Centre Universitaire d'Informatique

2011

Activity Report

UNIVERSITÉ DE GENÈVE

UNIVERSITY OF GENEVA
Centre Universitaire d'Informatique
Battelle - Bâtiment A
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CH-1227 Carouge
cui.unige.ch

Foreword

The year of 2011 has seen the Centre Universitaire d'Informatique - CUI - being honoured by many awards and new projects to the different research groups and members. In particular, projects in cooperation with other Swiss institutions financed by the Hasler Foundation were launched. For instance, projects in cooperation with the HES of Fribourg and Yverdon and the CSEM of Neuchatel were accepted. Also new EU projects with the participation of the CUI were initiated this year, for instance we can cite the projects Parlance, Wayfis, Thrombus among many others. National research projects financed by the Swiss National Foundation were also launched by the several research groups. The CUI is proud of the recognition given by such awards and projects detailed in this report. As director of the CUI it is my pleasure to invite the reader to discover the main scientific and educational activities of our several laboratories and research groups during the past year.

We welcome the promotions of Bastien Chopard as Full Professor and of Paola Merlo, Gilles Falquet and Stephane Marchand-Maillet as Associated Professors. We look forward to continue our work with these colleagues in their new positions.

In the interface with the city and with the students, we promoted the research of the CUI and of their members by different activities at different occasions, for instance: the Information and Technology day at the College Emilie Gourd Geneva, by hosting Dutch bachelor students for a day, and by several active participation on events organized by the communication service of the University.

This is my last activities report as director of the CUI, since on August 2012, Prof. Eric Wehri will occupy this function. Prof. Wehrli is a well known world expert in computational linguistic and has proved his administrative abilities during his term as dean of the Faculty of Humanities.
I would like to warmly welcome Prof. Wehrli on his new functions and at the same time acknowledge the help of all of you during my term as director of the CUI, in particular, the precious help of Mr. Elie Zagury at the administration of the CUI.

Welcome to the CUI

Prof. José Rolim
Director of the CUI
University of Geneva

Faculty of Sciences
Computer Science Department

CVML

Computer Vision and Multimedia Laboratory

cvml.unige.ch

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.

Content-based Visual Indexing and Retrieval group (Viper, MER. S. Marchand-Maillet, http://viper.unige.ch): develops strategies for the efficient indexing retrieval and exploration of large multimedia databases. The group studies the complete chain of multimedia management from multimedia processing to content modeling, description and storage and interactive retrieval.

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

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

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 3.5Tb, Raid 5) and processing capabilities (1 Transtec Calleo (2 Xeon Dual Core, 12Gb RAM) and 2 SunFire X4150 (2 QuadCore, 32Gb RAM each), all 64bits architecture).
- Biosemi Active II EEG acquisition system (http://www.biosemi.com/) with 64+16 electrodes, with other sensors to record heart rate, GSR, skin temperature, breathing rate, blood pressure, and EMGs;
- Guger Technology gTec gMobilab+ mobile physiological signals recording system (http://www.gtec.at/);
- Eckel C14 audiometric research chamber (http://www.eckel.ca/) with electromagnetic insulation (Faraday cage), 2.16m x 1.80m x 2.37m;
- eye gaze-tracker QuickGlance 2 (EyeTech Digital Systems);
- head-mounted display Emagin z800;
- stereo cameras: Videre Design STH-MDCS2, Bumblebee CCD BB2-03S2C-60;
- 3D time-of-flight camera SR4000 3D;
- combined 3D time-of-flight + luminance camera PMD CamCube 3.0 200x200 pixels;
- combined 3D + color camera Microsoft Kinect.

Team

Directors
Thierry Pun
Full professor

Sviatoslav Voloshynovskiy
Associate professor

Stéphane
Marchand-Maillet
Associate professor

Members
Dr. Guido Bologna (senior researcher)
Dr. Guillaume Chanel (post-doc, also affiliated with the Swiss Center for Affective Science)
Dr. Oleksiy Koval (S-MER)

Assistants (PhD students)
Fokko Beekhof
Benoît Deville(until Sept. 2011)
Moritz Diephuis
Farzad Farhadzadeh
Juan Gomez
Taras Holotyak
Jana Kludas (until April 2011)
Hisham Mohamed
Donn Morrison (until Sept. 2011)
Mohammad Soleymani (PhD Nov. 2011)
Ke Sun (since Oct. 2010)
Eniko Szekely (until Dec. 2011)
Marc von Wyl

Trainee
Sophie Adama

PhD thesis

- Mohammad Soleymani, «Implicit and automated emotional tagging of videos», Thesis No. 4368. Jury: Prof. Maja Pantic. Imperial College, London, UK and Univ. of Twente, The Netherlands, Prof. Didier Grandjean, Faculty of Psychology and NCCR Affective Sciences, Univ. of Geneva, Dr. S. Marchand-Maillet, Prof. T. Pun, November 2011

- Donn Morrison, «Latent variable modelling of user interaction in image retrieval», Thesis No 4305, Department of Computer Science, University of Geneva, February 2011

- Eniko Szekely, «Dimension reduction for clustered high-dimensional data», Thesis No 4333, Department of Computer Science, University of Geneva, March 2011

List of publications

Refereed papers in international journals

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

[2] C. Chênes, G. Chanel, M. Soleymani, T. Pun, «Highlights detection in movie scenes through physiological linkage», Extended summary for a proposed submission to: Social Media Retrieval, N. Ramzan, R. van Zwol, Jong-Seok Lee, K. Clüver, Xian-Sheng Hua. Submitted Nov. 2011. Accepted for submission of full paper, Dec. 2011.

[3] M. Soleymani, M. Pantic, T. Pun, «Multi-modal emotion recognition in response to videos», IEEE Trans. on Affective Computing, Subm., Jan. 2011. Accepted Nov. 2011, to be published.

[4] M. Soleymani, J. Lichtenauer, T. Pun, M. Pantic, «A multi-modal database for affect recognition and implicit tagging», IEEE Trans. on Affective Computing, Special Issue on Naturalistic Affect Resources for System Building and Evaluation, B. Schuller, L. Devillers, R. Cowie, E. Douglas-Cowie, A. Batliner, Guest Editors. Accepted 2011. To appear.

[5] S. Koelstra, C. Mühl, M. Soleymani, Jong-Seok Lee, A. Yazdani, T. Ebrahimi, T. Pun, A. Nijholt, I. Patras, «DEAP: A database for emotion analysis using physiological signals», IEEE Trans. on Affective Computing, Special Issue on Naturalistic Affect Resources for System Building and Evaluation, B. Schuller, L. Devillers, R. Cowie, E. Douglas-Cowie, A. Batliner, Guest Editors. Accepted 2011. To appear.

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

[7] G. Bologna, B. Deville, T. Pun, «Toward local and global perception modules for vision substitution», Neurocomputing, Vol. 74, No. 8, March 2011, 1182-1190 (Online: doi:10.1016/j.neucom.2010.07.022).

[8] J. J. M. Kierkels, M. Soleymani, T. Pun, «Identification of narrative peaks in clips: text features perform best», VideoCLEF 2009, Cross Language Evaluation Forum (CLEF) Workshop, Post-Conference Proc., Springer LNCS, 2011.

[9] S. Voloshynovskiy, O. Koval, F. Beekhof and T. Holotyak, «Information-theoretic multiclass classification based on binary classifiers: on coding matrix design, reliability and maximum number of classes», Journal of Signal Processing Systems, Vol. 65, Issue 3, 2011, pp. 413-430. (invited paper)

Full refereed papers in Conference Proceedings

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

[11] J. Gomez, G. Bologna, T. Pun, «A virtual ceiling mounted depth camera using orthographic Kinect», ICCV 2011, 13th Int. Conf. on Computer Vision, 6-13 Nov. 2011, Barcelona, Spain (demonstration track with abstract).

