visual interest.» ACM Multimedia 2015, 23rd Annual ACM Conference on Multimedia, Brisbane, Australia, 26 - 30 October 2015.

[12] M. Soleymani, A. Aljanaki, F. Wiering, R. C. Veltkamp., «Content-based music recommendation using underlying music preference structure», IEEE Int. Conf. on Multimedia and Expo (ICME 2015), Torino, Italy, June 29 - July 3, 2015, 1-6.

[13] M. Muszynski, T. Kostoulas, G. Chanel, P. Lombardo, T. Pun, «Spectators' synchronization detection based on manifold representation of physiological signals: application to movie highlights detection», ICMI 2015, 17th ACM Int. Conference on Multimodal Interaction, Nov. 9-13, 2015, Seattle, USA.

[14] M. Soleymani, M. Pantic, T. Pun, "Multi-modal emotion recognition in response to videos", ACII 2015, Special Session on Most Influential Articles in IEEE - Transactions on Affective Computing, Sept. 21-24, 2015, Xi'an, China (invited).

[15] V. Weiss, A. Korolev, G. Bologna, S. Cloix, T. Pun, «An Embedded Ground Change Detector for a «Smart Walker»», IWINAC2015, 6th Int. Work-conference on the Interplay between Natural and Artificial Computation, June 1-5, 2015, Elche, Spain.

[16] T. Kostoulas, G. Chanel, M. Muszynski, P. Lombardo, T. Pun, «Identifying aesthetic highlights in movies from clustering of physiological and behavioral signals», QoMEX 2015, 7th Int.Workshop on Quality of Multimedia Experience, 26-29 May 2015, Costa Navarino, Messinia, Greece.

[17] D. Cereghetti, G. Molinari, G. Chanel, T. Pun, M. Bétrancourt, «Sharing emotions during a computer-mediated collaborative task: a dual eye-tracking study», EARLI 2015, European Conference for Research on Learning and Instruction, 25-29 Aug. 2015, Limassol, Cyprus.

[18] F. Farhadzadeh, F. Willems, S. Voloshynovskiy, Information-Theoretical Limits of Active Content Fingerprinting in Content-based Identification Systems, IEEE Workshop on Information Forensics and Security - WIFS'15, Roma, Italy, 16-19, November, 2015.

[19] S. Voloshynovskiy, M. Diephuis, T. Holotyak, Mobile visual object identification: from SIFT-BoF-RANSAC to Sketchprint, IS&T/SPIE Electronic Imaging 2015, Media Watermarking, Security, and Forensics 2015, February 2-6, 2015, San Francisco, California, United States.

[20] D. Kostadinov, S. Voloshynovskiy, M. Diephuis, S. Ferdowsi, Vector quantization with constrained likelihood for face recognition, The 23rd European Signal Processing Conference (EUSIPCO 2015), Nice, France, August 31-Septemeber 4, 2015.

[21] M. Diephuis, S. Voloshynovskiy, T. Holotyak, Sketchprint: Physical object micro-structure identification using mobile phones, The 23rd European Signal Processing Conference (EUSIPCO 2015), Nice, France, August 31-Septemeber 4, 2015.

[22] S. Voloshynovskiy, M. Diephuis, T. Holotyak, Privacy preserving multimedia content identification for cloud based bag-of-feature architectures, Workshop on Cloud Based Media in conjunction with the 2015 IEEE International Conference on Multimedia and Expo (ICME 2015) Torino, Italy, June 29-July 3, 2015.
[23] M. Diephuis, S. Voloshynovskiy, T. Holotyak, Fine-grained recognition of physical objects on mobile phones: from categorization to identification, The Third Workshop on Fine-Grained Visual Categorization (FGVC3) in conjunction with the CVPR2015 conference, June 7-12, 2015, Boston, United States.
[24] P. Najgebauer, J. Rygal, T. Nowak, J. Romanowski, L. Rutkowski, S. Voloshynovskiy, R. Scherer, Fast Dictionary Matching for Content-based Image Retrieval, International Conference on Artificial Intelligence and Soft Computing, ICAISC'15, June 14-18, 2015, Zakopane, Poland.
[25] R. Grycuk, M. Gabryel, R. Scherer, S. Voloshynovskiy, Multi-layer Architecture For Storing Visual Data Based on WCF and Microsoft SQL Server Database, International Conference on Artificial Intelligence and Soft Computing, ICAISC'15, June 14-18, 2015, Zakopane, Poland.
[26] Osipyan, H., Krulis, M., & Marchand-Maillet, S. (2015). A Survey of CUDA-based Multidimensional Scaling on GPU Architecture. In 2015 Imperial College Computing Student Workshop, ICCSW 2015, September 24-25, 2015, London, United Kingdom.
[27] Sun, K., Wang, J., Kalousis, A., & Marchand-Maillet, S. (2015). Space-Time Local Embeddings. In Proceedings of Advances in Neural Information Processing Systems 28 (NIPS 2015), Montreal, Canada, December 2015.
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[31] Krulis, M., Osipyan, H., & Marchand-Maillet, S. (2015). Optimizing Sorting and Top-k Selection Steps in Permutation Based Indexing on GPUs. In New Trends in Databases and Information Systems - ADBIS 2015 Short Papers and Workshops, Poitiers, France, September 8-11, 2015. Proceedings.

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 Committe for the International ACM Conference on Multimedia Retrieval (ICMR).
- S. Marchand-Maillet, Member of the Editorial Board of the International Journal of Multimedia Information Retrieval.
- S. Voloshynovskiy, Elected associate member of the IEEE Information Forensics and Security Technical Committee (March 2015 – present).
- S. Voloshynovskiy, Founding member and board member of EURASIP Special Area Teams (SATs) in Biometrics, Data Forensics and Security (Aug. 2015 - present).

International and national Research Programs Committees

- T. Pun: evaluator for EU ERC - European Research Council (Starting & Advanced Investigators Grants); Swiss SNF, Swiss HES-ISYS.
- S. Marchand-Maillet: evaluator for National Funding Agencies from Switzerland, several European countries, and Australia.

PhD Thesis Committees

Thierry Pun:

- Yoann Baveye (Ecole Centrale - Lyon and Technicolor - Rennes, F, 2015).
- M. Chollet (Telecom-ParisTech, F, 2015).

Sviatoslav Voloshynovskiy:

- C. Ballester (Univ. of Geneva).
- A. Mehranian (Univ. of Geneva).

Stéphane Marchand-Maillet:

- M Schwaller (Uni Fribourg, CH).
- Maryam Habibi (EPFL/Idiap, CH).
- Nikhil Garg (Univ of Geneva, CH).
- A. Ginsca (Telecom-Bretagne, F).

Conference organization as chair or co-chair

Mohammad Soleymani:

- Soleymani, Mohammad, Yi-Hsuan Yang, Yu-Gang Jiang, and Shih-Fu Chang. «ASM'15: The 1st International Workshop on Affect and Sentiment in Multimedia.» In Proceedings of the 23rd Annual ACM Conference on Multimedia Conference, pp. 1349-1349. ACM, 2015.
- Larson, Martha, Gareth Jones, Bogdan Ionescu, Mohammad Soleymani, and Guillaume Gravier. «Recording and Analyzing Benchmarking Results: The Aims of the MediaEval Working Notes Proceedings.» (2015).
- Aljanaki, Anna, Yi-Hsuan Yang, and Mohammad Soleymani. «Emotion in music task at Mediaeval 2015.» MediaEval 2015 Workshop, Wurzen, Germany. 2015.
- ACM Int'l Conference on Multimedia 2015, Area chair
- Affective Computing and Intelligent Interactions, Publication chair.

Sviatoslav Voloshynovskiy:

- WIFS2015, IEEE Workshop on Information Forensics and Security 2015, Rome, Italy, program committee co-chair

Stéphane Marchand-Maillet:

- ACM SIGIR as Area Chair.
- IEEE CBI as member of the Steering Committee.

Member of conference/workshop program committees

Thierry Pun:

- ICTAI 2015 (Salerno, Italy); ACII 2015 (Xi'an, China); aBCI 2015 (Xi'an, China); ISRE 2015 - Int. Soc. Research Emotion (Geneva, Switzerland); TAIMA 2015 (Hammamet, Tunisia); CBAR 2015 - Context-based Affect Recognition (Ljubljana, Slovenia).

Mohammad Soleymani:

- IEEE Conference on Multimedia and Expo 2015.
- International Workshop on Content-based Multimedia Indexing 2015.
- ACM Int'l Conference on Multimedia systems 2015, dataset track.
- Multimodal Machine Learning workshop 2016.
- Workshop on Personality and Affect in Multimedia Retrieval '15.
- 3rd International Workshop on Emotion Representation, Analysis and Synthesis in Continuous Time and Space – EmoSPACE'15.

Sviatoslav Voloshynovskiy:

- SPIE2015, Electronic Imaging 2015, Media watermarking, security and forensics 2014, San Francisco, USA, 2014, (program committee, chairman of Watermarking in retail industry).
- ICAISC 2015, the 14th International Conference on Artificial Intelligence and Soft Computing ICAISC 2015, Zakopane, Poland, June 1-5, 2014, (Special session organizer on Large scale image recognition and machine learning and Chairman for the Keynote session).
- VICML 2015, Visual information coding meets machine learning: large-scale challenges, during 2nd IEEE International Conference on Cybernetics, CYBCONF 2015, Gdynia Poland, 24-26 June 2015 (organizer and chair).
- 3rd ACM Information Hiding and Multimedia Security Workshop, Portland, USA, June 17-19, 2015, (program committee).
- 2nd Workshop on Databases in Biometrics, Forensics and Security Applications, Hamburg, Germany, March, 2015, (program committee).
- ICIP2015, IEEE International Conference on Image Processing, Quebec City, Canada, September 27-30, 2015 (technical committee).
- ICPRAM 2015, The International Conference on Pattern Recognition Applications and Methods 2015, Lisbon, Portugal, January, 2015.

Stéphane Marchand-Maillet:

- ACM SIGIR.
- ACM CIKM.
- ACM SAC/IAR.
- ECIR.
- SISAP.
- ICPRAM.
- IPTA.
- KDDA.

Figure 1: Similarity-based collection browser

Guillaume Chanel:

- Chanel, Guillaume, Lotte, Fabien,Mühl, Christian, Nijholt, Anton, «4th Workshop on Affective Brain Computer Interaction», Affective Computing and Intelligent Interaction Conference, 2015
- Chair of session «Emotion and Cognition», Affective Computing and Intelligent Interaction 2015

Refereeing

- T. Pun: various conferences. IEEE Trans. Affective Computing. EURASIP Int. J. of Image and Video Processing (Springer), etc.
- S. Voloshynovskiy: IEEE Trans. on Information Forensics and Security, IEEE Signal Processing, Letters, IEEE Trans. on Image Processing, etc.
- S Marchand-Maillet: Main ACM and IEEE journals in the field of Information Retrieval, Information Systems, and Multimedia

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).

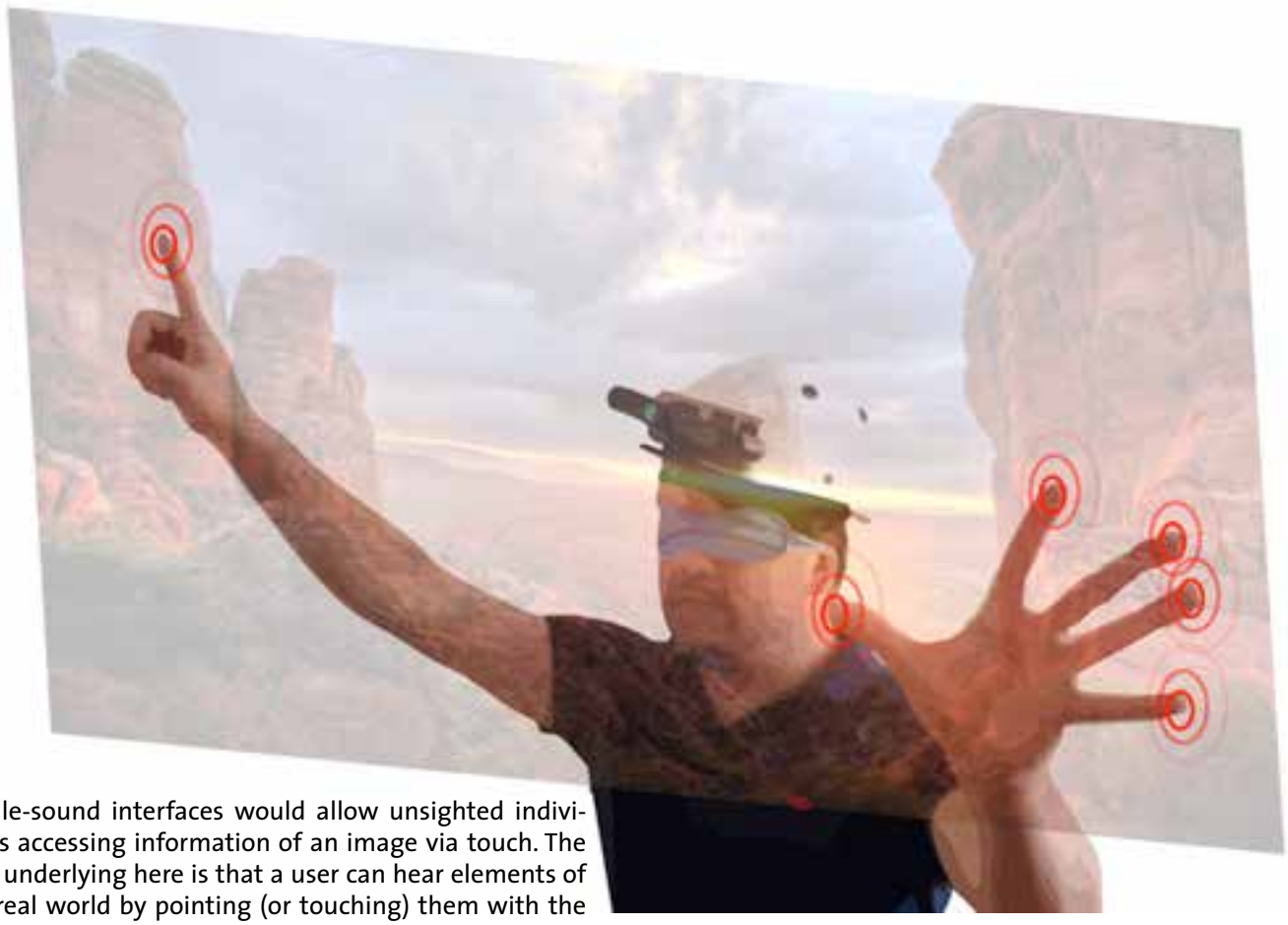
Mohammad Soleymani:

- Associate editor, IEEE Transactions on Affective Computing.

Sviatoslav Voloshynovskiy:

- Associate editor, IEEE Signal Processing Letters.
- Associate editor, IEEE Transactions on Information Forensics and Security.
- Associate editor, ELSEVIER Journal on Computer Standards and Interfaces.
- Associate editor, EURASIP Journal on Information Security (Eurasip IJS).
- Associate editor, International Journal of Image and Graphics (IJIG).

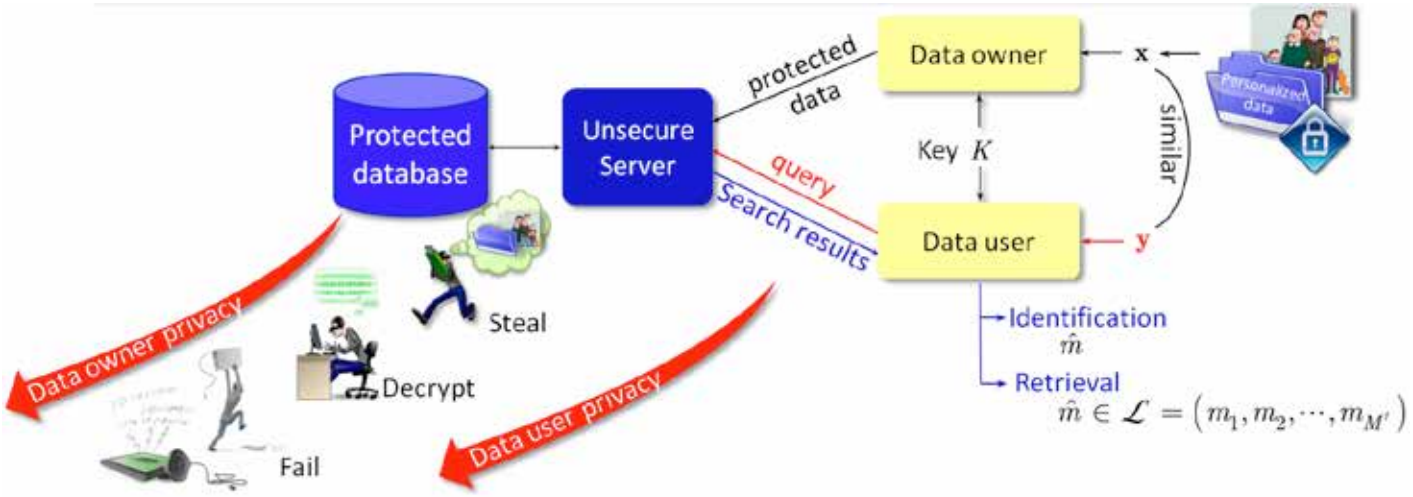
CVML team, December 3rd, 2013



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 discus in this section, whereas seminal ideas and early implementations of the ideal model (tablet-free) will be exhibited later in the conclusion section of this work.

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

Figure 2: Privacy-preserving multimedia identification/retrieval architecture



Invited talks

Thierry Pun:

- T. Pun, "Affective computing and multimodal interation: From BCI to aesthetics", Invited talk, Workshop: Affective Computing, a Multidisciplinary Challenge, LIRIS, Ecole Centrale de Lyon, France, November 12, 2015.
- T. Pun, D. Hasler, G. Bologna, S. Cloix, V. Weiss, «The EyeWalker Project», Meeting Community Resourcing Worldwide, Gerontechnology projects in Western Switzerland, Monday, June 8th 2015, University of Geneva, Switzerland (talk by Guido Bologna).

Stéphane Marchand-Maillet:

- Approximate Large-scale Reference-based Indexing. Keynote at ARIA research day, Paris, 2015.
- Multimedia Information Retrieval. Tutorial University of Lausanne, Switzerland, 2015.
- Curse of Dimensionality and Big Data. Keystone Summer School in Malta, 2015.

Guillaume Chanel:

- «Affective computing / science», Inauguration of the Swiss Doctoral School in Affective Sciences, September 15, 2015, University of Geneva, Campus Biotech, Geneva, Switzerland.