[12] J. Gomez, G. Bologna, T. Pun, «3D scene accessibility for the blind via auditory-multitouch interfaces'», AEGIS Workshop and Int. Conf. «Accessibility Reaching Everywhere», Brussels, Belgium, 28-30 November, 2011.

[13] J. Gomez, S. Mohammed, G. Bologna, T. Pun, «Toward 3D scene understanding via audio-description: Kinect-iPad fusion for the visually impaired», ACM ASSETS 2011, 24-26 Oct. 2011, Dundee, Scotland (Demonstration track with short paper).

[14] J. Gomez, G. Bologna, B. Deville, T. Pun, «Multisource sonification for visual substitution in an auditory memory game: one, or two fingers?», ICAD 2011, Int. Conf. on Auditory Display, June 20-24, 2011, Budapest, Hungary.

[15] M. Larson, M. Soleymani, P. Serdyukov, Organizers, Special session on «Automatic tagging and geo-tagging in video collections and communities», ACM Int. Conf. on Multimedia Retrieval (ICMR) 2011, April 17-20, 2011, Trento, Italy.

[16] M. Larson, M. Soleymani, P. Serdyukov, S. Rudinac, C. Wartena, G. Friedland, V. Murdock, R. Ordelman and G. J.F. Jones, «Automatic tagging and geo-tagging in video collections and communities», ACM Int. Conf. on Multimedia Retrieval (ICMR) 2011, April 17-20, 2011, Trento, Italy.

[17] M. Soleymani, S. Koelstra, I. Patras, T. Pun, «Continuous emotion detection in response to music videos», EmoSPACE 2011, 1st Int. Workshop on Emotion Synthesis, rePresentation, and Analysis in Continuous spacE, in conjunction with IEEE FG 2011, March 24-25, 2011, Santa Barbara, CA, USA.

[18] Morrison, D., Bruno, E., & Marchand-Maillet, S. (2011). «Query log simulation for long-term learning in image retrieval». In Content-based Multimedia Indexinding (CBMI'11), Madrid, Spain.

[19] Kludas, J., & Marchand-Maillet, S. (2011). «Effective Multimodal Information Fusion by Structure Learning». In 14th International Conference on Information Fusion (FUSION 2011), Chicago, IL.

[20] von Wyl, M., Mohamed, H., Bruno, E., & Marchand-Maillet, S. (2011). «A Parallel Cross-Modal Search Engine over Large-Scale Multimedia Collections with Interactive Relevance Feedback». In Demo at ACM International Conference on Multimedia Retrieval (ACM-ICMR'11), Trento, Italy.

[21] F. Farhadzadeh, S. Voloshynovskiy, O. Koval and F. Beekhof, «Information-Theoretic Analysis of Content Based Identification for Correlated Data», IEEE Information Theory Workshop - ITW'10, Paraty, Brazil, 16-20 October 2011.

[22] O. Koval, S. Voloshynovskiy, and F. Farhadzadeh, «Identification In Desynchronization Channels», IEEE Information Theory Workshop - ITW'10, Paraty, Brazil, 16-20 October 2011.

[23] N. Grigoryan, A. Harutyunyan , S. Voloshynovskiy, and O. Koval, «On Multiple Hypothesis Testing with Rejection Option», IEEE Information Theory Workshop - ITW'10, Paraty, Brazil, 16-20 October 2011.

[24] S. Voloshynovskiy, T. Holotyak, O. Koval, F. Beekhof, and F. Farhadzadeh, «Sign-Magnitude Decomposition of Mutual Information with Polarization Effect in Digital Identification», IEEE Information Theory Workshop - ITW'10, Paraty, Brazil, 16-20 October 2011.

[25] V. Balakirsky, S. Voloshynovskiy, O. Koval and T. Holotyak, «Information–Theoretic Analysis of Privacy Protection for Noisy Identification Based on Soft Fingerprinting», CSIT 2011, Yerevan, Armenia, 26 - 30 September, 2011.

[26] A. Harutyunyan, N. Grigoryan, S. Voloshynovskiy, and O. Koval, «A New Biometric Identification Model and the Multiple Hypothesis Testing for Arbitrarily Varying Objects», Biometrie - BIOSIG2011 CAST workshop, Darmstadt, Germany, 8-9 September 2011.

[27] F. Farhadzadeh, S. Voloshynovskiy, O. Koval, T. Holotyak and F. Beekhof, «Statistical Analysis of Digital Image Fingerprinting Based on Random Projections», ISPA 2011, Dubrovnik, Croatia, 4-6 September 2011.

[28] M. Diephuis, S. Voloshynovskiy, O. Koval, and F. Beekhof, «Statistical Analysis of Binarized SIFT Descriptors,» ISPA 2011, Dubrovnik, Croatia, September 4-6, 2011.

[29] O. Koval, S. Voloshynovskiy, F. Farhadzadeh, T. Holotyak, and F. Beekhof, «Information-theoretic analysis of desynchronization invariant object identification», IEEE International Conference on Acoustics, Speech and Signal Processing ICASSP'11, Prague, Czech Republic, May 22-27, 2011.

[30] T. Holotyak, S. Voloshynovskiy, O. Koval, and F. Beekhof, «Fast physical object identification based on unclonable features and soft fingerprinting,» ICASSP2011, Prague, Czech Republic, 22-27 May 2011.

[31] O. Koval, S. Voloshynovskiy, F. Farhadzadeh, T. Holotyak, and F. Beekhof, «Geometrically Robust Perceptual Fingerprinting: an assymetric case», In Proceedings of SPIE Photonics West, Electronic Imaging 2011, Multimedia Content Access: Algorithms and Systems IV, San Francisco, USA, 23-27 January 2011.

[32] S. Voloshynovskiy, T. Holotyak, O. Koval, and F. Beekhof, «Privacy content identification based on soft fingerprinting», In Proceedings of SPIE Photonics West, Electronic Imaging 2011, Multimedia Content Access: Algorithms and Systems IV, San Fransisco, USA, 23 - 27 January 2011.

[33] T. Holotyak, S. Voloshynovskiy, O. Koval, and F. Beekhof, «Trade-offing privacy-complexity of identification problem», In Proceedings of SPIE Photonics West, Electronic Imaging 2011, Multimedia Content Access: Algorithms and Systems IV, San Fransisco, USA, 23 - 27 January 2011.

Books ans book chapters

[34] Szekely, E., Bruno, E., & Marchand-Maillet, S. (2011). «Unsupervised Discriminant Embedding in Cluster Spaces». In A Fred, A. and Dietz, J.L.G. and Liu, K. and Filipe, J. (Eds.), Communications in Computer and Information Science, Vol. 128, Springer.

[35] Marchand-Maillet, S., Morrison, D., Szekely, E., Kludas, J., von Wyl, M., & Bruno, E. (2011). «Mining Networked Media Collections. In Adaptive Multimedia Retrieval». Understanding Media and Adapting to the User, Lecture Notes in Computer Science 6535, Springer.

Research and technical reports

[36] G. Gninkoun, M. Soleymani. «Automatic Violence Scenes Detection: A Multi-Modal Approach», Working notes Proceedings of the MediaEval 2011 Workshop, Sept. 1-2, 2011, Pisa, Italy.

[37] Cl.-H. Demarty, C. Penet, G. Gravier, M. Soleymani, «The MediaEval 2011 Aect Task: Violent scenes detection in Hollywood movies», Working notes Proceedings of the MediaEval 2011 Workshop, Sept. 1-2, 2011, Pisa, Italy.

[38] J. D. Gomez, G. Bologna, T. Pun, «Color-audio encoding interface for visual substitution», Zürich Vision Meeting 2011, April 19, 2011 (poster).

Figure 1: A blindfolded person following a red serpentine line by means of musical sounds only (SeeColor project, Hasler Foundation, with the HES-SO Geneva).

International and national advisory committees

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

Member of conference program committees

- T. Pun: ICMI-BCI 2011 (Alicante, Spain); IEEE SocialCom 2011 (MIT, Boston, USA); TAIMA 2011 (Hammamet, Tunisie); EUVIP 2011 (Paris, France); aBCI 2011 (Mem¬phis, TN, USA); ACII 2011 (Memphis, TN, USA); ACM CHI 2011 (Vancouver, Canada); EmoSpace at IEEE FG 2011 (Sta Barbara, USA); MMM2011 (Taipei, Taiwan)
- S. Marchand-Maillet: CORIA 2011(Avignon, FR), IEEE-ICME2011 (Barcelona, SP), SBA2011 (Santa Barbara, CA), WIAMIS 2011 (Delft, NL), CBMI2011 (Madrid, SP), ACM-SIGIR2011 (Beijing, CN), AMR2011 (Barcelona, SP)
- S. Voloshynovskiy: SPIE 2011 (San Francisco, USA), IEEE-WIFS 2011 (Foz do Iguacu, Brazil), IWDW 2011 (New Jersey, USA).

Invited talks

- S. Marchand-Maillet. «Large-Scale Multimedia Retrieval: Distributing Multimodal Interactive Learning». Invited lecture at the 9th International Workshop on Adaptive Multimedia Retrieval, Barcelona, July 2011.

Funded research projects
Participation to European projects

Petamedia
Peer-to-peer Tagged Media, European network of excellence, FP7 ICT-2007.1.5
Period: March 2008 - September 2011

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COST Action MUMIA IC1002
Multilingual and Multifaceted Interactive Information Access
Period: December 2010 - November 2014

Participation to National projects

FNRS-SNSF, Swiss National Science Foundation:

SeeColor II: Seing colours with an orchestra II
SNSF 200021-127334
Principal investigator: Dr. G. Bologna
Co-Principal investigator: Prof. T. Pun
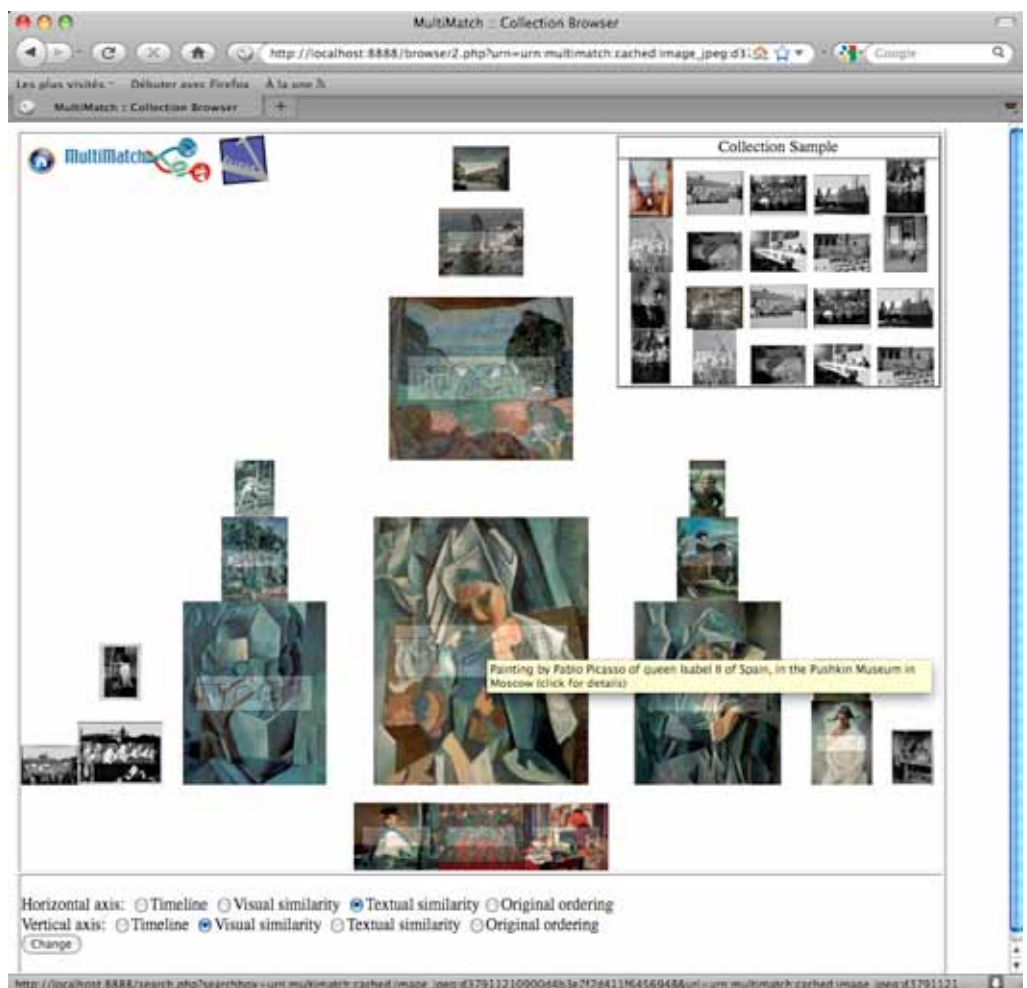Period: October 2009 – September 2011

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Figure 2: Similarity-based collection browser

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

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

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Swiss National Center of Competence in Research «Affective Sciences» (NCCR)
Affective computing and emotion awareness in computer-mediated interaction
Principal investigators: Prof. T. Pun and Prof. M. Betrancourt
Period: September 2011 - August 2013

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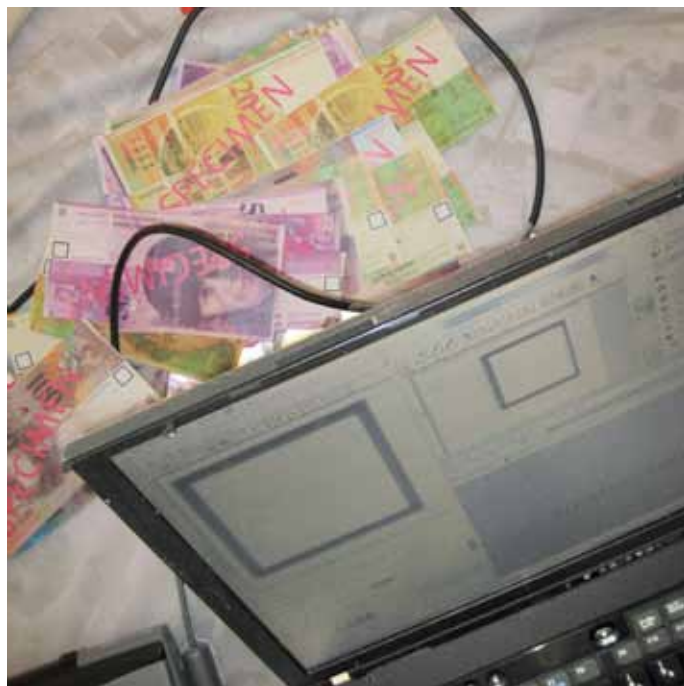Period: January 2012 – December 2013
Website: http://www.im2.ch

Hasler Foundation:

EyeWalker: Ultralight lowcost clipable vision system for mobility aids
Principal investigator: Prof. T. Pun
Partners: CSEM Neûchatel (E. Franzi, D. Hasler), HEIG-VD Yverdon (M. Kocher).
Period: September 2011 – August 2014

SER grant:

Large-scale distributed multimedia information retrieval strategies
CC11.0043
Period: October 2011 – September 2013

Industrial grant:

CRADA «Physical object identification»
University of Geneva, U-nica Systems
Principal investigator: Prof. S. Voloshynovskiy
Period: May 2011 – April 2012

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CRADA «Secure identification and authentication in large scale systems»
University of Geneva, Anteleon Imaging
Principal investigator: Prof. S. Voloshynovskiy
Period: May 2009 – April 2011

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.