Funded research projects

Participation to European projects

IMPRESSIONS
Seconds that matter: Managing first impressions for a more engaging virtual agent
Nr. 200021E-164326 / 1, Lead Agency Framework, joint French-Swiss project.
French principal investigator: Prof. C. Pélachaud, Télécom-ParisTec.
Swiss principal investigator: Prof. T. Pun, Dr. G. Chanel
Period: January 2016 - December 2018

Participation to National projects

FNRS-SNSF, Swiss National Science Foundation:

Ambizione
Grant PZ00P2_154981/1
Period: January 2015 - December 2017

Hasler Foundation

EyeWalker: Ultralight lowcost clipable vision system for mobility aids
Nr. 11083
Principal investigator: Prof. T. Pun
Partners: CSEM Neûchatel (E. Franzi, D. Hasler), HEIG-VD Yverdon (M. Kocher) HES-SO (G. Bologna)
Period: May 2015 – April 2016

EEG artifact reduction using facial expression analysis and its applications to emotion recognition
Principal investigator: Dr. M. Soleymani, Univ. of Geneva.
Co-principal investigator: T. Pun
Period: January 2016 - December 2018

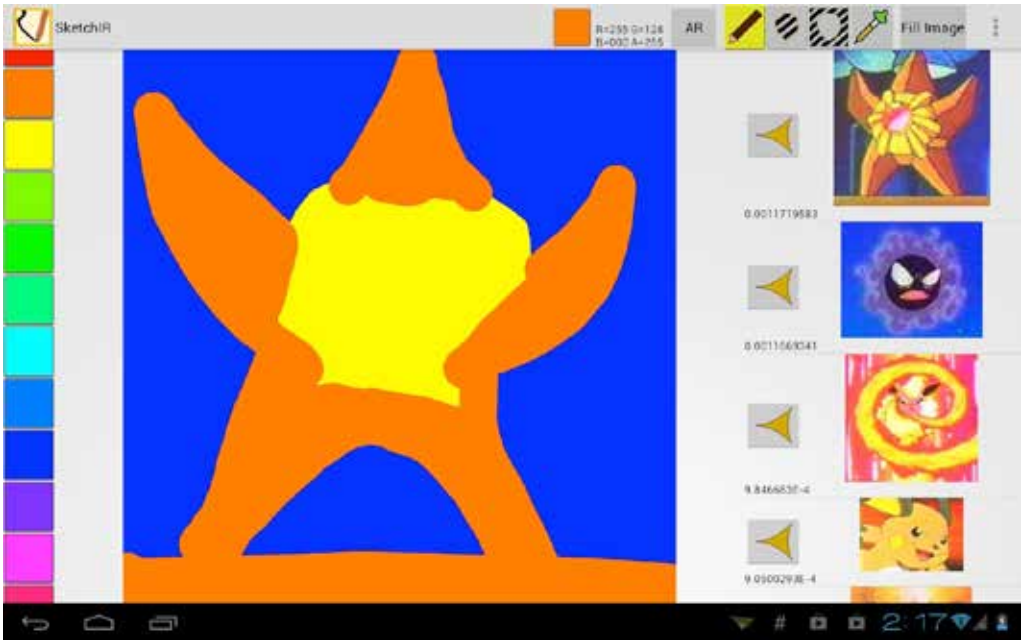


Figure 3: Tactile sketch-based image retrieval

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 2013 - August 2016

—

Emotional and aesthetic highlights detection in movies
Nr. 205121_153239
Leading House: University of Geneva, Prof. K. Sherer
Principal investigators: Dr. Guillaume Chanel, Dr. Patrizia Lombardo and Prof. T. Pun
Period: October 2014 - September 2016

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.
- **GEDECE, S.A.R.L.** Geneva (http://www.gedece.org) technology licencing and collaboration in the domain of physical objects security and image processing.

Others

- Juan Diego Gomez Valencia (PhD février 2014): Latsis University Prize 2015.
- Thierry Pun: membre des Conseils de Fondation de Unitec, du Fonds Général de l'Université.
- T. Pun, «Informatique affective et multimodale», Uni-3, Université de Genève, Mardi 2 juin 2015.
- G. Chanel, T. Pun, V. Weiss, «Tétris vous énerve? Recherches en informatique affective et sociale», TecDay@Madame-de-Stael, Collège Madame de Staehl, Genève, Mardi 28 avril 2015.
- 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.

Teaching

- **Human-computer interaction** (Affective computing and multimodal interaction part), Master, with Profs. G. Falquet et L. Moccozet. 56h practical work, approx. 10 students. 8 ECTS.
- **Digital image processing and synthesis**, Computer Science, 3rd year Bachelor, T. Pun, optional for Master and postgraduate students, 56h. course and 56h. practical work, approx. 15-20 students. 8 ECTS.
- **Introduction to algorithms**, Computer Science, 1st year Bachelor, 56h. course, 28h exercises and 56h. lab work, approx. 40-50 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. 15 students.
- **Information Analysis and Processing**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 25 students.
- **Elements of multiuser information theory and wireless communications**, 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. 30 students.
- **Hands-on Programming** (practical complement to Data Structures) , 1st year Bachelor. 56h Practical work, 20 students.
- **Computer Science Project**: Computer science, 3rd year Bachelor, 28 hours course and 56 hours lab. Approximately 10 students.
- **Industrial Internships**, Summer Semester (3 months supervision), 5 students.
- **Weekly Computer Vision and Multimedia seminars**, graduate students and senior researchers, 1h. per week, about 15 PhD students, post-docs, seniors, visitors.

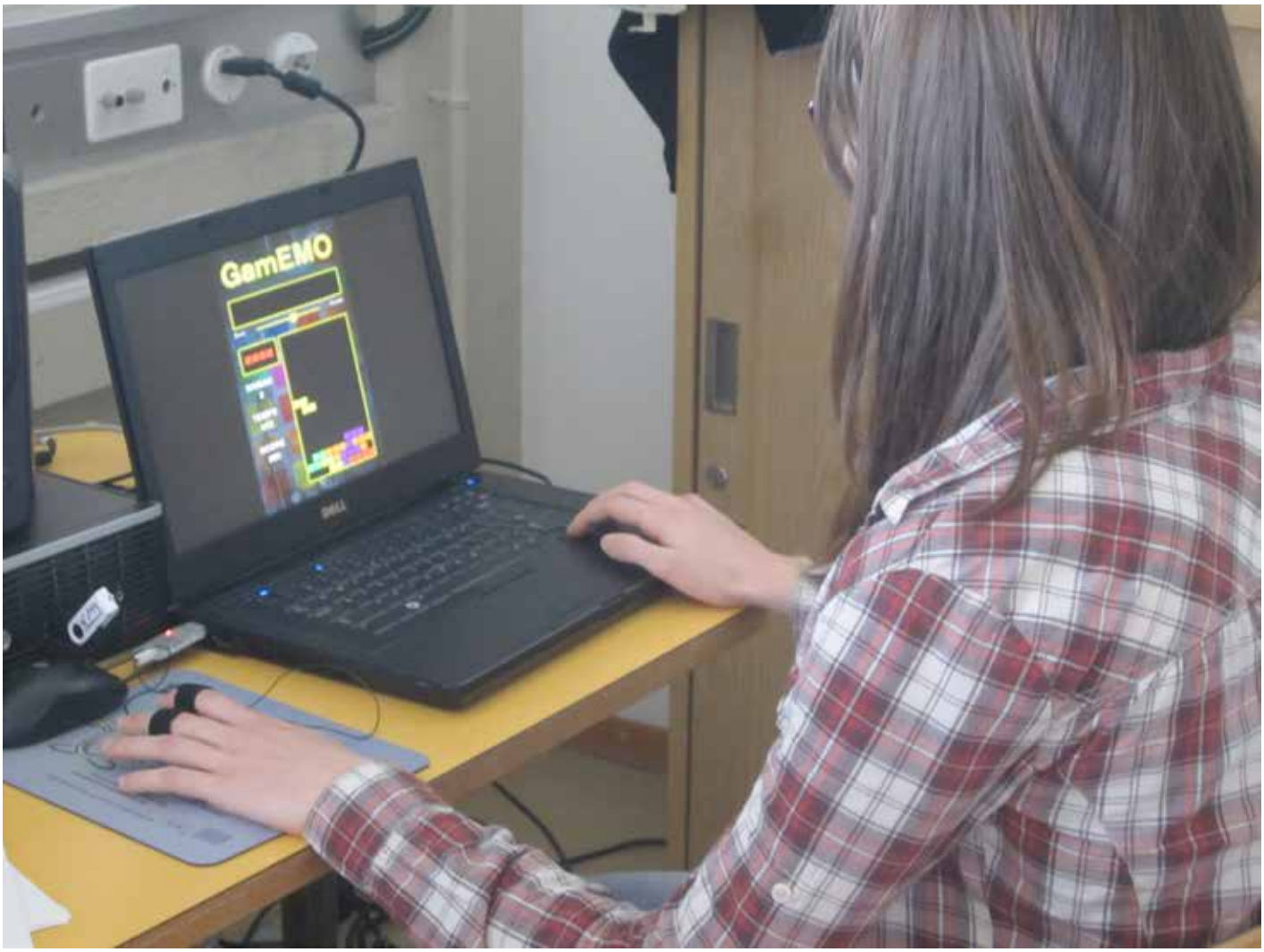


Figure 4: GameEmo is an example of affective game developped in our laboratory, where the speed of the falling bricks is varied according to the user's feelings. If the person is too stressed, the speed decreases, while it increases when the user gets bored, all this resulting in an increase in the sense 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:http://www.museum-neuchatel.ch/). Developing such affective, engaging games is one example of affective computing.

iss.unige.ch

ISS

Institute of Information Service Science

Battelle building B works, 2013 Sep. 13th

Institute of Information Service Science

Team

Senior Researchers
Dr. Lazhari Assassi
Dr. Louis Cuel
Dr. Michel Deriaz
Dr. Jose Luis Fernandez-Marquez
Dr. Jacques Guyot
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
Hammoud Abbass
Grigorios Anagnostopoulos
Carlos Ballester Lafuente
Matthias Becker
Maher Ben Moussa
Andra Chincisan
Hon Fai Choi
Anastasija Collen
Francesco De Angelis
Hélène De Ribaupierre
Marios Fanourakis
Meghdad Farahmand
Maxim Filatov
Nizar Ghoula
Mattia Gustarini
Giorgia Ionescu
Athanasios Kyritsis
Panagiotis Kostopoulos
Jérôme Marchanoff
Carlos Martinez de la Osa
Alexandre Mollard
Tiago Nunes
Aman Sabrina Nwatchouck A Koul
Alberto Olliaro
Gerardo Pinar Loriente
Lemonia Ragia
Arianna Religi
Kevin Salvi
Simon Senecal
Manel Sghir
Aikaterini Stamou
Camille Tardy
Yvain Tisserand
Christiana Tsiourti
Vlajki Vedran
Assane Wade

Nadia Magnenat-Thalmann
Honorary professor

Verena Kantere
Invited professor

Katarzyna Wac
Invited professor

Claudine Métral
MER

Laurent Moccozet
MER

Jolita Ralyté
MER

Jean-Marc Seigneur
MER

Developpers / Designers (PAT)
Mauricio Togneri
Jonathan Guislain
Xavier Titi

Internship Fellow
David Garcia

Giovanna Di Marzo Serugendo
Full professor

Dimitri Konstantas
Full professor

Eleni Christodoulou
Associate professor

Gilles Falquet
Associate professor

Jean-Henry Morin
Associate professor

Michel Léonard
Honorary professor

Visiting Academic Guests
Rui Filipe Antunes
Anne-Françoise Cutting-Decelle
Zang Fanglue
Jean-Pierre Hurni
Alain Junger
Tang Min

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.

ISS is an inter-faculty research laboratory of the Centre Universitaire d'Informatique of the University of Geneva (iss.unige.ch). As a team of 65 staff members, we are active in research, technology watch, creativity and teaching. We are currently participating in 29 research projects (EU/Cost/CTI/SNF/Private funding) representing a funding of 3.3M/year.
By its very mission, ISS targets research-led innovative services exploiting information and digital technology, such as services for mobile users, for seniors, or for specific industry needs. We developed a series of solutions specifically targeting the seven application domains:

- Smart and Sustainable Cities
- Digital Humanities
- Environment
- Health and Quality of Life
- Information Security
- Indoor positioning
- Processing data coming from smartphone or wearable sensors

Our major areas of research cover:

- Autonomous Adaptive Services, Pervasive Services
- Services for mobile users
- Multimedia services
- Digital Rights Management and Policies for Services
- Knowledge Engineering, Semantic Web, Ontology
- M-health, E-Health, Ambient Assisted Living
- Multimedia Services, Virtual Reality, Augmented Reality
- Modeling, Business Process Methods
- Trust, e-reputation
- Service Law Compliance
- Geographical Information Systems
- E-Learning
- Social Networks Analysis, Predictive analytics
- Indoor positioning
- Processing data coming from smartphone or wearable sensors
- Data visualization in 3D city models
- Quality of data and semantic queries in volunteer geographic information

We are also part of the Hub in Environmental Informatics of the University of Geneva aiming at developing research and teaching in this area.

Our additional 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 Information Systems and Services Science (BSc, Msc, Executive Programs 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 2015:

- LIFTAcademia: workshop within the LIFT Conference
- BAFS'15
- Clusis Campus (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.

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 markeplaces

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 several European projects in the Ambient Assisted Living (AAL) program. Our work in this domain concentrates in the study of lifestyle of senior persons (age 55 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.

Gilles Falquet, Laurent Moccozet and Claudine Métral - Knowledge Engineering KE@ISS

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 immerged in real situations.

Nadia Magnenat-Thalmann - MIRALab

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

Since 1992, MIRALab has participated in more than 50 European Projects and contributes to the management of two International Conferences, CASA and CGI. Moreover, MIRALab produces 3D showcases for museums, galleries, such as fashion shows with virtual models and clothes. In 2014, MIRALab was working on the following projects: ANINEX, EMC2, ITN-DCH, MULTISCALEHUMAN and REPLAY.

Katarzyna Wac - Quality of Life Technologies

The key aim of the Quality of Life (QoL) technologies research area is to promote ICT technologies to improve QoL of individuals through rigorous scientific research, education, science communication and outreach. Particularly, given the current expertise of the team, its goal is to establish quality research in mobile networking systems delivering accurate and timely services to their users «anywhere-anytime-anyhow». The general approach is necessarily a transdisciplinary one, as many of the challenges in development and deployment phases of these systems need to be addressed considering not only the system and its Quality of Service (QoS) provided in an operational networking environment, but, as sometimes missing in the current research - the actual system end-users, approaching mobile networking not from the perspective of new hype technology, but from the perspective of new innovative ways to achieve some pre-defined goal. These end-users have thus different services" requirements, expectations and perceptions of the Quality of Experience (QoE), including system's usability, efficiency and effectiveness. In transdisciplinary research projects, we aim to establish innovative methodologies to demonstrate the value of mobile networking systems improving the QoS, the QoE and ultimately the QoL outcomes of its end-users, and society at large. The QoL team currently contributes to research on mobile networking systems deployed in healthcare (denoted as 'mHealth') for personal well-being, active and healthy ageing and ambient assisted living by leveraging personal, big data approaches (like 'quantified-self' one) in Living Lab settings.

Verena Kantere - Big Data management and analytics

The field of Big Data management and analytics includes techniques, algorithms and tools used to inspect collections of data to extract patterns, generalizations and other useful information. Big data analytics is very important in risk assessment, pharmaceutics, fraud detection, epidemiology, business process effectiveness, market analysis, anti-terrorism, etc. More importantly, large-scale analytical data processing has become a necessity in the majority of industries. Enabling engineers, analytics experts and scientists alike to tap the potential of vast amounts of business-critical data has grown increasingly important. Such data analysis demands a high degree of parallelism, in both storage and computation. Business datacenters host vast amounts of data, stored over large numbers of nodes with multiple storage devices, and process them using thousands or millions of cores.

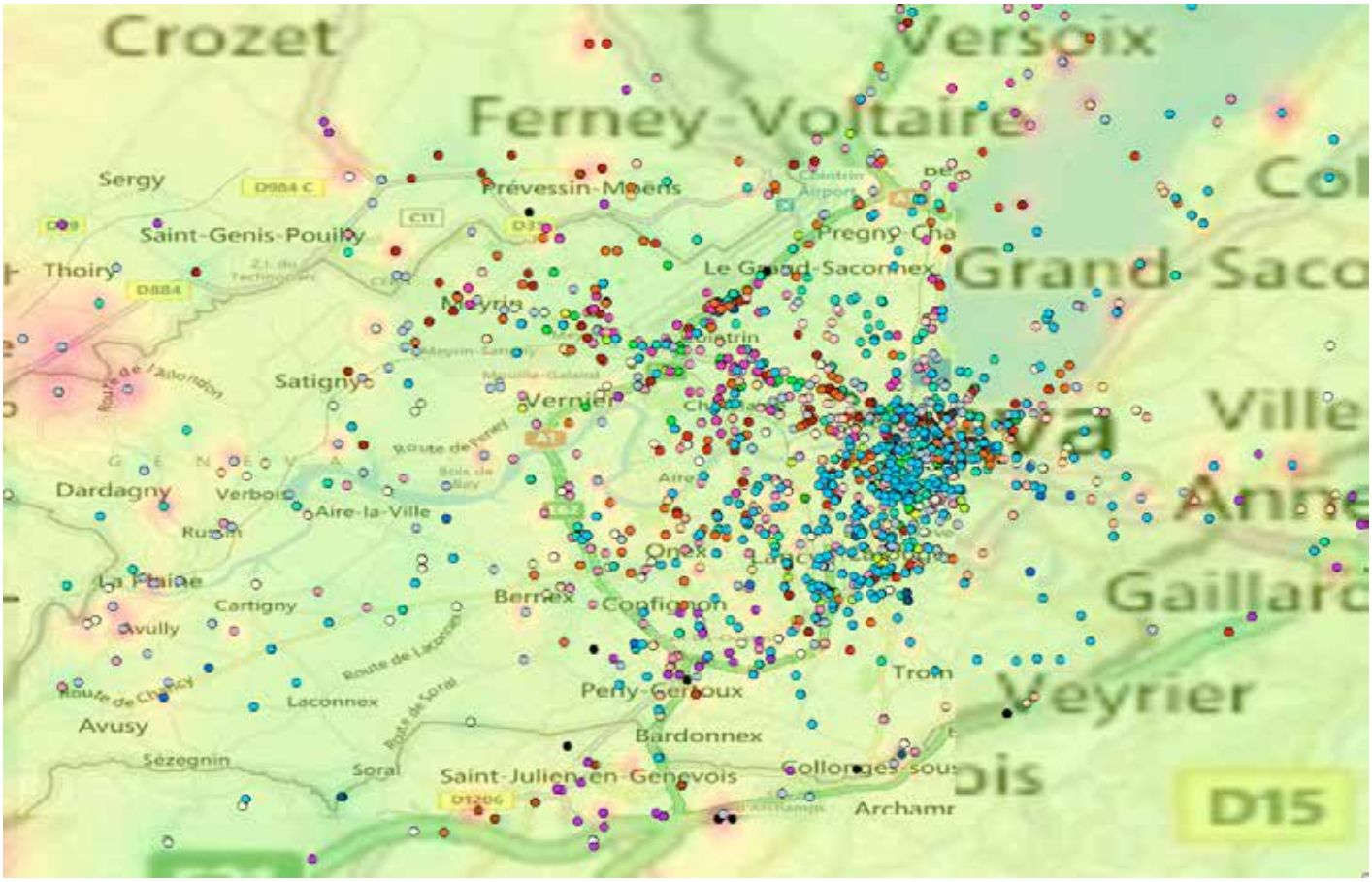


Figure 3: Quality of operator networks in Geneva Area
(Dec. 2012, qosis.net project)

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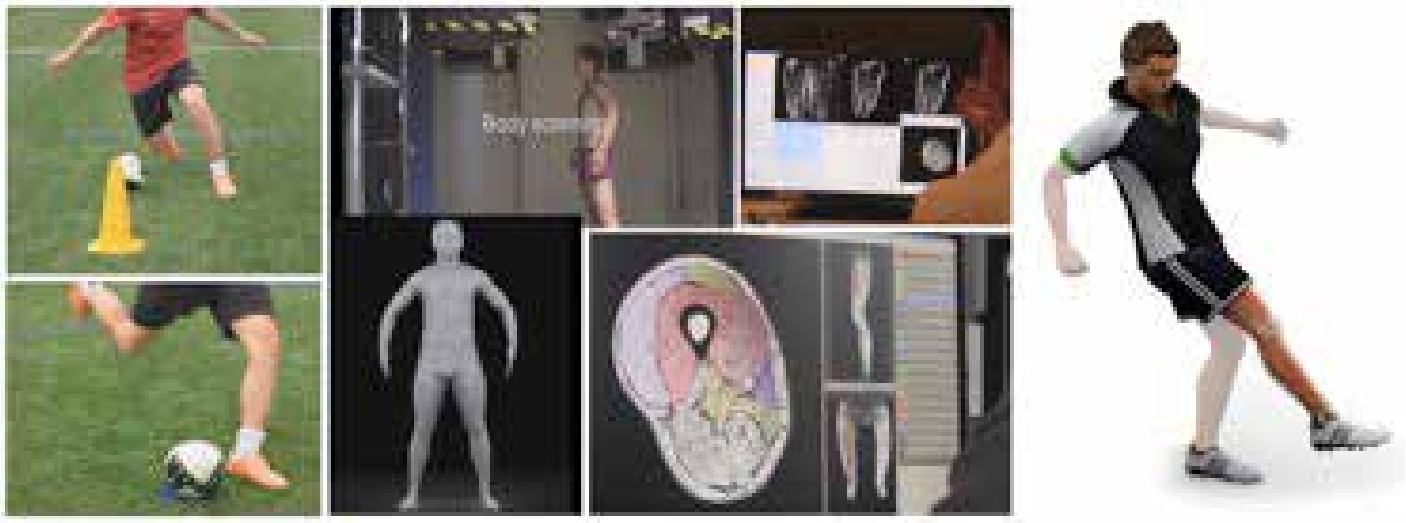

Figure 5: MultiScaleHuman project: case study of soccer player (part I) – recreating the soccer player in 3D
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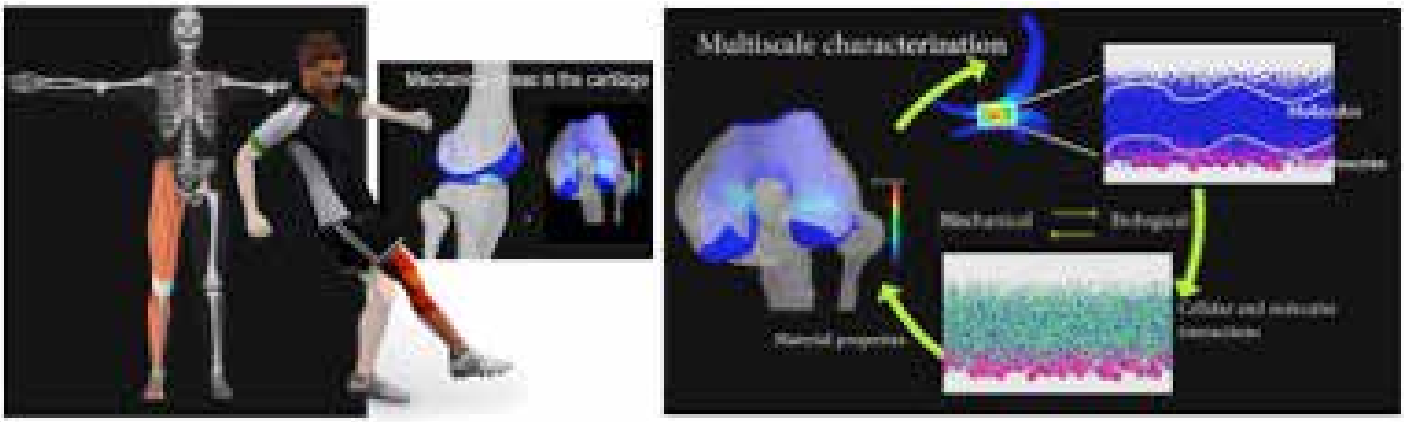

Figure 7: MultiScaleHuman project: case study of soccer player (part II) – multi-scale visualization of the knee © MIRALab

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Nadia Magnenat-Thalmann:

[87] Several technical reports for the following projects: ANINEX, ITN-DCH, MULTISCALEHUMAN and REPLAY.

International and national advisory committees

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 (2015-2019) – Conseil Académique Hepia

Nadia Magnenat-Thalmann:

- 2013-2016: Member of the Scientific Council of the Institute of Mines-Telecom, Paris, France
- 2013-2016: Expert on the advanced grant panel of the European Research Council (ERC)

Figure 9: Context-aware information flow

International and national research programs committees

Giovanna Di Marzo Serugendo:

- COST Actions – Expert Reviewer - November 2015
- Member (2011-): Comité de Direction, CADMOS
- Member (2011-): Programme Doctoral Romand d'Informatique (CUSO)
- 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:

- 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-, Forschung- und Technologiefonds, Austria

Verena Kantere:

- Evaluator for EU COST proposals submitted in 2015

Nadia Magnenat-Thalmann:

- ICACCI-2015, The 4th International Conference on Advances in Computing, Communications and Informatics, Kerala, India, August 2015
- ICAART 2015, The 7th International Conference on Agents and Artificial Intelligence, Lisbon, Portugal, January 2015

PhD Thesis committees

Giovanna Di Marzo Serugendo:

- Inna Pereverzeva. Formal Development of Resilient Distributed Systems. Abo Akademi University, Finland, Opponent, September 2015.
- Edmundo Lopez Bobeda. Symbolic Model-Checking with Set Rewriting. Reviewer. May 2015.
- Danilo Pianini, Engineering Complex Computational Ecosystems. Alma Mater Studiorum, Bologna. Italy. April 2015
- 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.

Jolita Ralyté:

- Marcela Ruiz. TraceME: Traceability-based Method for Conceptual Model Evolution. Universitat Politécnica de Valencia, Spain. Reviewer. December 2015.

Katarzyna Wac:

- Atef Abdelkefi, Norwegian University of Science and Technology, Norway (external examiner), June 2015

Nadia Magnenat-Thalmann:

- Matthias Becker, Supervisor, University of Geneva, Switzerland
- Andra Chincisan, Supervisor, University of Geneva, Switzerland
- David Garcia, Supervisor, University of Geneva, Switzerland
- Simon Sénécal, Supervisor, University of Geneva, Switzerland
- Yvain Tisserand, Supervisor, University of Geneva, Switzerland
- Sara Trombella, Supervisor, University of Geneva, Switzerland

Conference organization as chair or co-chair

Jolita Ralyté:

- Program Chair of the 8th IFIP WG 8.1 working conference on the Practice of Enterprise Modelling – PoEM 2015, November 10-12 2015, Valencia, Spain.
- Publicity Chair of the 27th International Conference on Advanced Information Systems Engineering – CAiSE 2015, Stockholm, Sweden, June 8-12 2015.
- Doctoral Consortium Mentor at the 9th IEEE International Conference on Research Challenges in Information Science – RCIS 2015, Athens, Grece, May 13-15, 2015.

Jean-Marc Seigneur:

- Chair of the Trust, Reputation, Evidence and other Collaboration Know-how (TRECK) track, ACM Symposium of Applied Computing, Salamanca Spain, April 13-17 2015
- Social Networking Chair, Augmented Human International Conference, Singapore, March 8-11 2015
- Social Networking Chair, IEEE International Conference on Communications, London, United Kingdom, June 8-12 2015

Katarzyna Wac:

- Special Session on «Hot Topics on Multimedia Communication Systems» (HOT-MMCS) at the Fourth IEEE International Workshop on Cloud Computing Systems, Networks, and Applications (CCSNA) at theIEEE GlobeCom 2015, Dec 2015
- 9th International Conference on Pervasive Computing Technologies for Healthcare, Workshops Chair (PervasiveHealth 2015)

Verena Kantere:

- Chair of the 1st Workshop on Emerging Software as a Service and Analytics - ESaaSA 2015 collocated with he 5th International Conference on Cloud Computing and Services Science (CLOSER 2015)

Nadia Magnenat-Thalmann:

- Conference Co-Chair, 14th ACM SIGGRAPH International Conference on Virtual Reality, October 2015
- Continuum and Its Applications in Industry (VRCAI 2015), Kobe, Japan
- Program Chair, 32nd Computer Graphics International (CGI 2015), Strasbourg, France, June 2015
- Conference Chair, 28th International Conference on Computer Animation and Social Agents (CASA 2015), Singapore, May 2015

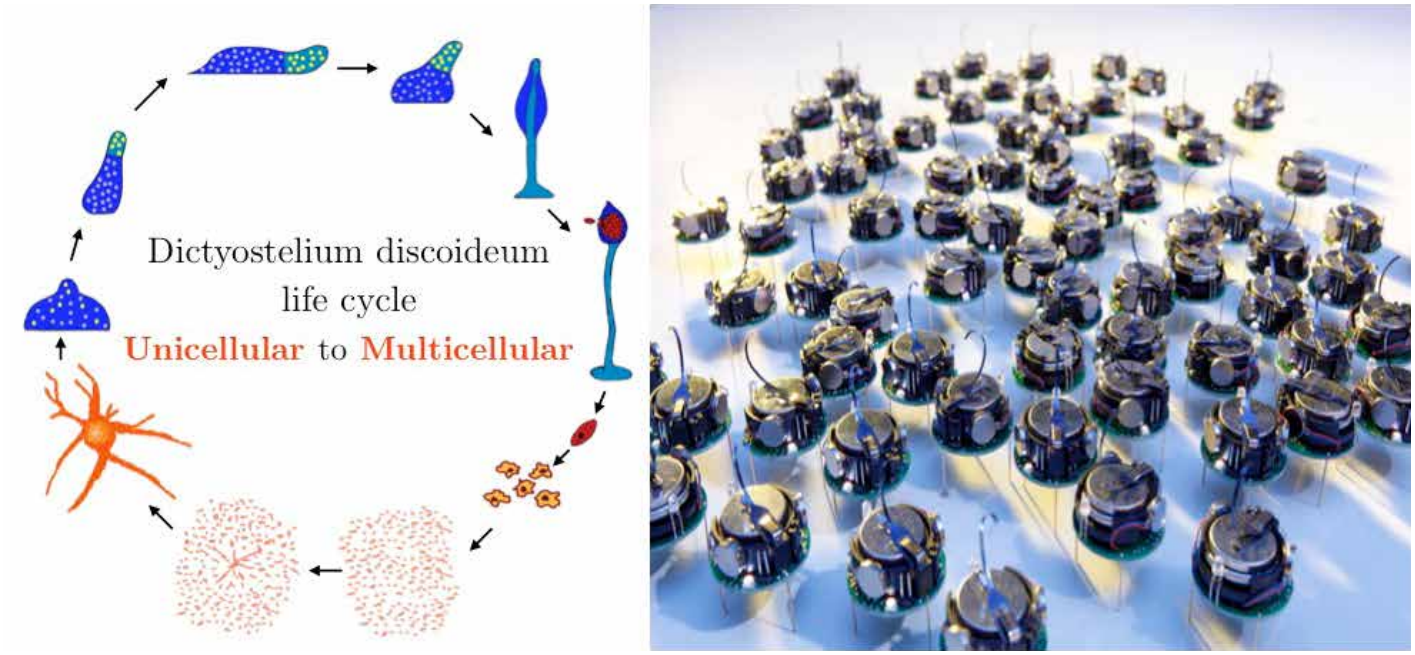


Figure 10: http://robohub.org/bioinspired-robotics-1-swarm-collectives-with-radhika-nagpal/

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

- Conference Chair, The 3rd International Conference on Computational Visual Media (CVM 2015), Beijing, China, April 2015

Member of conference program committees

Giovanna Di Marzo Serugendo:

- IEEE International Conference on Self-Adaptive and Self-Organising Systems, Boston, 2015 (SASO'15)
- International Conference on Ubiquitous Computing and Ambient Intelligence (UCAmI 2015)
- Worskshop on Synergies between Multiagent Systems, Machine Learning, and Complex Systems (TRI'2015)
- Antifragility Worskhop (2014-2015)
- ACM Symposium on Applied Computing (SAC'16)

Jolita Ralyté:

- 27th International Conference on Advanced Information Systems Engineering - CAiSE 2015, Stockholm, Sweden, June 8-12 2015.
- 34th International Conference on Conceptual Modeling – ER 2015, Stockholm, Sweden, October 19-22, 2015.
- 9th IEEE International Conference on Research Challenges in Information Science – RCIS 2015, Athens, Grece, May 13-15, 2015.
- International Conference on Exploring Modeling Methods in Systems Analysis and Design – EMMSAD 2015, Stockholm, Sweden, June 8-9 2015.
- 17th International Conference on Enterprise Information Systems – ICEIS 2015, Barcelona, Spain, April 27-30, 2015
- 6th International Conference on Exploring Services Science – IESS 2015, Porto, Portugal, February 5-6, 2015.
- 33ème Congrès Informatique des Organisations et Systèmes d'Information et de Décision – INFORSID 2015, Biarritz, France, May 26-29, 2013.
- 17th IEEE Conference on Business Informatics – IEEE CBI 2015, Lisbon, Portugal, 13-16 July 2015.
- 23rd International Conference on Cooperative Information Systems – CooPIS 2915, Rhodes, Greece, 28-30 October 2015.
- 2nd International Workshop on Conceptual Modeling in Requirements and Business Analysis – MReBA 2015, Co-located with ER 2015, Stockholm, Sweden, October 19-22th, 2015.
- 1st Workshop on Continuous Requirements Engineering – CRE 2015, Co-located with REFSQ 2015, Essen, Germany, March 23, 2015.
- 11th Asia-Pasific Conference on Conceptual Modelling – APCCM 2016, Sydney, Australia, January 27- 30 2015.
- 2nd International Workshop on Advances in Services DEsign based on the Notion of Capability – ASDENCA 2015, Co-located with CAiSE 2015, Stockholm, Sweden, 9 June 2015.
- 7th International Conference on Service Science and Innovation – ICSSI 2015
- International Workshop on Quality of Modeling and Modeling of Quality – QMMQ 2015, Co-located with ER 2015, Stockholm, Sweden, 19-22 October 2015.
- 7th International Workshop on Service-oriented Enterprise Architecture for Enterprise Engineering - SoEA4EE 2015, in conjunction with EDOC, Adelaide, Australia, 22 September 2015.

Abdelaziz Khadraoui:

- International Conference on Information Systems and Technologies - ICIST 2015, Istanbul, Turkey, March, 21 - 23, 2015.
- 12th International Symposium on Programming and Systems, ISPS'2015, Algiers, Algeria, April 28-30, 2015.
- IEEE Ninth International Conference on Research Challenges in Information Science, RCIS 2015, May 13-15 2015, Athens, Greece.

Katarzyna Wac:

- 7th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT 2015)
- Social Networking Track of International Conference on Cloud Computing and Big Data (CCBD 2015)

- The (LivingLab) Workshop at the (IEEE HealthCom 2015)
- Fourth IEEE International Workshop on Cloud Computing Systems, Networks, and Applications (CCSNA) and Workshop on Internet of Things for Ambient Assisted Living (IoTAAL) at the (IEEE GlobeCom 2015)
- International Conference on Smart Objects and Technologies for Social Good (GOODTECHS 2015)
- International Workshop on Enhanced Living Environments (ELEMENT 2015) at the ICT Innovations (ICT 2015)
- Workshop on Human Behavior Understanding (HBU), Workshop on New Frontiers of Quantified Self (FrontiersQS) and PerPart Workshop on Advanced Citizen e-participation (PerPart) at ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2015)
- Reviewer for the Aarhus Conference on Critical Alternatives (Aarhus2015)
- Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2011, IEEE EMBC 2015: Bioinstrumentation, Biosensors and Bio-Micro/Nano Technologies)
- Advisory Committee member of the International Conference on Open and Big Data (OBD 2015)
- IEEE Workshop on Quality of Experience-based Management for Future Internet Applications and Services (QoE-FI 2015) at IEEE International Conference on Communications (IEEE ICC 2015)
- Reviewer for the ACM CHI Conference on Human Factors in Computing Systems CHI 2015)

Verena Kantere:

- ACM International Conference of Special Interest Group on Management Of Data (SIGMOD) 2015.
- IARIA Cloud Computing 2015.
- International Conference on Future Internet of Things and Cloud (FiCloud) 2015.
- IEEE International Conference on High Performance and Communications (HPCC) 2015.
- International Conference on Data Mining, Internet Computing, and Big Data (BigData), 2015.
- First International Workshop on Elasticity Engineering for Big Data Analytics (eBigDaC), held in conjunction with IEEE International Conference on Big Data (IEEE BigData) 2015.
- Second international workshop on Enterprise Security, held in conjuction with the IEEE International Conference on Cloud Computing Technology and Science (IEEE CloudCom) 2015.

Claudine Métral:

- 3D GeoInfo - International 3D GeoInformation Conference

Invited talks

Giovanna Di Marzo Serugendo:

- MUSE – Smart Cities – May 2015
- Cloud Computing – PPDT - March 2015

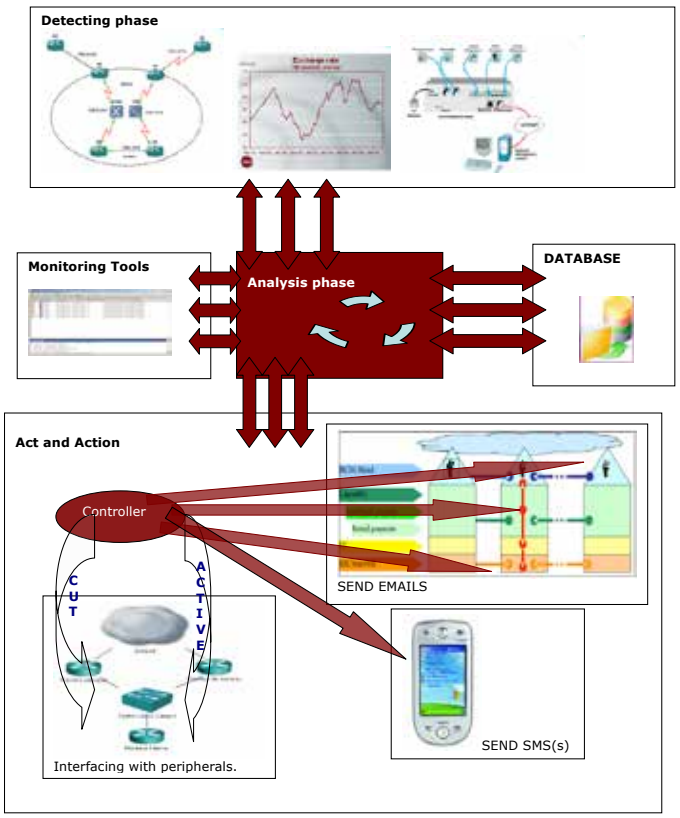
Jolita Ralyté:

- JISIC 2015 - 4th Jornadas de Ingeniería de Sistemas Informáticos y de Computación. Fundamentals and Challenges of Situational Method Engineering. Invited Talk, Quito, Ecuador, November 16, 2015.
- JISIC 2015 - 4th Jornadas de Ingeniería de Sistemas Informáticos y de Computación. Towards a Framework for Enterprise Information System Evolution Steering. Invited Talk. Quito, Ecuador, November 18, 2015.
- JISIC 2015 - 4th Jornadas de Ingeniería de Sistemas Informáticos y de Computación. Designing the Transformation from Information Systems to Information Services Systems. Invited Talk, Quito, Ecuador, November 18, 2015.
- Research seminar at Beijing University. Fundamentals and Challenges of Situational Method Engineering. Beijing, China, July 8, 2015.