Figure 3: Banknote identification based on unclonable natural randomness of banknote paper

CVML team in 2011

Others

Editorial boards

- Eurasip International Journal on Image and Video Processing (Springer, http://jivp.eurasipjournals.com/)
- Advances in Multimedia (Hindawi, http://www.hindawi.com/journals/am/) (T. Pun).
- International Journal of Image and Graphics (World Sci-Net, http://www.worldscinet.com/ijig/mkt/editorial.shtml) (S. Voloshynovskiy)
- EURASIP Journal on Information Security (Eurasip IJS) (http://www.hindawi.com/GetJournal.aspx?journal=IS) (S. Voloshynovskiy)
- ELSEVIER Journal on Computer Standards and Interfaces (http://www.elsevier.com/wps/find/journaldescription.cws_home/505607/description#description) (since October 2009) (S. Voloshynovskiy).
- SPRINGER Internatinal Journal of Multimedia Information Retrieval (S. Marchand-Maillet) http://www.springer.com/computer/journal/13735

Special issues

- Various public demonstrations in open days.

Refereeing/reviewing

- T. Pun is reviewer for the European Research Council "Advanced Investigator Grants", for the EU COST program, for the ANR (FR), for the SNF (CH), for the HES-ISYS research program (CH).
- S. Marchand-Maillet is reviewer for projects submitted to the following funding agencies: SNF (CH), EPSRC (UK), ANR (FR), NWO (NL), FWF (A), COST (EU)
- S. Voloshynovskiy is reviewer for SNF (CH) and Austrian Science Fund I (Austria).
- journals, conferences, national funding organizations for various countries.

Figure 4: Watch authentication based on the surface microstructure acquired by a mobile phone (SNF Prof Boursier and ECRYPT projects).

Figure 5: High Dimensional Multimodal Embedding (HDME): Automated organisation of a photo collection by content similarity

Teaching

- **Applied cybernetics**, Computer Science, Master, with T. Pun and S. Voloshynovskiy for 2011-2012, T. Pun and C. Pellegrini for 2010-2011, 56h. course, 56h practical work, approx. 10 students. This course ends with a Lego Mindstorm robotcup competition which involves participants from several Universities and from the Geneva University of Applied Sciences. 8 ECTS.
- **Digital image processing and synthesis**, Computer Science, 3rd year Bachelor, optional for Master and postgraduate students, 56h course and 56h practical work, approx. 20 students. 8 ECTS.
- **Introduction to algorithms**, Computer Science, 1st year Bachelor, 56h course, 28h exercises and 56h lab work, approx. 20 students.
- **Avanced image processing**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 8 students.
- **Elements of information theory**, Computer Science, 2nd year Bachelor, Master, postgrades, 28h. course and 28h. practical work, approx. 25 students.
- **Multimedia security**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 8 students.
- **Multimedia Information Retrieval**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 25 students.
- **Data Analysis and Pattern Recognition**, Computer Science, Master, postgrades, 28h. course and 28h. practical work, approx. 10 students.
- **Elements of multiuser information theory and wireless communications**, Science, Master, postgrades, 28h. course and 28h. practical work, approx. 10 students.
- **Data Structures**, Computer Science, 1st year Bachelor, 56h. course and 56h. lab work, approx. 20 students.

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

Figure 6: EEGs (electroencephalograms) recordings for affective computing

Faculty of Sciences
Computer Science Department

GAIL

Geneva Artificial Intelligence Laboratory

cui.unige.ch/AI-group

Geneva Artificial Intelligence Laboratory

Domain activities

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

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

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

Team

Director
Christian Pellegrini
Full professor

Members
Dr. James Henderson (MER)
Dr. Mélanie Hilario (MER)
Dr. Alexandros Kalousis, Research Associate

Assistants
Dr. Adam Woznica, Post doctoral fellow

Scientific Programmers
Denis Petrov
Nabil Stendardo

PhD students
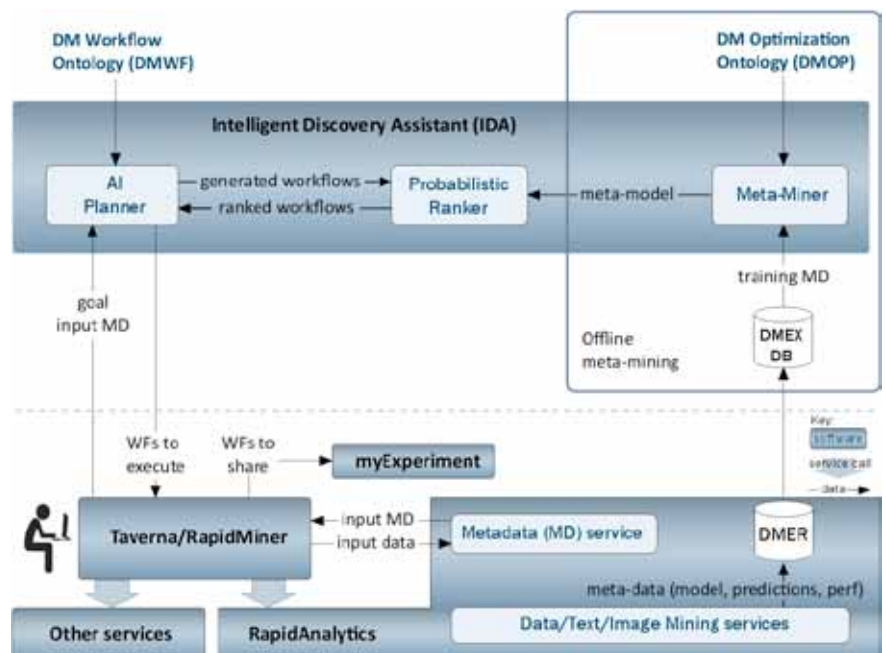Huyen Do
Nikhil Garg
Andrea Gesmundo
Phong Nguyen
Jun Wang

Figure 1: The overall architecture of the e-LICO Data Mining Lab

List of publications
Full refereed papers in Conference Proceedings

[1] J. Henderson (2011), «Bayesian network automata for modelling unbounded structures». In Proc.12th International Conference on Parsing Technologies (IWPT 2011), Dublin, Ireland.

[2] A. Gesmundo, J. Henderson (2011), «Heuristic Search for Non-Bottom-Up Tree Structure Prediction». In Proc. 2011 Conf. on Empirical Methods in Natural Language Processing (EMNLP 2011), Edinburgh, UK.

[3] N. Garg, J. Henderson (2011), «Temporal Restricted Boltzmann Machines for Dependency Parsing». In Proc. 49th Annual Meeting of the Association for Computational Linguistics (ACL 2011), Portland, Oregon, USA.

[4] L. van der Plas, P. Merlo, J. Henderson (2011), «Scaling up Cross-Lingual Semantic Annotation Transfer». In Proc. 49th Annual Meeting of the Association for Computational Linguistics (ACL 2011), Portland, Oregon, USA.

[5] Jun Wang, Huyen Do, Adam Woznica and Alexandros Kalousis, «Metric learning with multiple kernels». In Proceedings of the NIPS 2011, Spain, Granada.

[6] Phong Nguyen, Alexandros Kalousis, and Melanie Hilario, «A meta-mining infrastructure to support KD workflow optimization». In Proceedings of the ECML-2011 Workshop of Planning to Learn and Service-Oriented Knowledge Discovery.

[7] Huyen Do, Alexandros Kalousis, Jun Wang and Adam Woznica, «A metric learning perspective of SVM: on the relation of SVM and LMNN». In NIPS 2011 - workshop on Beyond Mahalanobis: Supervised Large-Scale Learning of Similarity.