Katarzyna Wac:

- Katarzyna Wac, Human Aspects in Use (and Misuse) of Mobile Apps and Wearables for Health Self-Management, Conference of International Society for Wearable Technology in Healthcare (WATCH-Society), Dubai, UAE, Dec 2015
- Christiana Tsiourti, Ambulatory Assessment of Affect by Autonomic Nervous System Activation Patterns, International Symposium on Companion-Technologies, Invited Talk, Germany, Sep 2015
- Katarzyna Wac, Mobile Ubiquitous Communications and Computing for Health(care): Assuring User Experience, Faculty of Informatics, Vienna University of Technology, Austria, Mar 2015
- Jerome Marchanoff and Mattia Gustarini, UnCrowdTPG: Open Data in Action, Invited talk at the seminar on Open Data hosted by Prof. Thomas Gauthier, University of Applied Sciences Western Switzerland (HES-SO), Carouge, Switzerland, Mar 2015
- Mattia Gustarini, Open Data au Service des Citoyens, Open Geneva Contest, Geneva Creativity Center, Geneva, Switzerland, Mar 2015

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



- Katarzyna Wac, Les Biosensors pour le suivi des Patients, XIV Congrès de la Société Francophone d'Analyse du Mouvement chez l'Enfant et l'Adulte (SOFAMEA), Geneva, Switzerland, Feb 2015 Video: https://mediaserver.unige.ch/play/87916, Slides http://www.slideshare.net/KatarzynaWac/wacsofamea-feb2015short
- Katarzyna Wac, Personalised Health Self-management Systems: What is the Design Space?, Human-Centered Computing Section, Department of Computer Science, University of Copenhagen, Denmark, Feb 2015

Verena Kantere:

- Keynote in CLUSIS conference on the 23/01/2015
- Keynote in Salon Swiss IT Business & BI Swiss Forum Genève on the 22/04/2015
- University of Fribourg on the 03/12/2015

Jean-Marc Seigneur:

- Réunion CLUSIS
- Réunion de l'Association Suisse de la Sécurité de l'Information, Authentification et moteur de confiance informatique, Lausanne, Suisse, 27/10/2015

Nadia Magnenat-Thalmann:

- Keynote at ShanghaiTech University, Modelling the Human Body: from its External Appearance to the Hidden Multiscale Level, School of Information Science and Technology, ShanghaiTech University, Shanghai, China, November 13, 2015
- http://sist.shanghaitech.edu.cn/NewsDetail.asp?id=516
- SIGGRAPH ASIA 2015 course on Multimodal Human-Machine Interaction including Virtual Humans or Social Robots, Kobe, Japan, November 3, 2015 - http://sa2015.siggraph.org/images/downloads/schedule/Day-2-Tuesday-03-November-28-10-15.pdf
- Keynote at Ada Lovelace Festival, Virtual Humans and Social Robots: What are the Challenges, What they can Do?, Berlin, Germany, October 28, 2015 - http://wiwo.konferenz.de/ada/programmuebersicht/
- FT-ACI Smarter World Summit - Showing businesses how to engage with emerging technologies, Panel: Robots in a Commercial Environment, InterContinental Singapore, Singapore, October 8, 2015 - http://www.asia-business-summit.com/SmarterWorldSummitAgenda.html
- Lecture at University of Modena, Computer Graphics and 3D Reconstruction, Italy, September 21-24, 2015 - http://imagelab.ing.unimore.it/imagelab/
- Keynote at the Photogrammetric Week 2015, Image-based 3D Avatar for Virtual Try-on Applications, Institute for Photogrammetry, University of Stuttgart, Germany, September 10, 2015 - http://www.ifp.uni-stuttgart.de/phowo/2015/presentations/index.en.html
- Invited talk at Visual Computing Summer School, Social Robots & Virtual Humans: State of the Art and What is Next?, Shandong University, Qingdao, China, 20 July 2015 - http://irc.cs.sdu.edu.cn/2015-summer-school/
- Keynote lecture at Computer Assisted Radiology and Surgery (CARS 2015), Modelling Human Joints: 20 Years of Research and Beyond, Barcelona, Spain, June 24-27, 2015 - http://www.cars-int.org/program/program_overview.html?L=%2F
- Computer Assisted Radiology and Surgery (CARS 2015) - Workshop on Multiscale Digital Patient (MDP), Problems and Solutions to the Multiscale Approach, Barcelona, Spain, June 24-27, 2015 - http://www.carsint.org/program/cars_tutorials_special_events/cars_workshop_on_multiscale_digital_patient_mdp.html

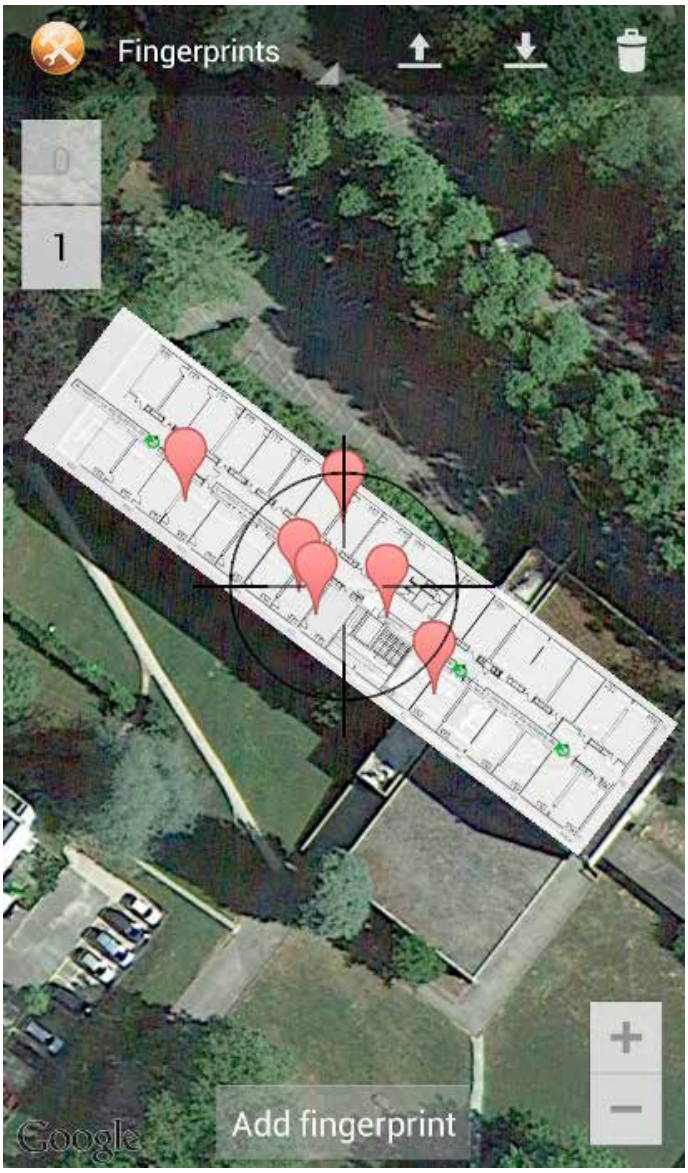


Figure 13: Indoor geopositionning

- Participation to a Panel at Conference on Future of The Doctorate, European Commission, Supervision and Quality Assurance, Riga, Latvia, May 28-29, 2015 - https://future-doctorate.teamwork.fr/en/programme
- Keynote speech at Workshop on Hightech NTU Day, The Humanoid Social Robot Nadine: a Social Companion?, Research Techno Plaza (RTP), NTU, Singapore, May 11, 2015 - http://conference.ntu.edu.sg/casa2015/Workshops/Pages/About_the_Workshop.aspx
- Invited talk at Conference on Smart Nation Innovations – Our Future. Now Interaction with Virtual Characters and Social Robots, Hotel Fort Canning, Singapore, April 22, 2015 - https://www.smartnation.sg/innovations
- Invited talk at Workshop on Visual Computing for Social and Cognitive Robots (CVM 2015), Modelling Awareness and Social Behavior for Virtual Humans and Social Robots, Tsinghua University, Beijing, China, April 15, 2015 - http://iccvm.org/2015/workshop/

Refereeing

Giovanna Di Marzo Serugendo:
- 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
- IJISSS – International Journal of Information Systems in the Service Sector
- RE – Requirements Engineering Journal
- ISI – Revue Ingénierie des Systèmes d'Information
- CSIMQ – Complex Systems Informatics and Modeling Quarterly

Katarzyna Wac:
- IEEE Transactions on Mobile Computing
- IEEE Pervasive Computing
- IEEE Communications Magazine
- IEEE Transactions on Network and Service Management
- European Transactions on Telecommunications (Wiley)
- IET Communications Journal
- ACM Computing Surveys
- ACM Transactions on Cyber-Physical Systems
- Pervasive and Mobile Computing (Elsevier)
- Personal and Ubiquitous Computing (Springer)
- IEEE Transactions on Affective Computing
- Sensors (MDPI)
- Interacting with Computers (Oxford)
- Human-Computer Interaction (Frontiers ICT)
- International Journal of Technology and Human Interaction (IGI Global)
- International Journal of Information Technology and Management (Inderscience)
- Behavior Research Methods (Springer)
- Applied Research in Quality of Life (Springer)
- IEEE Journal of Biomedical and Health Informatics (previously IEEE Transactions on Information Technology in Biomedicine)
- IEEE Journal of Translational Engineering in Health and Medicine
- Journal of Medical Internet Research (JMIR Publications Inc.)
- International Journal of Medical Informatics (Elsevier)
- Computer Methods and Programs in Biomedicine (Elsevier)
- International Journal of Electronics and Communications (Elsevier)
- International Journal of Telemedicine and Applications (Hindawi)
- PLoS ONE (Public Library of Science)

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)

Verena Kantere:
- IEEE Transactions on Parallel and Distributed Systems
- Information Sciences
- IEEE Transactions on Electron Devices
- Data and Knowledge Engineering
- International Journal of Cooperative Information Systems
- The Computer Journal
- The VLDB Journal Special Issue on Data Management for Mobile Services
- The IEEE Network
- IEEE Transactions of Knowledge and Data Engineering
- International Journal of Cooperative Information Systems
- Distributed and Parallel Databases
- Acta Informatica
- IEEE Internet Computing
- Concurrency and Computation: Practice and Experience
- Peer-to-Peer Networking and Applications
- American Journal of Applied Sciences
- The Journal of Computer Science

Laurent Moccozet:
- The Scientific World Journal (Hindawi)
- Concurrency and Computation: Practice and Experience (Wiley)

Figure 14: ITN-DCH project: case study of Asinou church - recreating the pope in 3D © MIRALab

Nadia Magnenat-Thalmann:

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

Editorial responsabilities

Giovanna Di Marzo Serugendo:

- Guest Co-editor (2015). Special issue on Self-Organising Coordination in Science of Computer Programming (SCP), vol 110, September 2015.
- Editorial Board Member: Multiagent and Grid Systems - An International Journal. ISSN: 1574-1702.
- Editorial Board Member: International Journal of Intelligent Information and Database Systems. Inder-Science.
- Editorial Board Member (2013 -) - TCAASA

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

Figure 16: Object localisation - EDLAH project

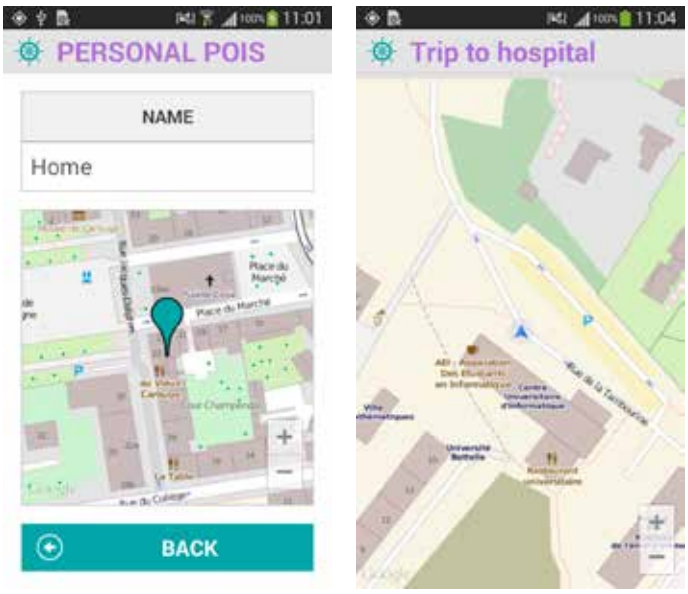


Figure 15: Indoor positionning & Navigation adapted to seniors - Virgilius project

Jean-Henry Morin:

- 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: Ralyté, J. (2015). Introduction. Numéro spécial "Méthodes, langages et outils de modélisation pour l'ingénierie des systèmes d'information", Revue Ingénierie des Systèmes d'Information, Vol. 20(2), Lavoisier.

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.

Verena Kantere:

- Editor of the Open Journal on Big Data (OJBD)

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.
- 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:

- Vice-Chair of the IFIP WG 8.1: Design and Evaluation of Information Systems. 2010 - 2015.

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

Jolita Ralyté and Giovanna Di Marzo Serugendo:

- Local Organisers: Changing Change: Babok 3.0. 2eme Edition du Symposium on Business Analyse, Uni-Mail, July 2015

Giovanna Di Marzo Serugendo:

- Tiers-Lieu – Gestion du territoire, mise en lumière nocturne, September 2015
- CLUSIS event – The Password is Dead, October 2015
- CLUSIS Campus – Scientific Day on Security issues, January 2015
- Open Geneva Student Contest, Committee member, March-April 2015/2016

Nadia Magnenat-Thalmann:

- CeBIT fair: "MultiScaleHuman project" at CeBIT, Hannover, Germany, 16-20 March 2015, http://www.cebit.de/en/exhibition/exhibitors-products/index.xhtml
- Exhibition: "It began with Ada. Women in computer history", Heinz Nixdorf Forum (Paderborn, Germany), 2 September 2015 - 10 July 2016, http://www.hnf.de/en/sonderaustellungen/preview-ada-lovelace.html

Participation in TV and radio programs

Verena Kantere:

- Participation in the kids program of RTS «La Semaine des Médias».

Nadia Magnenat-Thalmann:

- Nadine: the emotional robot receptionist, BBC World Service, 31 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Media_Coverage/BBCworldservice_160101_Nadine%20the%20robot%20receptionist.pdf

Press release

Michel Deriaz:

- Tribune de Genève: "La révolution numérique au service des seniors". http://tam.unige.ch/assets/documents/press/20150418_TdG.pdf
- Tribune de Genève: "Géolocalisation «indoor», Saint-Graal du marketing". http://tam.unige.ch/assets/documents/press/20151121_TdG.pdf

Katarzyna Wac:

- Auto-mesure: un outil médical d'avenir?, «Ma santé au quotidien», Planet Sante Suisse, Invitée: Dr. K. Wac, Janvier 2015. http://www.planetesante.ch/Mag-sante/Ma-sante-au-quotidien/Auto-mesure-un-outil-medical-d-avenir

Nadia Magnenat-Thalmann:

- NTU scientists unveil social and telepresence robots, Nanyang Technological University, 29 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Google/NTU.pdf
- Meet Nadine, the terrifyingly lifelike 'social robot' that looks and acts like its owner and could one day work in your office, Dailymail, 29 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Google/Dailymail%20UK.pdf
- Scientists unveil social and telepresence robots, PHYS ORG, 29 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Google/PHYS%20ORG.pdf
- Singapore: Meet Nadine, the chatty robot that can remember past conversations, Ruptly, 29 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Google/Ruptly.pdf
- Meet Nadine, the terrifyingly lifelike 'social robot' that looks and acts like its owner and could one day work in your office , The Daily Mail Online, 29 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Google/20_Daily%20Mail%20Online_291215_Meet%20Nadine,%20the%20terrifyingly%20lifelike%20%27social%20robot%27%20that%20looks%20and%20acts%20like%20its%20owner.pdf
- Meet Nadine, the eerily-realistic social robot that works as a receptionist, RedOrbit, 30 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Media_Coverage/RedOrbit_160101_Meet%20Nadine%20the%20eerily-realistic%20social%20robot%20that%20works%20as%20a%20receptionist.pdf
- Scientists have built a 'social' robot with a personality, Newsweek, 30 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Media_Coverage/Newsweek_160101_Nadine%20robot.pdf

- Meet Nadine, the Social Robot Who Can Give You Company, NDTV, 30 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Media_Coverage/NDTV_160104_Meet%20Nadine%20the%20Social%20Robot%20Who%20Can%20Give%20You%20Company.pdf
- Say hello to 'social' robot Nadine, The Financial Express, 30 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Media_Coverage/FinancialExpress_160104_Say%20hello%20to%20%E2%80%98social%E2%80%99%20robot%20Nadine.pdf
- NTU develops social companion robots that mimic humans, Tamil Murasu, 30 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Media_Coverage/TM_151230_3_.pdf
- New social robot Nadine has a personality, United Press International, 30 Dec 2015 - http://imi.ntu.edu.sg/IMIResearch/Research_Areas/Nadine/Documents/Media_Coverage/UPI_151230_Nadine%20social%20robot.pdf
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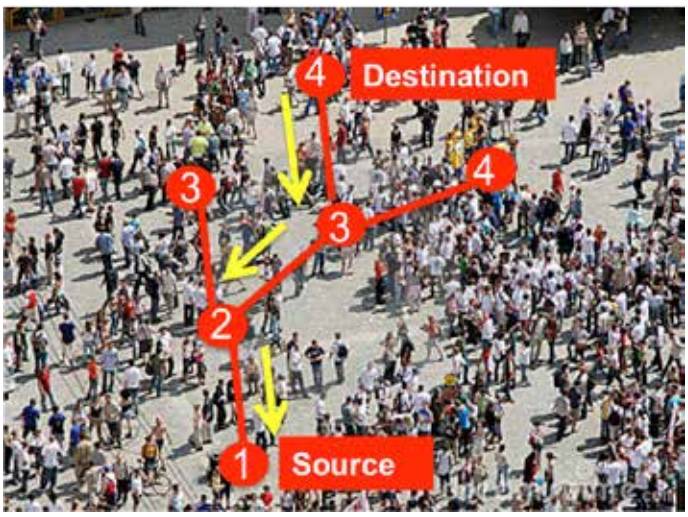