Books and book chapters

[8] Melanie Hilario, Phong Nguyen, Huyen Do, Alexandros Kalousis, «Ontology-Based Meta-Mining of Knowledge Discovery Workflows». In N. Jankowski, W. Duch, K. Grabczewski (Eds.), Meta-Learning in Computational Intelligence, Springer.

Conference organization as chair or co-chair

• James Henderson, Program Co-Chair for 2012 Joint Conference on Empirical Methods in Natural Language Processing and Conference on Computational Natural Language Learning (EMNLP-CoNLL 2012), Jeju, Korea

• Alexandros Kalousis, Discovery Challenge Co-chair, ECML-PKDD 2011

Member of conference program committees

• Melanie Hilario, 8th Extended Semantic Web Conference, Special Track on Inductive and Probabilistic Approaches, May 29-June 2, 2011, Heraklion, Greece.

• Alexandros Kalousis, International Conference on Data Engineering 2011 (ICDE 2011).

• Alexandros Kalousis, European Conference on Machine Learning/Principles and practice of Knowledge Discovery in Databases (ECML/PKDD 2011). Athens, September 2011.

• Alexandros Kalousis, ACM conference on Knowledge Discovery and Data Mining 2011 (KDD 2011)

• Alexandros Kalousis, SIAM conference on Data Mining 2012.

• Adam Woznica, First International Conference on Pattern Recognition Applications and Methods.

Funded research projects
Participation to European projects

PARLANCE
Probabilistic Adaptive Real-Time Learning And Natural Conversational Engine
EU ICT FPT
Period: November 2011 – October 2014

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CLASSIC
Computational Learning in Adaptive Systems for Spoken Conversation
EU ICT FP7
Partners: University of Edinburgh (coordinator), Cambridge University, Ecole Supérieure d'Eléctricité (Metz), France Telecom.
Period: March 2008 – February 2011
Website: http://www.classic-project.org/

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DebugIT
Detecting and Eliminating Bacteria UsinG Information Technology
Large-scale integrating project
FP7
Partners: Agfa HealthCare (Belgium, Coordinator), Empirica (Germany), Gama Sofia Ltd. (Bulgaria), Institut National de la Santé et de la Recherche Médicale (France), IZIP (Czech Republic), Linköping University (Sweden), Technological Educational Institute of Lamia (Greece), University College London (UK), Hôpital Universitaire de Genève (Switzerland), University Medical Center Freiburg (Germany)
Period: January 2008 – December 2011
Website: http://www.debugit.eu/

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

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EuroKUP

EuroKUP
Kidney and Urine Proteomics.
Cost Action BM0702
Partners: Biomedical Research Foundation, Academy of Athens (Greece, Coordinator), Mario Negri Institute for Pharmacological Research, Bergamo (IT), University of Manchester (UK), National Centre for Sensor Research/BioAnalytical Sciences (IE), INSERM U858, Renal and Cardiac Remodeling, Toulouse (FR), The Linnaeus Centre for Bioinformatics, Uppsala University / SLU, and others from 15 countries that signed the Memorandum of Understanding.
Period: May 2008 – April 2011
Website: http://www.eurokup.org/

Participation to National projects

Inducing Semantic Representations from Multiple Data Sources
FNRS Project
Period: October 2011 – September 2013

———

An Adaptive Framework for Learning over Composite Representations
FNRS Project
Period: October 2008 – September 2011

———

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

———

Sampling and Regularization for Latent Structure Models with Feature Induction
FNRS Project
Period: October 2009 – August 2011

———

Improving the coherence of machine translation output by modeling intersentential relations
Sinergia
Period: Mars 2010 – February 2013

OTHERS

Tutorials
- Semantic Data Mining, Nada Lavrac, Anze Vavpetic, Melanie Hilario, Alexandros Kalousis, Agnieszka Lawrynowicz, Jedrzej Potoniec. In European Conference on Machine Learning/Principles and practice of Knowledge Discovery in Databases 2011

Refereeing
- Alexandros Kalousis: Machine Learning Journal 2011.
- Huyen Do: ECML-PKDD 2011, KDD-2011, SDM 2012.
- Jun Wang: ECML-PKDD 2011, KDD-2011.
- Adam Woznica: ECML-PKDD 2011, KDD-2011, Journal of Machine Learning Research, IDA, ICPRAM, ICDE-2012.

Editorial responsibilities
- Mélanie Hilario. Associate Editor, International Journal on Artificial Intelligence Tools (IJAIT), World Scientific Publishing.
- Mélanie Hilario. Editorial Board Member, Intelligent Data Analysis (IDA), IOS Press.

DMO Foundy
The Data Mining Ontology Foundry was by Melanie Hilario and Phong Nguyen as one of the e-LICO project results. Its goal is to gather the most significant ontologies concerning data mining as well as the different algorithms and resources that have been developed to support the knowledge discovery process, http://www.dmo-foundry.org.

TEACHING
- **Introduction to Artificial Intelligence**, Computer Science, Bachelor, 8 ECTS, 112 hours.
- **Data Mining**, Computer Science, Master, 8 ECTS, 112 hours
- Alexandros Kalousis, Adam Woznica, Jun Wang and Huyen Do also participate in **Heuristic Methods of Learning and Optimization** (prof. B. Chopard and M. Tomassini)
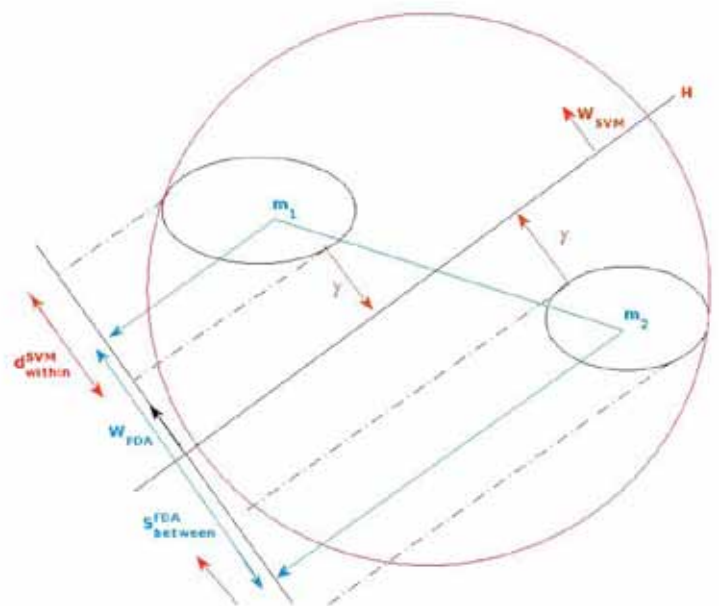

Figure 2: Explaining SVM using the within and between class distance concept used in typical metric learning algorithms

Faculty of Sciences
Computer Science Department

SMV

Software Modeling and Verification

smv.unige.ch

Software Modeling and Verification

Domain activities

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

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

Team

Director
Didier Buchs
Associate professor

Senior researchers
Dr. Alban Linard
Dr. Steve Hostettler (PhD in Nov. 2011)
Dr. Matteo Risoldi

PhD students
Edmundo Lopez
Alexis Marechal
Qin Zhang (until Dec. 2011)

Administration
Anne-Isabelle Giuntini

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

PhD Thesis

- Steve Hostettler, «High-Level Petri Net Model Checking - The symbolic way», Nov. 2011
- Odorico Von Susani, «Managing evolution risk of cross-organizational services», Nov. 2011

List of publications
Refereed papers in international journals

[1] S. Hostettler, A. Marechal, A. Linard, M. Risoldi, and D. Buchs (2012). «High-Level Petri Net Model Checking with AlPiNA» Fundamenta Informaticae, 113(3-4), pp 229-264 Feb.

[2] F. Kordon, A. Linard, D. Buchs, M. Collange, S. Evangelista, J.-F. Jensen, K. Lampka, N. Lohmann, E. Paviot-Adet, Y. Thierry-Mieg, and H. Wimmel (2012). «Report on the Model Checking Contest at Petri Nets 2011» Transactions on Petri Nets and Other Models of Concurrency.

[3] N. Sedlmajer, D. Buchs, S. Hostettler, A. Linard, E. Lopez, and A. Marechal (2011). «Modelling of Genetic Regulatory Mechanisms with GReg» CoRR, abs/1108.3436.

Full refereed papers in Conference Proceedings

[4] D. Buchs, S. Hostettler, and A. Marechal (2011). «Experience-based model refinement» In: Software Engineering for Resilient Systems - Third International Workshop, SERENE 2011, Geneva, Switzerland, September 29-30, 2011., ed. by Didier Buchs and Elena Troubitsyna, Springer-Verlag.

[5] A. Linard and D. Buchs, D (2011). «When Graffiti Brings Order» CEUR Workshop Proceedings, 726:81-95.

[6] N. Sedlmajer, D. Buchs, S. Hostettler, A. Linard, E. Lopez, and A. Marechal (2011). «GReg : a Domain Specific Language for the Modeling of Genetic Regulatory Mechanisms» In: Proceedings of the 2nd International Workshop on Biological Processes & Petri Nets (BioPPN2011), ed. by Monika Heiner and Hiroshi Matsuno, pp. 21-35, Sun SITE Central Europe (CEUR).

International and national advisory committees

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

Conference organization as chair or co-chair

- SUMO 2011, General Chair, Newcastle, June 2011
- Organisation SERENE International workshop, http://serene.uni.lu/Workshops/SERENE, 29-30 Sept. 2011
- SERENE ERCIM Chairman

Member of conference program committees

- Petri Nets 2011
- Componet 2011
- RSP 2011
- SERENE Conference
- RSP Conference Steering Committee
- Management Committee for project COST RichModel Toolkit no. 235

Invited talks

- Workshop Synthesis, Verification, and Analysis of Rich Models (SVARM 2011), Saarbrücken, April 2011

Funded research projects
Participation to European projects

Movere
Period: 2010 - 2013

Participation to National projects

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

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

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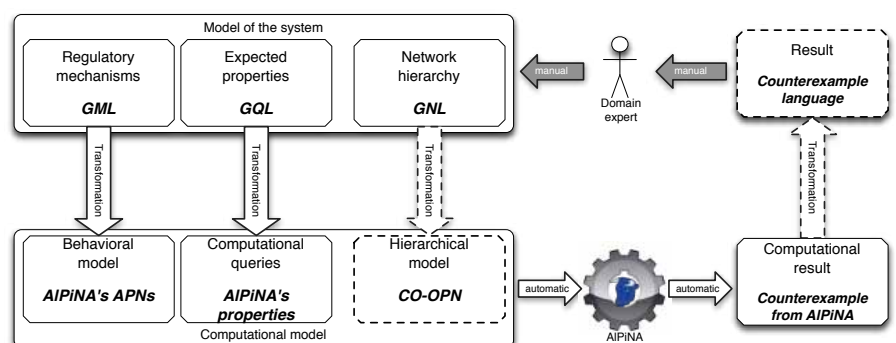
Technology transfer

- D. Buchs, S. Hostettler: Presentation for Honeywell international, «Automatic test methods»
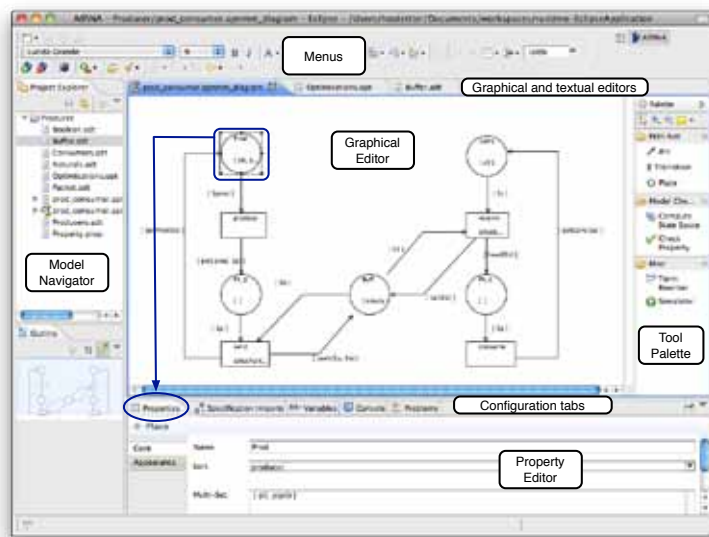
Others
Courses and tutorials

- Organisation and teaching for DSM-TP school http://ctp.di.fct.unl.pt/DSM-TP/ , 12-16 september 2011

Editorial responsabilities

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

Special issues

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

Teaching

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

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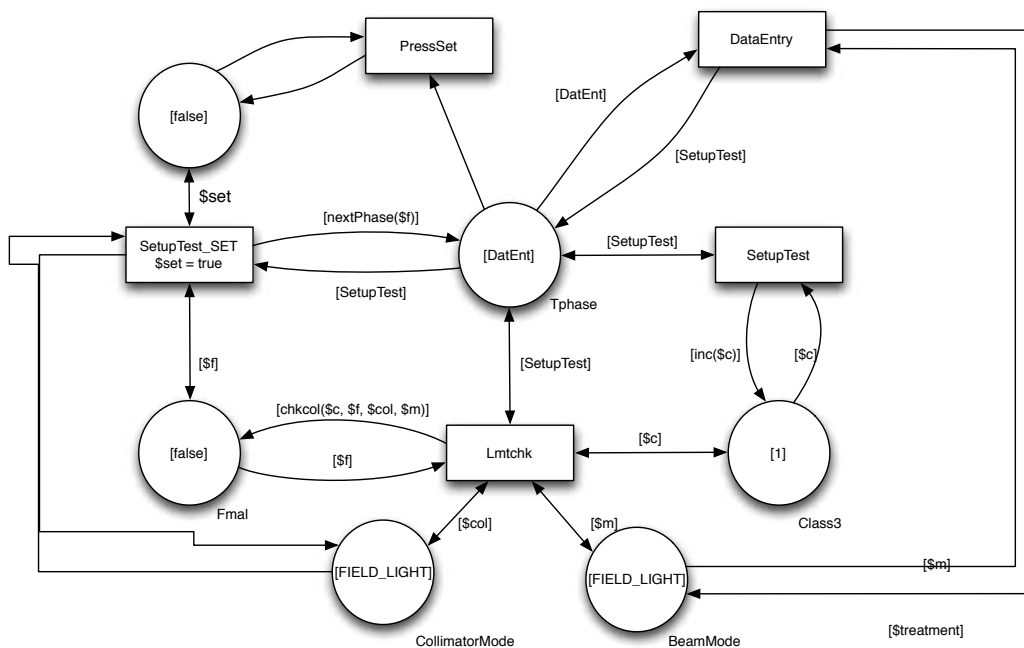

Figure 3: Algebraic Petri net describing the critical module of the famous case of the Therac-25, a radiation therapy machine that caused at least 3 fatal accidents between 1985 and 1987

Faculty of Sciences
Computer Science Department

SPC

Scientific
and Parallel
Computing

spc.unige.ch

Scientific and Parallel Computing

Domain activities

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

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

Another domain of activity is bioinformatics, in collaboration with Swiss Institute of Bioinformatics. New classification methods and algorithm techniques are developed to analyse various biological problems. For instance a complex networks approach is currently developed, in order to understand the differences between healthy and unhealthy systems.