Figure 18: Crowd Steering

Figure 17: Confidential channel over MANET

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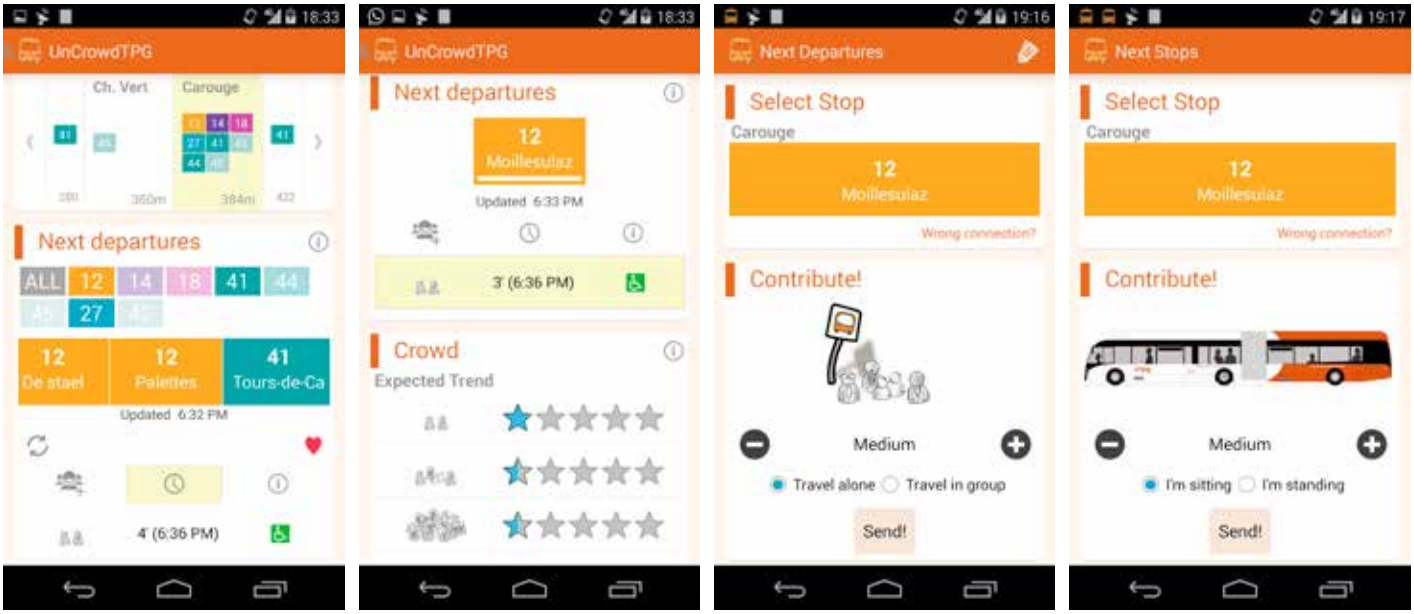

Figure 19: UnCrowdTPG is a TPG open data API contest winner. It is a smartphone application that let people know which are the less crowded trams and buses for a more comfortable commute. It is based on the collaboration between people to engage them and be part of the general society and family of TPG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

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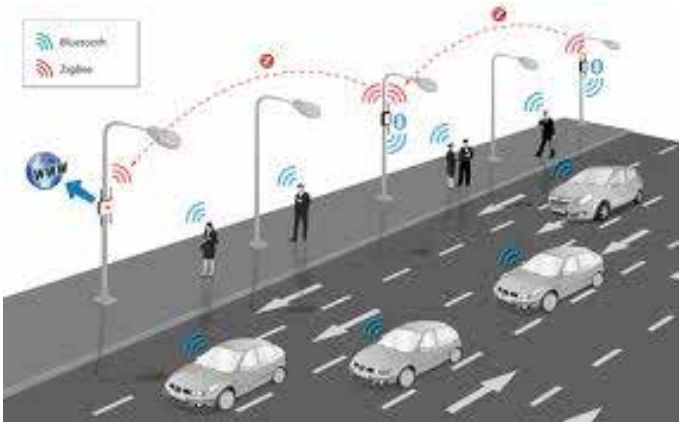

Figure 20: Spatial Services

Figure 21: ThingVibe, Internet of Things (IoT) social network and application store

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Other achievements

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.
- QoL has participated in The PORT Health Hackathon @ Campus Biotech, Geneva, Switzerland. Prototype service "myQoL: Empowering Individuals in Preventive Health & Quality of Life".
- 7-8.2015 – K. Wac was a Visiting Scientist at Stanford University, USA, group lead by Prof. H. Rivas (MD)

ISS team in 2013

- 2015 – 2016 K. Wac being a Mentor, Mentoring Program for female academics of the University of Lugano, Switzerland
- K. Wac: Since 2015 TEDMED Research Scholar and TEDMED Reviewer for Speaker Nominations

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

GrowMeUp
H2020 project
Partners: Artificial Perception Team (Portugal), University of Cyprus (Cyprus), University of Geneva (Switzerland), ProbaYes (France), PAL Robotics (Spain), CiTARD Services Ltd (Cyprus), Caritas Ciocesana de Coimbra (Portugal), Zuyderland(Netherland)
Period: February 2015 - January 2018
Website: http://www.growmeup.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

StayActive
AAL project
Partners: TeamNet (Romania), eLearning Studios (UK), HI-Iberia (Spain), RGB Medical Devices (Spain), CETEMMSA (Spain), Ana Aslan International Foundation (Romania), Université de Genève (Switzerland)
Period: 2014 - 2016
Website: http://stay-active.net

SmartHeat
AAL project
Partners: Université de Genève (Switzerland), Modosmart S.L. (Spain), MX-SI S.L. (Spain), Sensor ID s.n.c. (Italy), terzStiftung (Switzerland), Eurag (Austria), Gluk Advice B.V. (Netherland), Teamnet International (Romania)
Period: 2015 - 2018
Website: http://www.smartheat-aal.eu

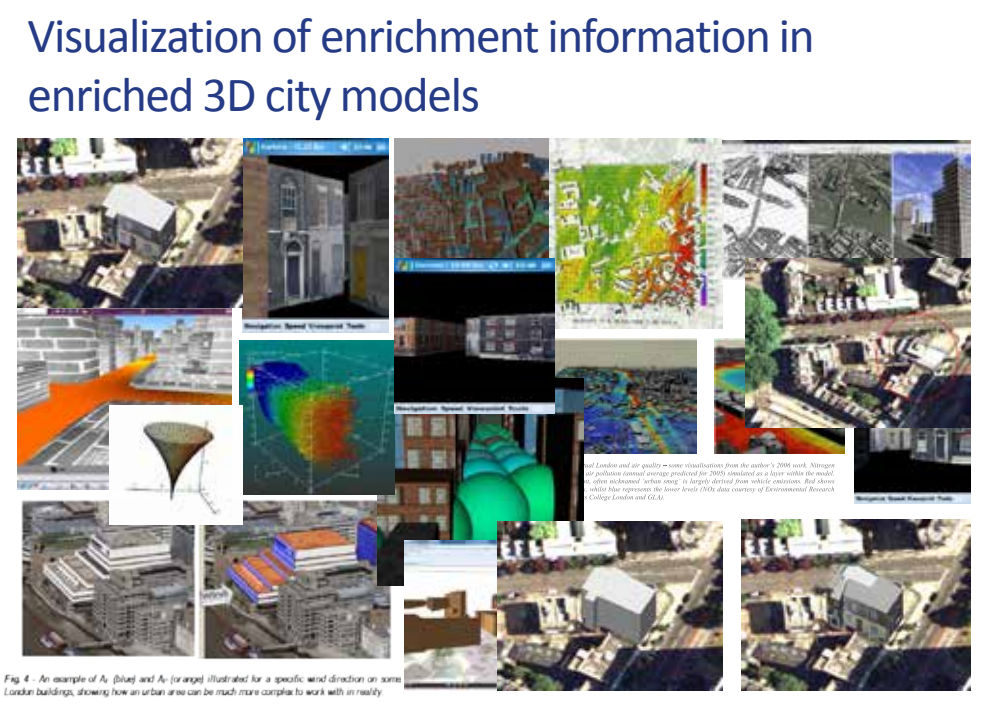


Figure 22: Data and knowledge visualization techniques in urban models

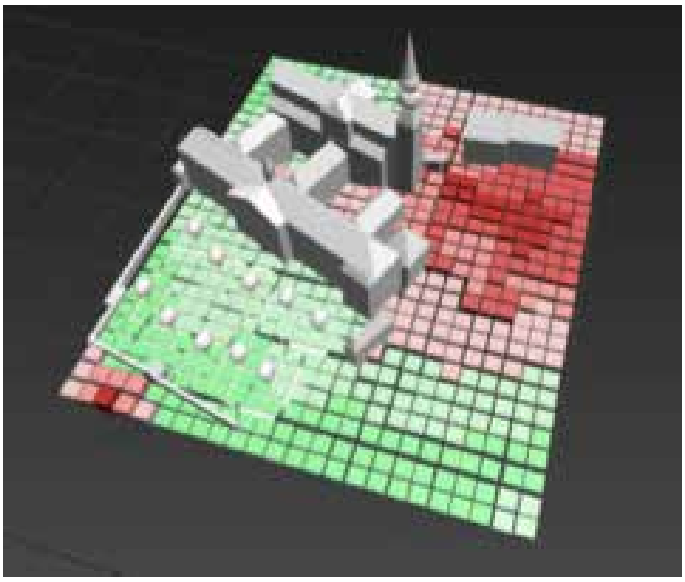


Figure 23: A visualization technique for air quality in a 3D city model

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 (Itreland)
Period: May 2014 - October 2016
Website: http://sponsor-aal.eu/Home

CoME
European Ambient Assisted Living project «Caregivers and Me"
AAL-CoME AAL-2014-127
Partners: HI iberia (Spain), IRBLLeida (Spain), University of Geneva (Switzerland), Vigisense (Switzerland), Connected-Care (Netherland), Pannon Business Network (Hungary)
Period: 2015 – 2018
Web site: http://come-aal.eu/

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 (managemenet committe members)
Period: December 2012 - December 2016
Web site: http://vgibox.eu/

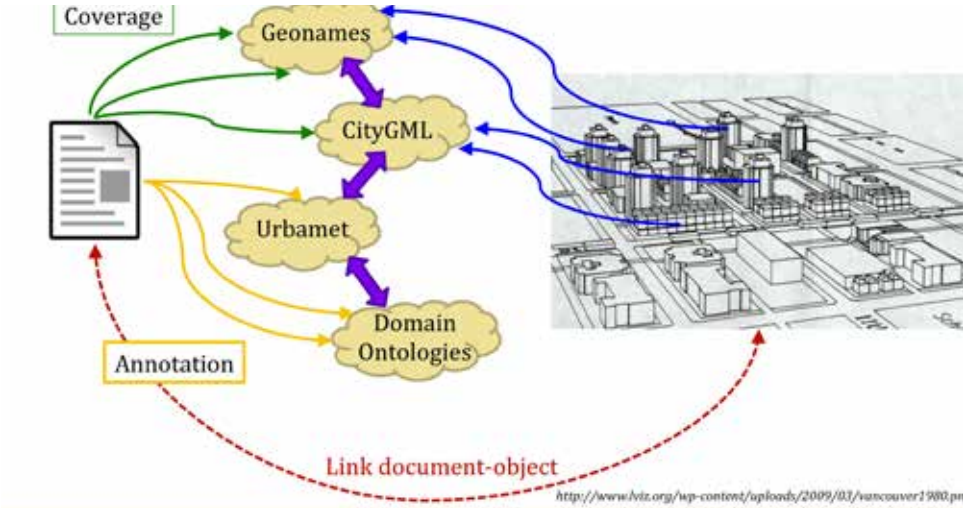


Figure 24: Connecting documents and city objects through ontologies

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 (Autria)
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/

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

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

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

F2D
Period: 2014 - 2015
Website: http://tam.unige.ch/projects/f2d.html

MIQmodel
Context-aware Mobile Internet Quality Model
SNSF-157003
Period: 2015 - 2018
Website: http://p3.snf.ch/Project-157003

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

WeezzLink
Chèque d'innovation CTI
17115.1 INNO-13-16-ES
2015

CitiGeo
Citizen-centered Photogrammetry Service Project
CTI project
Partners: Arx IT SA (Switzerland), Etat de Genève (Switzerland), Swiss Federal Office of Topography (Switzerland), University of Geneva (Switzerland)
Period: March 2015 - September 2016
Website: http://www.citigeo.ch/

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
- **Projet Transverse I**
- **CAS Protection des données (Data Protection)** (Director)

Giovanna Di Marzo Serugendo and Jose Luis Fernandez-Marquez:
- **Self-adaptive systems**, ISS, Master course, 4 ECTS, 42 Hours, 6 students

Abdelaziz Khadraoui:
- **CAS MATIS-DSI**, ISS, Continuing education, 10 ECTS, 8 students

Dimitri Konstantas:
- **Réseaux de communication**, ISS, Bachelor, 48 hours, 12 students
- **Mobile Systems and Services**, ISS, Master, 48 hours, 10 students
- **Design of Multimedia Services**, ISS, Master, 48 hours, 12 students
- **Technologies for Services**, ISS, Master, 48 hours, 11 students
- **InfoSec (program director)**, ISS, Continuing education, 24 hours, 30 students

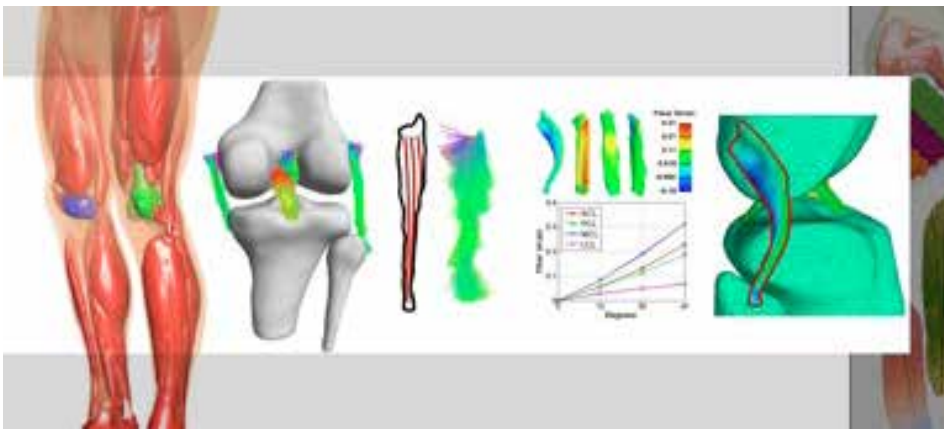


Figure 25: Multimodal knee articulation model © MIRALab

- **Systèmes d'information et sciences des services**, ISS, Master 2 Gestion d'entreprise / Continuing education, 24 hours, 20 students
- **MAS SCN (program director)**, Continuing education, 6 students

Laurent Moccozet:

- **Service Innovation Lab**, ISS, Master, 3 ECTS, 28 hours, 8 students
- **Introduction à la programmation**, ISS, Bachelor, 6 ECTS, 56 hours, 20 students
- **Services et technologies multimédia**, ISS, Bachelor, 6 ECTS, 56 hours, 60 students
- **Introduction à la sience des services**, ISS, Bachelor, 6 ECTS, 56 hours, 300 students

Jean-Henry Morin:

- **Systèmes d'Information et Applications**, ISS, Bachelor course, 3 ECTS, 28 hours, 153 students
- **Introduction à la Sécurité, Ethique et Règlementation des Services**, ISS, Bachelor course, 3 ECTS, 28 hours, 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
- **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**, Continuing 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, 29 students
- **Géolocalisation**, ISS, Master Journalisme et Communication, 5 ECTS, 14 hours, 19 students
- **Information Stratégique, Veille et Recherche d'Information**, ISS, Master Journalisme et Communication, 3 ECTS, 28 hours, 19 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, 10 students, participation for 28 hours
- **Systèmes d'information de l'environnement**, Master en sciences de l'environnement (MUSE) course, 3 ECTS, 28 hours, 55 students, participation for 4 hours

Claudine Métral:

- **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

Verena Kantere:

- **Advanced Databases**

latl.unige.ch

LATL

Laboratory for the Analysis and Technology of Language

Battelle building B works, 2014 Jan. 29th

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. Yves Scherrer
Jean-Philippe Goldman
Luka Nerima

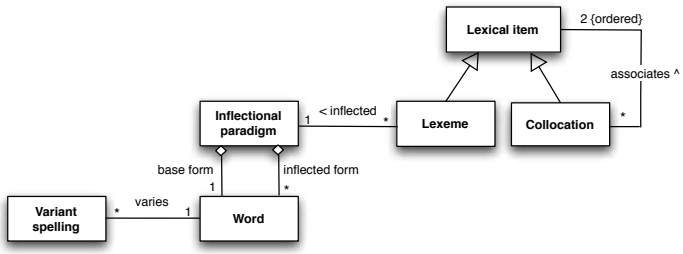
Assistants (PhD students)
Maria Ivanova
Sharid Loaiciga
Kamel Nebhi
Tiago Macedo

Internship Fellow
Mercedes Cardozo

Administration
Lara Broi
Eva Capitao

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

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



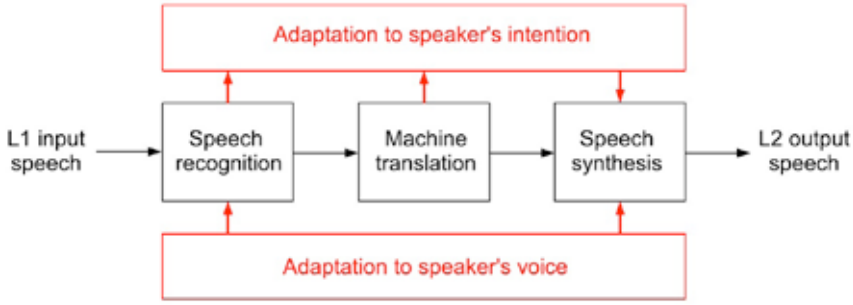


Figure 3: General concept of speech-to-speech machine translation, with SIWIS adaptations in red.

List of publications

Refereed papers in international journals

[1] Yves Scherrer & Tomaz Erjavec (2015): „Modernising historical Slovene words". Natural Language Engineering. Available on Cambridge Journals Online.

Full refereed papers in Conference Proceedings

[2] Maria Ivanova & Eric Wehrli (2015): Identification of Noun-Noun Compounds in the Context of Speech-to-Speech Translation. Proceedings of the 18th International Conference: Text, Speech and Dialogue (TSD) 2015, Pilsen, Czech Republic. Springer. Pages: 533-541.