The figure below is a 3D numerical simulation of a draining event of the Rhone at the Verbois Dam. This is part of a research project with SIG to model sediment transport in the Rhone.
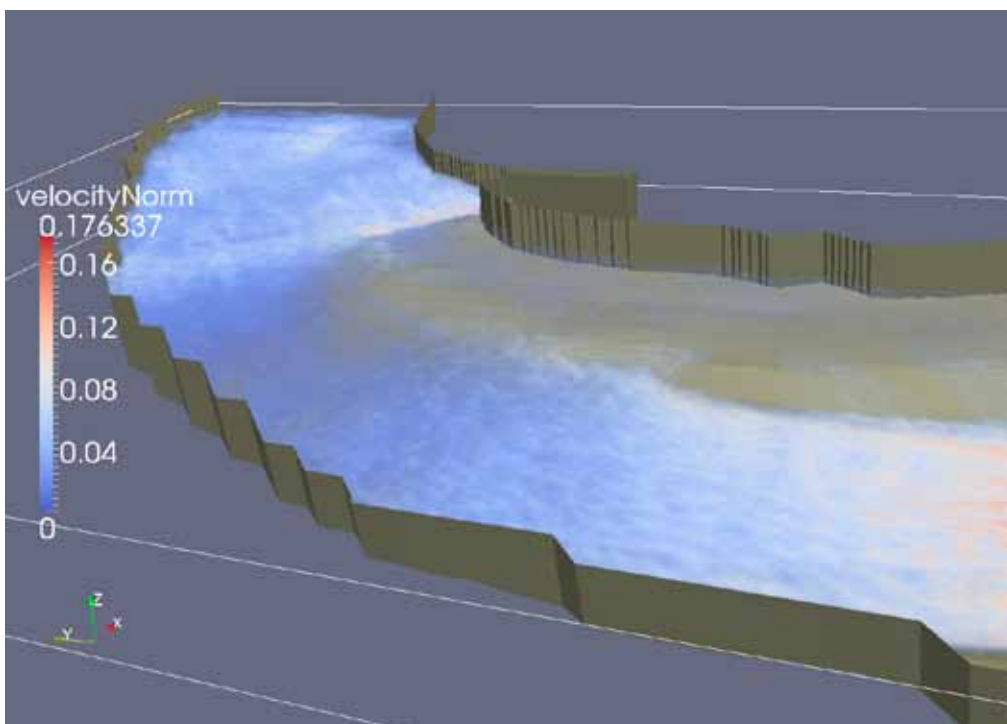
Director
Bastien Chopard
Full professor

Senior researchers
Roland Bouffanais
Najib Kacem
Orestis Malaspinas
Dr. Jonas Latt
Dr. Rafik Ouared

PhD students
Andrea Parmigiani
Daniel Lagrava
Christophe Charpilloz
Ranaivo Razakanirina
Kae Tsunematsu
Mohamed Ben Belgacem

Administration
Anne-Isabelle Giuntini

PhD thesis

- Andrea Parmigiani, «Lattice Boltzmann Calculations of Reactive Multiphase Flows in Porous Media», Feb. 4, 2011
- Federico Santoni, «Deciphering the code for retroviral integration site selection», July 7, 2011. Co-direction with Prof Luban, Faculty of Medicine
- Xin Zhou, «Grid–Based Medical Image Retrieval Using Local Features», Nov. 18, 2011. Co-direction with Dr H. Mueller

List of publications

Refereed papers in international journals

[1] Kae Tsunematsu, Bastien Chopard, Jean-Luc Falcone and Costanza Bonadonna, Comparison of two advection-diffusion methods for tephra transport in volcanic eruptions, Commun. Comput. Phys. Vol. 9(5), pp 1323-1334, 2011. DOI: 10.4208/cicp.311009.191110s

[2] Alfonso Caiazzo, David Evans, Jean-Luc Falcone, Jan Hegewald, Eric Lorenz, Bernd Stahl, Dinan Wang, Joerg Bernsdorf, Bastien Chopard, Julian Gunn, Rod Hose, Manfred Krafczyk, Pat Lawford, Rod Smallwood, Dawn Walker, Alfons Hoekstra, A Complex Automata approach for In-stent Restenosis: two-dimensional multiscale modeling and simulations, J. of Comp. Sciences, 2011 DOI: 10.1016/j.jocs.2010.09.002

[3] Orestis Malaspinas, Bastien Chopard and Jonas Latt, General regularized boundary condition for the lattice Boltzmann method, Computer \& Fluids, 49 (2011) 29--35 2011. http://dx.doi.org/10.1016/j.compfluid.2011.04.010

[4] C Huber, J. Dufek and B. Chopard, A simple algorithm to enfore Dirichlet boundary conditions in complex geometries. Int. J. M. Phys. C, vol 22(10), 1093--1105, 2011 DOI: 10.1142/S0129183111016774.

[5] R. Razakanirina and Bastien Chopard, Multilayer Cellular Automata on a Graph Applied to the Exchanges of Cash and Goods, J. of Cellular Automata, in press 2011.

Full refereed papers in Conference Proceedings

[6] X. Meyer, P. Albuquerque and B.Chopard, A multi-GPU implementation and performance model for the standard simplex method, 1st International Symposium & 10th Balkan Conference on Operational Research, Thessaloniki, Greece. September 22-25, 2011.

[7] B. Chopard, J.-L. Falcone, A. Hoekstra and J. Borgdorff, A framework for multiscale and multiscience modeling and numerical simulations, Unconventional Computation, C.S Calude, J Kari, I Petre and G Rozenberg Eds. Springer-Verlag Berlin, LNCS 6714, 2011.

[8] Joerg Bernsdorf, Guntram Berti, Bastien Chopard, Jan Hegewald, Manfred Krafczyk, Dinan Wang, Eric Lorenz and Alfons Hoekstra, Towards Distributed Multiscale Simulation of Biological Processes. IEEE conference on Distributed Multiscale Computation, 2011, DOI 10.1109/eScienceW.2011.19

[9] Joris Borgdorff, Eric Lorenz, Alfons G. Hoekstra, Jean-Luc Falcone and Bastien Chopard, A principled approach to distributed multiscale computing, from formalization to execution. IEEE conference on Distributed Multiscale Computation, 2011

International and national advisory committees

PhD Committees:

- Expert in PhD committee of Qiu Guangzhong, University of Amsterdam. Feb. 9, 2011
- Expert in the PhD committee of Joris Verchaeve, University of Trondheim, Norway, Nov. 9, 2011

Other Committees:

- CADMOS
- 3ème cycle romand d'informatique
- SwinNG
- Speedup

Member of conference program committees

- Discrete Simulation of Fluid Dynamics, DSFD 2011. Fargo USA, July 2011.04.010
- International Conference on Computatinal science, ICCS 2011, Singapore, June 2011.04.010
- Distributed Multiscale Computation DMC 2011, IEEE e-Science conference, December 5, 2011, Stockholm, Sweden

Invited talks

- Multiscale fluid dynamics with the Lattice Boltzmann method, A Methodology for Multiscale-Multiscience Lattice-Boltzmann Simulations and Application to biomedical problems Lorenz Center, NL, Feb 14-18, 2011
- Unconventional computing UC 2011, 6-10 June, A Methodology for Multiscale-Multiscience modeling and simulations. Turku, Finland, June 7, 2011.
- Discrete simulation of complex systems, Solstice 2011. Emergence of structures in a simple economical model on a graph. Turku, Finland, June 9th, 2011
- Basel Computational Biology Conference BC2-2011. A Methodological framework for Multiscale and Multiscience modeling. Basel, June 23, 2011.
- CREA Unexpected Conference, Competing Species Dynamics: Qualitative Advantage versus Geography, CREA, 14-16 nov Paris
- ICES 2011 A Methodology for Multiscale-Multiscience modeling and simulations, International Center for Earth Simulations, Geneva, Nov 22, 2011