[3] Tanja Samardzic, Yves Scherrer & Elvira Glaser (2015): Normalising orthographic and dialectal variants for the automatic processing of Swiss German. Proceedings of the 7th Language and Technology Conference: Human Language Technologies as a Challenge for Computer Science and Linguistics. Poznan, Poland.

[4] Yves Scherrer, Philippe Boula de Mareüil & Jean-Philippe Goldman (2015): Crowdsourced mapping of pronunciation variants in European French. Proceedings of ICPhS 2015, Glasgow.

Full refereed papers in Workshops Proceedings

[5] Maria Ivanova, Eric Wehrli & Luka Nerima (2015): Multiword Expressions in Machine Translation: The case of German compounds. Proceedings of the 2nd Workshop on Multi-word Units in Machine Translation and Translation Technology (MUMTTT2015), Malaga, Spain.

[6] Sharid Loáiciga. (2015). Predicting Pronoun Translation Using Syntactic, Morphological and Contextual Features from Parallel Data. Second Workshop on Discourse and Machine Translation (DiscoMT2015), Lisbon, Portugal.

[7] Sharid Loáiciga & Eric Wehrli. 2015). Rule-Based Pronominal Anaphora Treatment for Machine Translation. Second Workshop on Discourse and Machine Translation (DiscoMT2015), Lisbon, Portugal.

[8] Kamel Nebhi, Kalina Bontcheva & Genevieve Gorrell: ResToRinG CaPitaLiZaTion in #TweeTs. In: Proceedings of the 24th International World Wide Web Conference (WWW 2015) SocialNLP Workshop, Florence, Italia, May 18-22, 2015.

Books and book chapters

[9] Eric Wehrli & Luka Nerima (2015). The Fips Multilingual Parser, in Text, Speech, Language Tech., Vol. 48, Gala, Núria, Rapp, Reinhard and Bel-Enguix, Gemma (Eds.): Language Production, Cognition, and the Lexicon. Springer, pp. 473 - 490

Research and technical reports

[10] Philip N. Garner, Alexandros Lazaridis, Pierre-Edouard Honnet, Beat Pfister, Hui Liang, Eric Wehrli, Jean-Philippe Goldman, Maria Ivanova, Rob Clark, Junichi Yamagishi & M. Sam Ribeiro (January 2016). SIWIS: Spoken Interaction with Interpretation in Switzerland - Scientific Report 3: 01.12.2014 to 30.11.2015.

International and national Research Programs Committees

- Yves Scherrer: ANR, France (Evaluation of a research project related to dialect cartography)

Member of conference program committees

- Luka Nerima, program committee member, TALN 2015, Caen, France, juillet 2014.
- Yves Scherrer, SFCM (Fourth International Workshop on Systems and Frameworks for Computational Morphology), Stuttgart.
- Yves Scherrer, TALaRE (Traitement Automatique des Langues Régionales de France et d'Europe), TALN 2015, Caen.
- Yves Scherrer, LT4VarDial (Joint Workshop on Language Technology for Closely Related Languages, Varieties and Dialects), RANLP 2015, Hissar.

Refereeing

- Yves Scherrer: Computational Linguistics (CL).

Events organised in Geneva

- Luka Nerima, co-organizer of The First Digital Humanities Short Talks, November 25, Faculty of the humanities, Geneva, 2015

Invited talks

Luka Nerima

- Ada Lovelace cette informaticienne méconnue, Workshop "Femmes et vie publique : sors de ta chambre ! ", University of Geneva, March 12, 2015.

Eric Wehrli

- Federal University of Rio Grande do Sul, Brazil Impact of Collocations on Parsing and Translation, March 31, 2015.
- Béja, Tunisia, Collocations et résolution d'anaphores en traduction automatique, April 23, 2015.
- Nanyang Technological University, Singapore, Current Issues in Grammar-based Machine Translation, October 22, 2015.
- Malta, Collocations and Anaphora Resolution in Machine Translation, December 9, 2015.

Funded research projects

Participation to European projects

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

Participation to National projects

SINERGIA SIWIS: Spoken Interaction with Interpretation in Switzerland
Swiss NSF project
Principal Investigator: Ph. Garner and H. Bourlard (IDIAP)
Partners: Alexandros Lazaridis (Idiap), Pierre-Edouard Honnet (Idiap), Beat Pfister (ETH), Hui Liang (ETH), Eric Wehrli (UNIGE), Jean-Philippe Goldman (UNIGE), Maria Ivanova (UNIGE), Rob Clark (UEdin), Junichi Yamagishi (UEdin), M. Sam Ribeiro (UEdin).

Period: November 2012 - November 2015
Website: http://www.idiap.ch/project/siwis/

Knowledge engineering models and tools for the digital scholarly publishing of manuscripts
Swiss NSF Interdisciplinary project
Principal Investigator: Gilles Falquet (CUI – UNIGE)
Partners: Claire Forel (FTI - UNIGE) Luka Nerima (CUI – UNIGE)
Period: April 2015 - April 2017
Website: http://fds.unige.ch

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

Technology transfer

LATL.ch is a technology start-up specialized in the development of linguistic software components. Closely associated with LATL laboratory, LATL.ch develops and commercializes products based on fundamental research conducted in the university lab. Two companies use its POS-Tagger: Acapela Group, a European Speech synthesis company, and ShareWizMe, a French innovative company specialized in real time analysis of contributions (ideas, feedback, comments).

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

Others

- Luka Nerima (2015) «A Collocation Extraction Tool for Romanian» (in collaboration with : Violeta Seretan, Eric Wehrli and Amalia Todirascu), Parseme workshop, Iasi, Romania, September 2015.
- Luka Nerima (2015) : Génération de terminologies et d'index par extraction automatique d'expressions polylexicales, talk at The First Digital Humanities Short Talks.
- Faculty of the humanities, University of Geneva, November 25.
- Yves Scherrer (2015): La numérisation de l'atlas dialectologique de la Suisse allemande. Digital Humanities Short Talks, Université de Genève.
- Yves Scherrer (2015): ArchiMob - Un corpus annoté d'histoire orale en suisse allemand. Digital Humanities Short Talks, Université de Genève.
- Yves Scherrer: Co-organizer of the weekly research seminar of the Department of Linguistics, University of Geneva
- Sharid Loáiciga (2015). Bourse Doc.Mobility du FNS (P1GEP1_161877). Projet: Pronominal Anaphora for Machine Translation.
- Eric Wehrli (2015) : Extraction of Multilingual MWEs from Aligned Corpora (in collaboration with Aline Villaviciencio, UFRGS), Parseme workshop, Iasi, Romania, September 2015.
- Eric Wehrli (2015) : The Its-2 MT System: current state and Siwis adaptation, SIWIS Workshop, Edinburgh, March 2015.
- Eric Wehrli (2015) : Collocations in Translation, Parseme workshop, Malta, March 2015.

Teaching

Eric Wehrli:

- **Informatics I - Algorithms and programming**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 16 students
- **Informatics II - Data structures and Object Oriented Programming**, Computer Science for the Humanities, Bachelor, 4 ECTS, 42 hours, 12 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, 16 students
- **Informatics II - Java seminar**, Computer Science for the Humanities, Bachelor, 2 ECTS, 28 hours, 12 students
- **Informatics II - Object Oriented Project**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 8 students
- **Information and Communication Technology**, Computer Science for the Humanities, Bachelor, & Master, 12 ECTS, 112 hours, 13 students

Yves Scherrer:

- **Informatics I - Web programming**, Computer Science for the Humanities, Lecture, Bachelor, 6 ECTS, 56 hours, 28 students
- **Informatics I - Algorithms and programming**, Computer Science for the Humanities, Laboratory sessions, Bachelor, 6 ECTS, 56 hours, 10 students
- **Natural language processing, linguistic approaches and empirical approaches**, Computer Science for the Humanities, Laboratory sessions, Master, 4 ECTS, 56 hours, 20 students
- **Natural language processing for scarce resource language**, Lecture, Institute of Computational Linguistics, University of Zurich, Bachelor & Master, 56 hours, 10 students
- **Natural language processing and corpora: Alignment tools**, Lecture and laboratory sessions, University of Strasbourg, Master, 9 hours, 15 students

www.sib.swiss

PIG

Proteome Informatics Group

Battelle building B works, 2014 May 21th

Proteome Informatics Group

Domain activities

The Proteome Informatics Group (PIG) is involved in bioinformatics. Bioinformatics is a recently created discipline in which computer technology is applied to the understanding and effective use of biological data (see http://www.sib.swiss/bioinformatics-for-all/what-is-bioinformatics). At PIG, we concentrate on the study of proteins that are the active molecules of the cell. Extracting and studying proteins from a cell or a tissue requires the use of sophisticated experimental methods which generate large datasets. The analysis of this experimental data entails the identification and quantification of proteins, the determination of their cellular location, modifications, interactions and, ultimately, their function. This information is crucial to decipher cellular processes. This strongly motivates our group to develop software and databases that support data analysis and knowledge discovery in cooperation with Life scientists. These resources are made available through the ExPASy server (http://www.expasy.org). Our software tools mainly support experimental mass spectrometry data analysis, focused on the detection of posttranslational modifications. Our databases store knowledge of carbohydrates attached to proteins as well as protein-carbohydrate interactions.

The PIG joined the Computer Science Department in October 2015.

Team

Director
Frederique Lisacek
MER

Senior researchers
Dr. Markus Müller
Dr. Marcin Domagalski

Assistants (PhD students)
Davide Alocci
Oliver Horlacher
Aivett Bilbao (co-direction)
Emma Ricart
Thibault Robin
Thomas Stricker (co-direction)
Giulia Bianchi (co-direction)

Developers / Designers
Julien Mariethoz

Internship Fellow
Marie Ghraichy
Jessica Mottard

PIG team in 2016

PhD Thesis

- Aivett Bilbao Pena. Development of computational tools to improve data-independent workflows for the characterization of proteins and metabolites by Mass Spectrometry (co-direction with Prof. G. Hopfgartner, Life Sciences Mass Spectrometry Lab, UniGe), December 9, 2015

List of publications

Refereed papers in international journals

[1] Bilbao Aivett, Zhang Ying, Varesio Emmanuel, Luban Jeremy, Strambio-De-Castilla Caterina, Lisacek Frederique, Hopfgartner Gerard, Ranking fragment ions based on outlier detection for improved label-free quantification in Data-Independent Acquisition LC-MS/MS, ACS Publications, Journal of Proteome Research, Volume 14, issue 11, pp4581-93, November 2015

[2] Horlacher Oliver, Nikitin Frederic, Alocci Davide, Mariethoz Julien, Müller Markus, Lisacek Frederique, MzJava: An open source library for mass spectrometry data processing, Elsevier, Journal of Proteomics, Volume 129, pp63-70, November 2015

[3] Zhang Ying, Bilbao Aivett, Bruderer Tobias, Luban Jeremy, Strambio-De-Castillia Caterina, Lisacek Frederique, Hopfgartner Gerard, Varesio Emmanuel, The Use of Variable Q1 Isolation Windows Improves Selectivity in LC-SWATH-MS Acquisition, ACS Publications, Journal of Proteome Research, Volume 14, issue 10, pp4359-71, October 2015

Full refereed papers in Conference Proceedings

[4] Alocci Davide, Mariethoz Julien, Lisacek Frédérique, Glycan pattern search, 8th Semantic Web Applications and Tools for Life Sciences International Conference, CEUR Workshop Proceedings p38, Volume 1546, Cambridge, UK, December 7-10, 2015

PhD Thesis Committees

- Mounia Achoch, Rapporteur (F.Lisacek), Université de Grenoble Alpes, Annecy

Member of conference/workshop program committees

- Joint Network Tools and Applications in Biology (NETTAB) 2015 and Integrative Bioinformatics 2015, Bari, Italy, October 2015

Refereeing

- Journal of Proteome Research (JPR), PROTEOMICS

Editorial Responsabilities

- Editorial Board Member, PLOS One, Peer J, Biochimica et Biophysica Acta (BBA): Proteins and Proteomics, Clinical Applications in Proteomics

Funded research projects

Participation to European projects

GastricGlycoExplorer: Systems glycobiology of gastric cancer
Partner of ITN (FP7-PEOPLE-2012-ITN)
(coordinator NG Karlsson, Uni. Gothenburg, Sweden)
Period: May 2013 - May 2017

Participation to National projects

Spectral deconvolution of SWATH data for peptide identification and deciphering HIV-1 antiviral response mechanisms
Recipient with co-applicant G. Hopfgartner (Uni. Geneva) of SystemsX.ch- Interdisciplinary PhD (IPhD 2014/241)
extension of earlier SNF project for 1 year: 11/2014-10/2015

Others

- article in SIB Newsletter: http://www.isb-sib.ch/images/sib/7-about-us/corporate-publications/sib-newsletters/sib-nov2015-newsletter-en_web1.pdf
- The SIB PhD Fellowship programme addresses the fast growing need for well-trained bioinformaticians, specialized in analysing, visualizing and interpreting the massive amounts of data being generated in life science projects. In 2015, Emma Ricart was awarded a SIB PhD Fellowship under the supervision of Markus Muller and Frédérique Lisacek. She is working on the combination of bioinformatics tools and mass spectrometry analyses for the high-throughput discovery of new bioactive molecules.

Teaching

- **Protein expression and interaction**, Master, 42h, approx. 12 students, 4 ECTS.
- **Analysis and Processing of information**, Master, 56h, 4 ECTS.

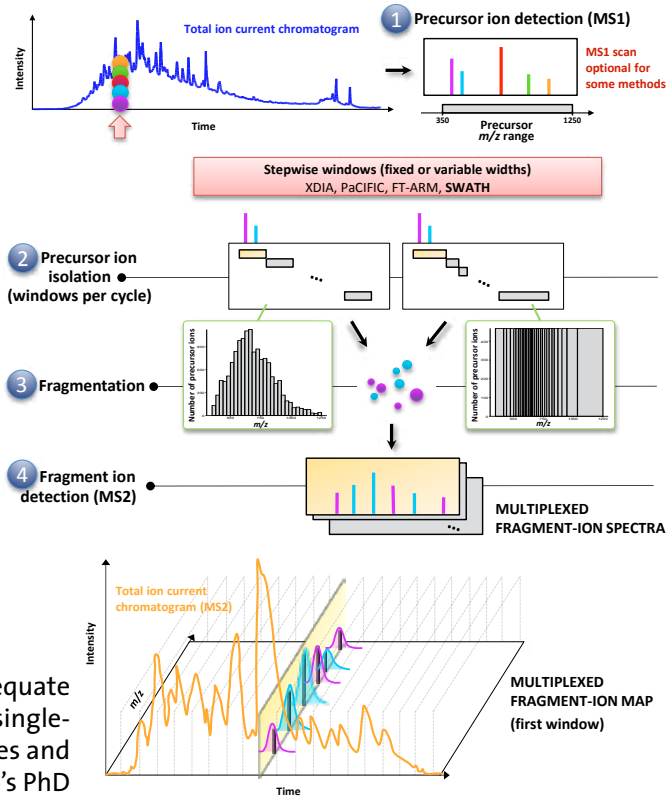


Figure 1: Mass spectrometry based methods coupled with adequate software solutions can deliver comprehensive information in a single-shot analysis to study the full range of small to large molecules and unravel biological processes. Source: Aivett Bilbao's PhD

smv.unige.ch

SMV

Software Modeling and Verification

Battelle building B works, 2015 Jan. 23th

Software Modeling and Verification

Domain activities

Symbolic Model Checking was developed with the idea of verifying complex 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 4500 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.

We currently develop several tools such as StrataGEM for the set rewriting principles and CosyVerif a meta-environment for managing formalisms and their verification tools. 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. 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. We also develop methods to adapt our formalisms to the domain of modeling and verification of cyber-physical systems.

Several application domain have been covered by the team such as the development of a domain specific language for computing on sets. This language is applied successfully for expressing various models of toxicology analysis in the context of health in the workplace.

Team

Director
Didier Buchs
Full professor

Senior researchers
Dr. Maximilien Colange
Dr. Alban Linard
Dr. Steve Hostettler

PhD students
Stefan Klikovits
David Lawrence
Edmundo Lopez
Dimitri Racordon

Administration
Maëlle Rümbeli
Lara Broi

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

PhD Thesis

- Edmundo Lopez, Symbolic Model-checking with Set Rewriting, June 2015.

List of publications

Refereed papers in international journals

[1] Alexis Marechal, Didier Buchs: Generalizing the Compositions of Petri Nets Modules. Fundam. Inform. 137(1): 87-116 (2015).

[2] Mihai-Lica Pura, Didier Buchs: Using Symbolic Techniques and Algebraic Petri Nets to Model Check Security Protocols for Ad Hoc Networks. TOPNOC 2015.

[3] Maximilien Colange, Dimitri Racordon, Didier Buchs: A CEGAR-like Approach for Cost LTL Bounds. CoRR abs/1506.05728 (2015).

[4] Maximilien Colange, Dimitri Racordon, Didier Buchs: Computing Bounds for Counter Automata. ECEASST 72 (2015).

Refereed papers in Conference Proceedings

[5] Maximilien Colange, Dimitri Racordon and Didier Buchs. Computing Bounds for Counter Automata, AVOCS 2015.

[6] Edmundo López Bóbeda, Maximilien Colange and Didier Buchs, Building a Symbolic Model Checker from Formal Language Description, ACSD 2015, june 2015, Brussels, Belgium.

[7] Stefan Klikovits, David P. Y. Lawrence, Manuel Gonzalez-Berges, Didier Buchs:?Considering Ex- ecution Environment Resilience: A White-Box Approach. SERENE 2015: 46-6.

International and national advisory committees

- Cosyverif project – Copil member.

PhD Thesis committees

- Yasir Itmtiaz Khan, PhD Thesis , Model-Driven development, Resilient Systems, Luxembourg, 2015. (Raporteur)

Member of conference program committees

- Program Committee of RSP'2015, Int. Conf. on Rapid System Prototyping, part of ESWeek in Amsterdam 8-9 october 2015.
- Program Committee of SERENE 2015, sept 2015, Paris.
- Program Committee of PNSE 2015, june 2015, Brussel, Belgium.
- Program Committee of Petri Nets 2015, june 2015, Brussels, Belgium.
- Program Committee of VOLT 2015.

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

Multi-Paradigm Modelling for Cyber-Physical Systems (MPM4CPS)
ICT COST Action IC1404
COST action management committee
Serene ERCIM Conference Steering Committee
RSP Conference Steering Committee

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

ESTATE

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

CERN

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

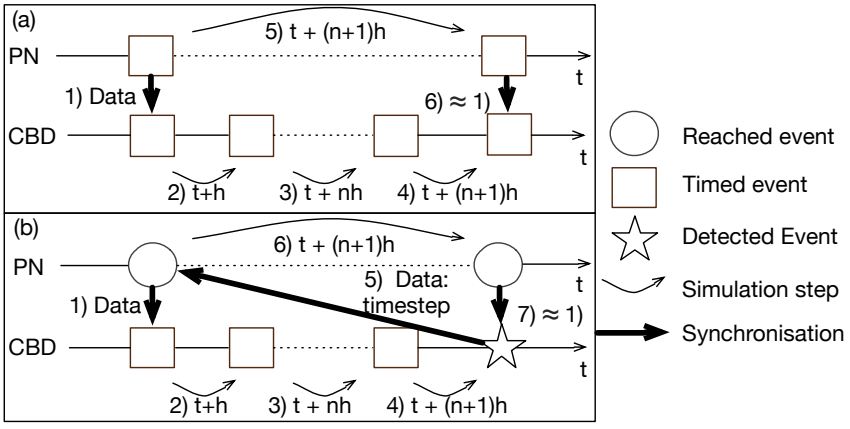
Toxicology

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

Stratos

Strategy based Term Rewriting for Analysis and Testing Of Software
FNFS 156068
Partners: Didier Buchs (UNIGE)
Period: April 2015 - March 2017

Figure 1: Synchronisation diagrams for the co-simulation in cyber-physical systems (PN= Petri net model, CBD= causal block diagram)



Others

Refereeing

- TOPNOC, IEE Transaction on Modeling

Editorial responsabilities

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

Events:

- Various public demonstrations in «Ramène ta science» with «Programmez un robot»

Invited talks

- D. Buchs: invited presentation at the MeFoSyLoMa, Paris 6 march 2015, «Sigma DD and StrataGEM».
- D. Buchs: Seminar at the CamPAM workshop, january 2015, Bellairs research institute, Barbados. «Multi-view modelling»
- DSM-TP (Domain Specific Modeling, Theory and Practice) 2015, 6 hrs, august 2015, Antwerp, Belgium.

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, 4 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

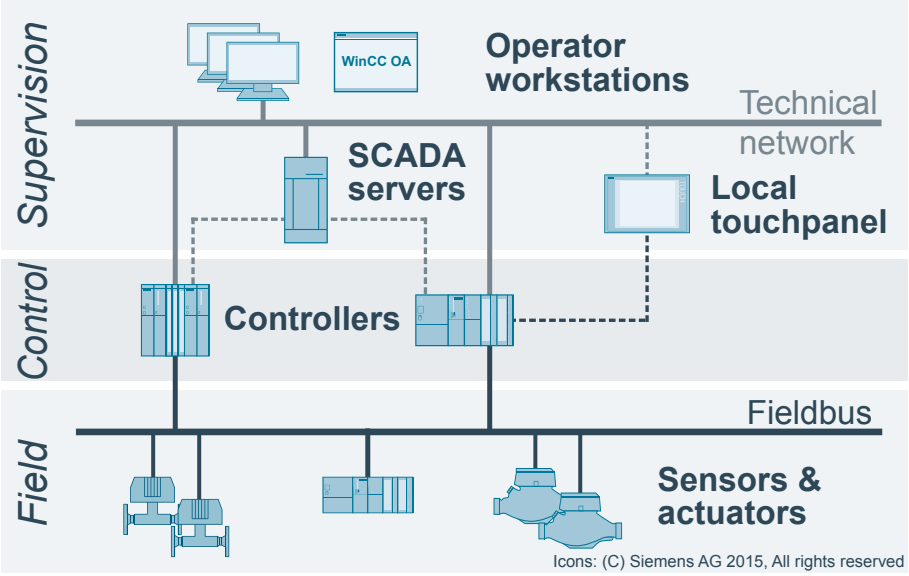


Figure 2: Layer model depicting the connection of field objects, frontend controllers (e.g. PLCs) and Operator Work Stations through SCADA (Supervisory Control and Data Acquisition) applications at CERN LHC

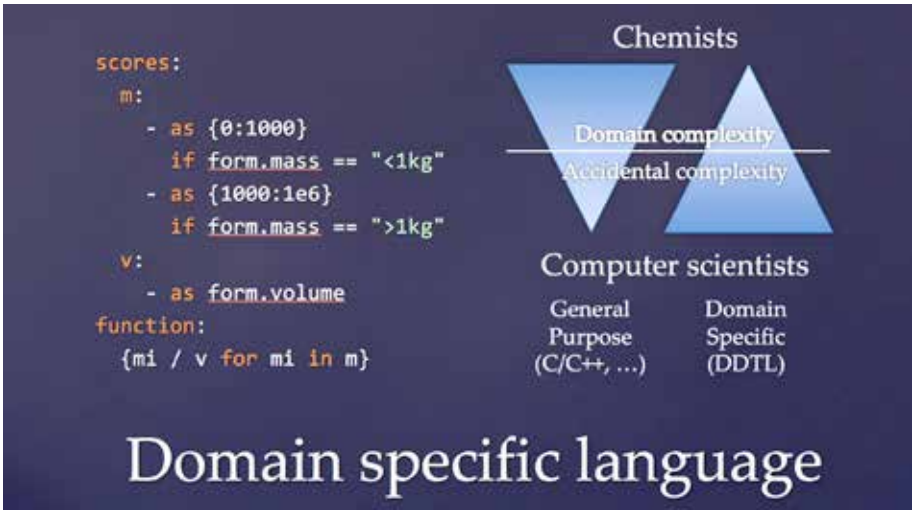


Figure 3: TREXMO is a tool built for chemical safety assessment, using multiple models of exposure. It is the result of a joined effort between the University of Geneva, the Institute for Work and Health and the State Secretariat for Economic Affairs.

Because the result of these models can vary for a given situation, it is desirable to have a tool able to run a scenario against multiple models with little to no user overhead. However, building such a tool can be rather complex, because of the complexity induced by the models translations, which is beyond the expertise of chemists.

In order to address this issue, we offered them a domain specific language that hides out this “accidental complexity” and let them deal with their “domain complexity”.

spc.unige.ch

SPC

Scientific and Parallel Computing

Battelle building B works, 2015 Dec. 3rd

Scientific and Parallel Computing

Domain activities

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

The modeling and simulation of biomedical processes and multiscale problem an important research direction. We have developed a numerical model that explain the formation of thrombus in a cerebral aneurysm. By combining biological observation and computer simulation, we have discover new prcesses governing the adhesion and aggregation of platelets, which is a central physiological process.

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 SystemX project EpiPhysiX, in collaboration with M. Milikovithch 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 distrtibuted 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.

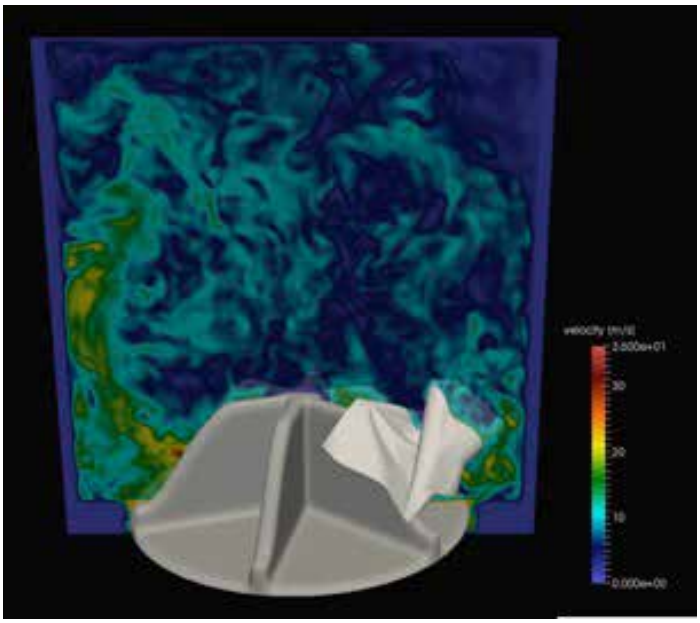


Figure 1: simulation of a cloth in a washing machine. Palabos software, Jonas Latt

Team

Director
Bastien Chopard
Full professor

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

PhD students
Christophe Charpilloz
Gregor Chliamovitch
Anton Golub
Pierre Kunzli
Sha Li
Aziza Merzouki
Xavier Meyer
Yann Thorimbert

Visiting Academic Guests
Dr. Sébastien Leclaire

Administration
Anne-Isabelle Giuntini

PhD Thesis

- Mohamed Ben Belgacem, Distributed and multiscale computing for scientific applications, Feb 13, 2015
- Christophe Charpilloz, Analysis of large biological data: Metabolic network modularization and prediction of N-terminal acetylation, Nov 17 2015

List of publications

Refereed papers in international journals

[1] Mohamed Ben Belgacem and Bastien Chopard,. A hybrid HPC/cloud distributed infrastructure: Coupling EC2 cloud resources with HPC clusters to run large tightly coupled multiscale applications, Future Gen. Comp. Sys., vol 42, pp 11-21, 2015

[2] Ranaivo Mahaleo Razakanirina and Bastien Chopard, Risk analysis and controllability of credit market. ESAIM: PROCEEDINGS AND SURVEYS, Vol. 49, p. 91-101, 2015.

[3] L. Mountrakis, E. Lorenz, O. Malaspinas, S. Alowayyed, B. Chopard, A.G. Hoekstra. Parallel performance of an IB-LBM suspension simulation framework. Journal of Computational Science, Vol 9. pp. 45—50, 2015.

[4] Anton Golub, Gregor Chliamovitch, Alexandre Dupuis and Bastien Chopard. Uncovering Discrete Non-linear Dependence with Information Theory. Entropy, 17, 2606-2623, 2015.

[5] G. Chliamovith, A. Dupuis, A. Golub and B. Chopard. Improving predictability of time series using maximum entropy methods. EPL, 110, 10003, 2015.

[6] Daniel Ribeiro de Sousa, Carolina Vallecilla, Kamil Chodzynski, Ricardo Corredor, Orestis Malaspinas, Omer Eker, Rafik Ouared, Luc Vanhamme, Alexandre Legrand, Bastien Chopard, Guy Courbebaisse, Karim Zouaoui Boudjeltia. Determination of a wall shear rate threshold for thrombus formation in intracranial aneurysms. Journal of NeuroInterventional Surgery. 2015-011737, 2015.

[7] Gregor Chliamovitch, Alexandre Dupuis and Bastien Chopard. Maximum Entropy Rate Reconstruction of Markov Dynamics}. Entropy , 17, 3738-3751, 2015.

[8] Karim Zouaoui Boudejltia, Daniel Ribeiro de Sousa, Pierrick Uzureau, Catherine Yourassowsky, David Perez-Morga, Guy Courbebaisse, Bastien Chopard and Frank Dubois. Quantitative analysis of platelets aggregates in 3D by Digital Holographic Microscopy. Biomedical Optics Express, vol 6(9), p. 3556--3563, 2015.

[9] Gregor Chliamovitch, Orestis Malaspinas and Bastien Chopard, A Truncation Scheme for the BBGKY2 Equation, Entropy, vol. 17, pp 7522-7529, 2015.

[10] Anton Golub, Gregor Chliamovitch, Alexandre Dupuis and Bastien Chopard. Multi-scale Representation of High Frequency Market Liquidity. Algorithmic Finance, in Press, 2015

Full refereed papers in Conference Proceedings

[11] Mohamed Ben Belgacem, Nabil Abdennadher, Towards a high level programming paradigm to deploy e-science applications with dynamic workflows on large scale distributed systems, 15th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing, May 4-7, 2015, Shenzhen, Guangdong, China.

[12] Ben Belgacem Mohamed and Abdennadher Nabil (2015), «A high level framework to develop and run e-science applications on Cloud infrastructures», IEEE HPCC 2015, New York, USA, August 24 – 26, 2015.

Books and book chapters

[13] Alexandru Mizeranschi, Derek Groen, Joris Borgdorff, Alfons G. Hoekstra, Bastien Chopard and Werner Dubitzky. Anatomy and Physiology of Multiscale Modeling and Simulation in Systems Medicine. in System Medicine, Volume 1386 of the series Methods in Molecular Biology, pp 375-404, Springer Protocols, 2015.

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

- Fahrang Mosheni, Rapporteur, ETHZ, 23 Jan 2015, Zurich.
- Jimmy Dubuisson, Expert, UNIGE 22 May 2015, Geneva.
- Julien Bryois, Expert, 17 June, 2015, UNIGE, Geneva.
- Lampros Mountkaki , Rapporteur, UvA, Amsterdam, Sept 1, 2015.
- Yue Zhang, Rapporteur, INSA-Lyon, Sep 25, 2015.
- Mohsen Bagheri, Expert, UNIGE, Oct 29, Geneva.
- Nicolas Maquignon, Rapporteur, Uni Calais, Nov 4, France.
- Simon Tanaka, Rapporteur, ETHZ, Dec 18, 2015, Basel.

Conference organization as chair or co-chair

- CADMOS Day June 11, EPFL, co-chair.
- CADMOS Activity Days Sept 7-9, Leysin Jonas Latt & J.-L Falcone, chairs.
- HPC-CH, co-chair, Oct 22-23 2015, Geneva.

Member of conference program committees

- DSFD Discrete Simulation of Fluid Dynamics, Edinburgh July 2015

Funded research projects

Participation to European projects

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

Participation to National projects

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 advanded codon models of natural selection
CR3213_1437 68/1
Partners: Nicolas Salamin, M Robinson-Rechavi (UNIL)
Period: April 2013 - December 2015

Others

Refeereeing

- Referee for many intenational journals

Editorial responsibilities

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

Events organized in Geneva

- HPC-CH, co-chair, Oct 22-23 2015, Geneva.

Invited talks

- GCC TechLunch Oct 13, 2015, Geneva: "HPC et Big Data"

Teaching

- **Méthodes Heuristiques d'apprentissage et d'optimisation**, Computer Science, Master, 6 ECTS, 70 hours, 20 students
- **Parallelisme**, Computer Science, Bachelor, 4 ECTS, 56 hours, 15 students
- **Algorithmique**, Computer Science, Bachelor, 4 ECTS, 56 hours, 15 students
- **Algorithme paralleles/probabilistites**, Computer Science, Master, 4 ECTS, 56 hours, 6 students
- **Modélisation et simulation de phénomènes naturels**, Computer Science, Master, 4 ECTS, 56 hours, 15 students

Supervision of Master thesis

- Lino Velasquez
- Ryan Cherifa

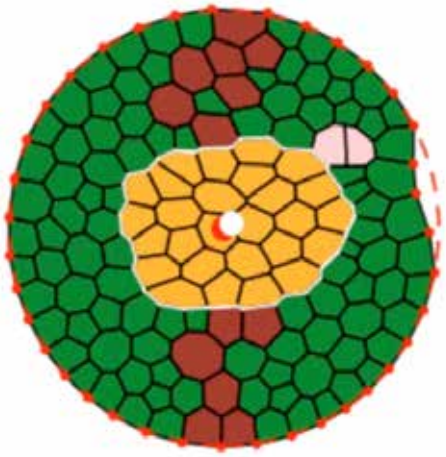
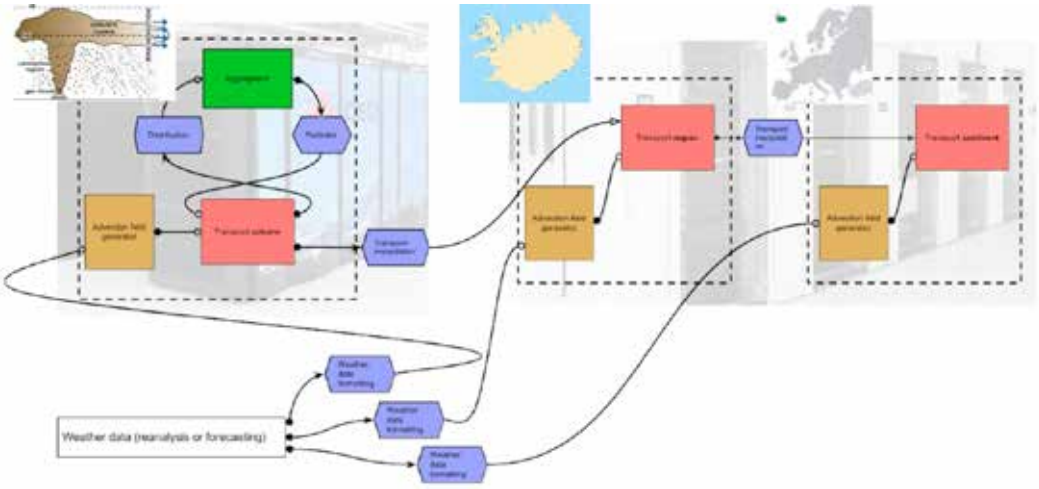


Figure 2: Simulation of the competition between two type of growing cells, for the case of the Acomys mouse. Projet EpiPhysiX, image A. Merzouki.

Figure 3: TETRAS software is an advance simulation tool to predict the transport and deposition of volcanic ashes at 3 different scales (around the volcano, regional and continental). The technology developed for this project allows a cycylic workflow across several supercomputers.



tcs.unige.ch

TCS

Theoretical Computer Science

Battelle building B works, 2016 Feb. 12th

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.

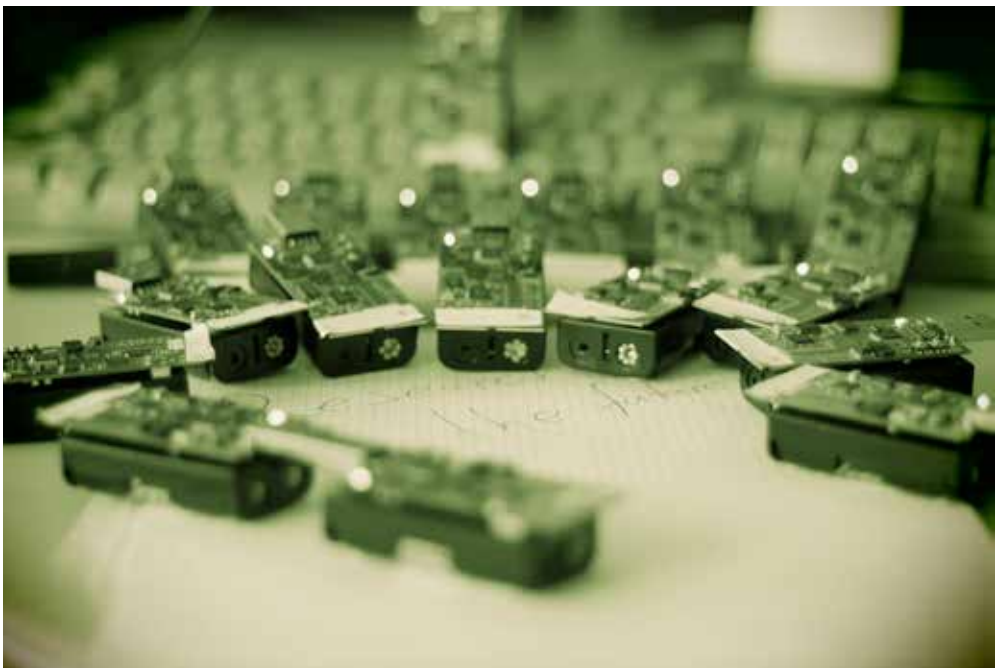


Figure 1: Testing experimental algorithms and models on Wireless Sensor Networks (WSN)
© Orestis Evangelatos

Team

Director
José Rolim
Full professor

Senior researchers
Dr. Pierre Leone (MER)
Dr. Constantinos Marios Angelopoulos
Dr. Ricardo Wehbe
Dr. Marios Karagiannis

Lecturer
Eduardo Solana

Assistants (PhD students)
Julia Buwaya
Napoleon-Orestis Evangelatos
Stéphane Kündig
Cristina Muñoz
Eugenio Noto
Kasun Wijesiriwardana Samarasinghe

Administration
Lara Broi

PhD thesis

- Napoleon-Orestis Evangelatos. Efficient algorithms, architectures and implementations in Internet of Things and Smart Environments, November, 2015

List of publications

Refereed papers in international journals

[1] Pierre Leone, Kasun Samarasinghe Geographic Routing on Virtual Raw Anchor Coordinates, Theoretical Computer Science 2015.

[2] Improving Sensor Network Performance with Wireless Energy Transfer, Constantinos Marios Angelopoulos, Sotiris Nikoletseas, Theofanis P. Raptis, Christoforos Raptopoulos, Filippos Vasilakis, International Journal of Ad Hoc and Ubiquitous Computing, Inderscience Publishers, in press, 2015.

[3] Wireless Energy Transfer in Sensor Networks with Adaptive, Limited Knowledge Protocols, Constantinos Marios Angelopoulos, Sotiris E. Nikoletseas, Theofanis P. Raptis, Computer Networks 70: 113-141, Elsevier Journal, in press, 2015.

[4] Design and Evaluation of Characteristic Incentive Mechanisms in Mobile Crowdsensing Systems, Constantinos Marios Angelopoulos, Sotiris Nikoletseas, Theofanis P. Raptis, Jose Rolim, Simulation Modelling Practice and Theory, Volume 55, Pages 95-106, Elsevier, June 2015.

Full refereed papers in Conference Proceedings

[5] Anna Stahlbrost, Orestis Evangelatos, Srdjan Krco, Sebastien Ziegler, Constantinos M. Angelopoulos, Sotiris. Nikoletseas and Theofanis P. Raptis, Understanding crowdsourcing modes and crowd motivators in Proceedings of the 14th International Society for Professional Innovation Management, ISPIM, June 2015.

[6] Marios Angelopoulos, Julia Buwaya, Orestis Evangelatos and Jose Rolim, Traversal Strategies for Wireless Power Transfer in Mobile Ad-Hoc Networks, ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems, (MSWIM), ACM, pp. 31-40, November, 2015.

[7] Orestis Evangelatos and Jose D. P. Rolim, AIRWISE - An Airborne Wireless Sensor Network for Ambient Air Pollution Monitoring, {SENSORNETS} 2015 - Proceedings of the 4th International Conference on Sensor Networks, Scitepress, pp. 231-239, February, 2015.

[8] Andreea Hossmann-Picu, Zan Li, Zhongliang Zhao, Torsten Braun, Constantinos Marios Angelopoulos, Orestis Evangelatos, Jose Rolim, Michela Papandrea, Kamini Garg, Silvia Giordano, Aristide Tossou, Christos Dimitrakakis and Aikaterini Mitrokotsa, Synergistic User Context Analytics, ICT Innovations 2015, Springer, pp. 163—172, October 2015.

[9] Stevan Jokic, Aleksandra Rankov, Joao Fernandes, Michele Nati, Sebastien Ziegler, Theofanis Raptis, Constantinos M. Angelopoulos, Sotiris Nikoletseas, Orestis Evangelatos, Jose Rolim and Srdjan Krco, IoT Lab - Crowdsourced Experimental Platform Architecture, 5th International Conference on Information Society and Technology (ICIST), Serbia, March, 2015

[10] Constantinos Marios Angelopoulos, Orestis Evangelatos, Sotiris E. Nikoletseas, Theofanis P. Raptis, Jose D. P. Rolim and Konstantinos Veroutis, A user-enabled testbed architecture with mobile crowdsensing support for smart, green buildings. 2015 IEEE International Conference on Communications, (ICC), IEEE, pp. 573—578, June 2015.

[11] Towards a Holistic Federation of Secure Crowd-enabled IoT Facilities Constantinos Marios Angelopoulos, Gabriel Filios, Sotiris Nikoletseas, Theofanis P. Raptis, Jose Rolim, Konstantinos Veroutis, Sebastien Ziegler, IEEE International Conference on Communications, London, UK, (ICC 2015).

[12] IoT Lab: Towards Co-design and IoT Solution Testing Using the Crowd Joao Fernandes, Srdjan Krco, Aleksandra Rankov, Stevan Jokic, Michele Nati, Nikos Loumis, Constantinos Marios Angelopoulos, Sotiris Nikoletseas, Theofanis P. Raptis, Sebastien Ziegler, 1st International Conference on Recent Advances in Internet of Things, Singapore, (RIoT 2015).

[13] Sébastien Ziegler, Sotiris E. Nikoletseas, Srdjan Krco, José D. P. Rolim, Joao Fernandes: Internet of Things and crowd sourcing - a paradigm change for the research on the Internet of Things. WF-IoT 2015: 395-399

[14] Kasun Samarasinghe, Pierre Leone, Greedy Zone Routing: Scalable Routing in Large Scale Wireless Ad-hoc Networks, 2015 IEEE International Conference on Sensing Communication and Networking, (SECON), IEEE, pp. 172—173, June 2015.

[15] Kasun Samarasinghe, Ricardo Wehbe Pierre Leone, Greedy Zone Routing: Scalable and Robust Routing in Large Scale Wireless Ad-hoc Networks, 2016 IEEE International Conference on Advanced Information Networking and Applications (AINA), IEEE, To appear

[16] Muñoz, C., Rocci, L., Solana, E. and Leone, P.: Performance Evaluation of Searchable Symmetric Encryption in Wireless Sensor Networks. In: Proc. 2nd Intl. Conference on Safety and Security in Internet of Things, SaSeIoT (2015), Rome, Italy.

[17] Muñoz, C., Leone, P. : Fragmented-Iterated Bloom Filters for Routing in Distributed Event-Based Sensor Networks. In: Proc. 8th Intl. Conference on Internet and Distributed Computing Systems, IDCS (2015), Windsor, United Kingdom.

Books and book chapters

[18] Naveen Garg, Klaus Jansen, Anup Rao, José D. P. Rolim: Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques, APPROX/RANDOM 2015, August 24-26, 2015, Princeton, NJ, USA. LIPIcs 40, Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik 2015, ISBN 978-3-939897-89-7

International and national Research Programs Committees

- Dr. Angelopoulos: Personally invited by the new International Telecommunication Union (ITU) Rapporteur of Question 1 at Study Group 20 on the Internet of Things, Mr. Sebastien Ziegler, as editor on crowdsourcing potential for IoT and Smart Cities. (sziegler@mandint.org)

PhD Thesis committees

- Dr. Angelopoulos: Member of the examining committee of the Ph.D. thesis of Dr. Orestis Evangelatos, "Efficient Algorithms, Architectures and Implementations in Internet of Things and Smart Environments", University of Geneva.

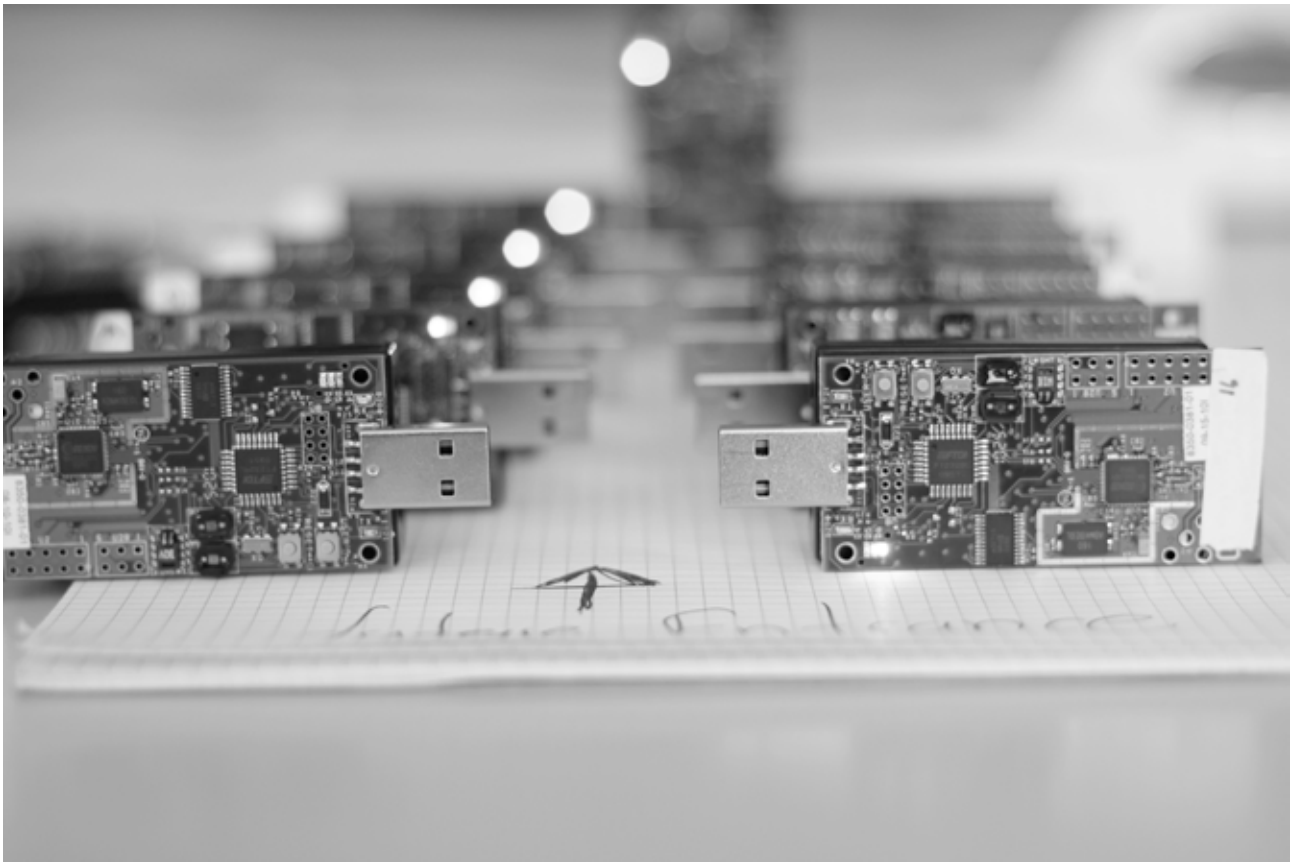
Conference organization as chair or co-chair

- Track chair IEEE ICDCS 2015 - Algorithms and Theory Track, Columbus Ohio, USA, May 2015: Jose Rolim
- DCOSS 2015 IEEE International Conference on Distributed Computing in Sensor Systems, Fortaleza Brazil, June 2015 - chair steering committee: Jose Rolim
- APPROX 2015 – 18th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems - Princeton University Aug.24-Aug.26 2015 - chair steering committee: Jose Rolim
- RANDOM 2015 - 19th International Workshop on Randomization and Computation – Princeton University Aug.24-Aug.26 2015 -chair steering committee: Jose Rolim
- SEA 2015– 14th International Symposium on Experimental Algorithms –May –Paris, France - chair steering committee: Jose Rolim
- ALGOSENSORS 2015 - 11th International Workshop on Algorithms for Sensor Systems, Wireless Ad Hoc Networks and Autonomous Mobile Entities –Patras, Greece - member steering committee: Jose Rolim
- IPDPS 2015 - 27th IEEE International Parallel & Distributed Processing Symposium. May 2015, Hyderabad, India - member steering committee: Jose Rolim

Member of conference program committees

- Dr. Angelopoulos: Technical Programme Committee (TPC) member of IEEE ICDCS 2015 - Algorithms and Theory Track , IEEE ICC 2015 - Internet of Things Track, IEEE ISSNIP 2015 – Sensor Networks Track, ALGOSENSORS 2014 - Experiments Track.
- Pierre Leone, program committee member: MOBIWAC 2015, AdHocNow 2015, FUTURE COMPUTING 2015, SENSORNET 2015, UBICOMM 2015, TPMC 2015, SENSORCOMM 2015.
- Jose Rolim 3rd Workshop on Distributed Cloud Computing (DCC 2015) co-located with ACM SIGMETRICS 2015 – Portland US.
- Jose Rolim - The Ninth International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies - UBICOMM 2015 - July 19 - 24, 2015 - Nice, France.

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



Funded research projects

Participation to European projects

IoT Lab
Researching crowdsourcing to extend IoT testbed infrastructure for multidisciplinary experiments, with more end-user interactions, flexibility, scalability, cost efficiency and societal added value
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 Univers ity of Technology – Centre for Distant Spanning Technology (CDT) LTU Sweden, University of Southampton Soton UK, University of Surrey
Period: October 2013 – September 2016
Website: http://www.iotlab.eu/

Participation to National projects

Swiss Sense Synergy
FNSR
Principal Investigator: José Rolim
Period: 2015 - 2018

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
Principal Investigator: Pierre Leone
Period: 2012 - 2015

Others

Refeereeing

- Dr. Angelopoulos: Reviewer for the following journals: IEEE Transactions on Computers (TC), Elsevier's Computer Networks (COMNET), Elsevier's Computer Communication (ComCom), Elsevier's Simulation Modelling Practice and Theory (SIMPAT).
- Pierre Leone, Reviewer for Zentralblatt MATH, ACM Transactions on sensor networks, Computer Networks Journal (COMNET)

Editorial responsibilities

- International Journal of Distributed Sensor Networks (IJDSN), November 2015- June 2016, Napoleon-Orestis Evangelatos, Guest Editor
- Member of the Editorial Board of the Journal Ad Hoc & Sensor Wireless Networks (Sector Editor), http://www.oldcitypublishing.com/AHSWN/AHSWN.html - Pierre Leone
- Member of the Editorial Board of the journal Algorithm letters, http://scik.org/index.php/al - Pierre Leone
- Member of the Editorial Board of the journal ISRN Sensor Networks, www.isrn.com/journals/sn/ - Pierre Leone
- Member of the Editorial Board of the journal Algorithms, http://www.mdpi.com/journal/algorithms - Pierre Leone
- Member of the Editorial board of the journal Computer Science Review. Jose Rolim

Best Paper Award

- Muñoz, C., Leone, P. : Fragmented-Iterated Bloom Filters for Routing in Distributed Event-Based Sensor Networks. In: Proc. 8th Intl. Conference on Internet and Distributed Computing Systems, IDCS (2015), Windsor, United Kingdom.

Others awards

- Award granted by the "Swisscom Innovation Award 2016" to Blaise Carron for conducting his bachelor thesis under the supervision of Dr. Pierre Leone and Dr. Napoleon-Orestis Evangelatos.
- Dr. Angelopoulos among the 10 researchers selected for the Academy Industry Training programme 2015 organised by Swissnex, EPFL, Venture Lab.

Teaching

- **Distributed Algorithms for Wireless Sensor Networks**, Computer Science, Master, 4 ECTS, 56 hours, 25 students
- **Complexité et calculabilité**, Computer Science, Bachelor, TP, 4 ECTS, 56 hours, 24 students
- **Langages Formels**, Computer Science, Bachelor, TP, 4 ECTS, 56 hours, 39 students
- **Programmation des Systèmes, systèmes concurrents et distribués, réseaux informatiques**, Computer Science, Semester lecture, 4 ECTS
- **Cryptographie et sécurité**, Computer Science, Bachelor, 4 ECTS, 56 hours, 15 students
- **Securité des Systèmes d'Information**, Computer Science, Master, 4 ECTS
- **Intelligence Artificielle**, Bachelor, 4 ECTS, 56 hours, 25 students

Administrative Staff


Lara Broi


Marie-France Culebras


Anne-Isabelle Giuntini


Maëlle Rümbeli

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

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

- **Elie Zagury** is direction assistant;

Secretariat: Works at the departments level of CUI. Hiring and contract renewals of doctoral students as well as all the tasks related to CUI operations are handled by the secretariat. It also provides a perfect connection to major University services such as HR, accounting, etc.

- **Lara Broi** is secretary.
- **Marie-France Culebras** is secretary;
- **Anne-Isabelle Giuntini** is part-time secretary (50%);
- **Maëlle Rümbeli** is part-time secretary (50%);

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

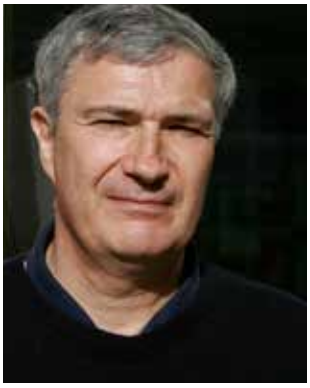
- **Nicolas Mayencourt** is system-engineer;
- **Daniel Agulleiro** is system-engineer;


Nicolas Mayencourt, Elie Zagury, Daniel Agulleiro

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

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


Amélia Bossard


Jérôme Napoléon

Financial Report

CUI

Staff	CHF 859'157.-
• Academic	CHF 274'156.-
• Administrative and Technical	CHF 422'635.-
• Employer's social contributions	CHF 162'366.-
Operating costs - Investment	CHF 78'900.-
Operating costs - Others	CHF 190'060.-
CUI subtotal	**CHF 1'128'117.-**

Faculty of sciences (Computer Science Department)

Staff	CHF 3'206'559.-
• Academic	CHF 2'456'357.-
• Administrative and Technical	CHF 170'181.-
• Employer's social contributions	CHF 580'021.-
Operating costs - Investment	CHF 66'770.-
Operating costs - Others	CHF 33'840.-
Sciences subtotal	**CHF 3'307'169.-**

Geneva School of economics and management & Geneva School of Social Sciences (ISS)

Staff (estimation)	CHF 1'794'218.-
• Academic, incl. Charges (estimation)	CHF 1'427'258.-
• Administrative and Technical, incl. Charges (estimation)	CHF 37'410.-
• Employer's social contributions (estimation)	CHF 329'550
Operating costs - Investment	CHF 0.-
Operating costs - Others	CHF 0.-
Economics and management subtotal	**CHF 1'794'218.-**

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

Staff - Academic, incl. Charges (estimation)	CHF 875'384.-
Operating costs	CHF 20'000.-
Humanities subtotal	**CHF 895'384.-**

TOTAL BUDGET	**CHF 7'124'888.-**

External funding obtained by the professors	Credit
CUI	
Swiss-funded Projects	CHF 15'000.-
CUI subtotal	**CHF 15'000.-**
Faculty of sciences (Computer Science Department)	
UE-funded Projects	CHF 223'603.-
Swiss-funded Projects	CHF 1'835'448.-
Sciences subtotal	**CHF 2'059'051.-**
Geneva School of economics and management & Geneva School of Social Sciences (ISS)	
UE-funded Projects	CHF 2'189'699.-
Swiss-funded Projects	CHF 682'351.-
Economics and management subtotal	**CHF 2'872'050.-**
Faculty of humanities (Unit of Computer Science for the Humanities)	
Swiss-funded Projects	CHF 247'739.-
Humanities subtotal	**CHF 247'739.-**
TOTAL CREDIT	**CHF 5'193'840.-**

UNIVERSITÉ
DE GENÈVE

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