Funded research projects
Participation to European projects

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

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

Participation to National projects

Cellular Automata dynamics on irregular topologies: application to simple economical model
FN - 200021-120245
Period: June 2008 - January 2012

———

HP2C: Numerical modeling of the ear: towards the building of new hearing devices
Partner: Elisabeth Delevoy, CEA Grenoble
Period: November 2010 - December 2011

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

———

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

Others
Courses and tutorials
- Organisation of a 3-Day International Course on the Palabos software, Feb 2010 (en collaboration avec J. Latt, EPFL)

Refeereeing
- Reviewing for many international journals and conferences

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

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

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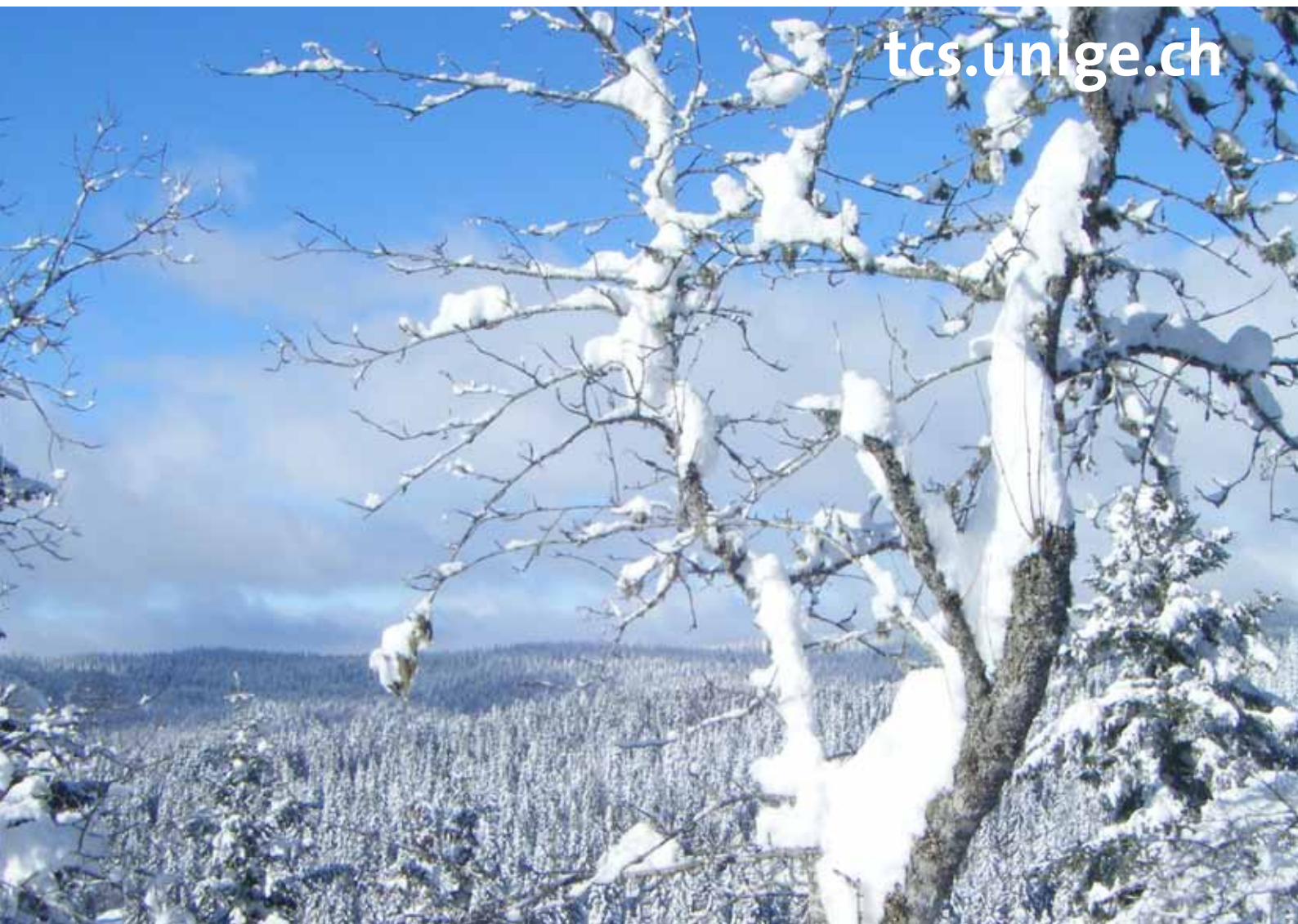
Faculty of Sciences
Computer Science Department

TCS

Theoretical Computer Science

tcs.unige.ch

Theoretical Computer Science

Domain activities

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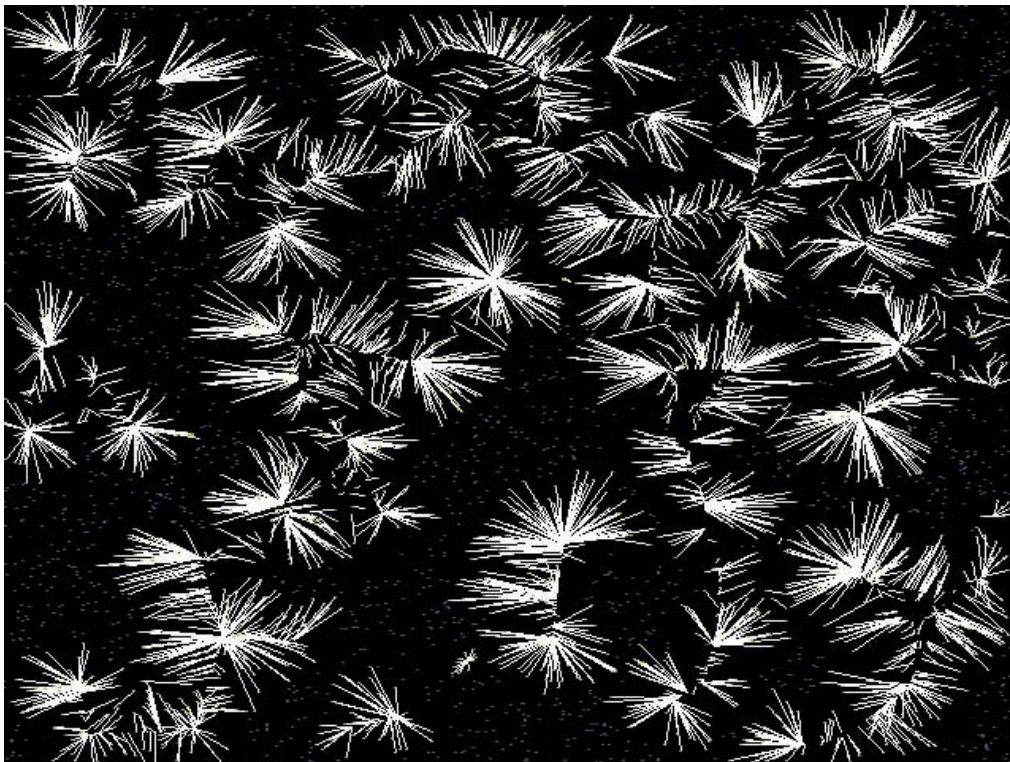
Team

Director
José Rolim
Full professor

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

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

Example of a clustered sensor network

List of publications

Refereed papers in international journals

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

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

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

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

Full refereed papers in Conference Proceedings

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

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

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

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

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

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

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

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

Books and book chapters

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

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

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

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

Research and technical reports

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

International and national advisory committees

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

Conference organization as chair or co-chair

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

Member of conference program committees

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

Invited talks

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

Funded research projects
Participation to European projects

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

———

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

———

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

Participation to National projects

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

———

Virtual Raw Anchor coordinates
FNSR
Principal Investigator: Pierre Leone

Others

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

Teaching

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

Faculty of Economic and Social Sciences

Institute of Services Science

ISS

Institute of Services Science

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Dr. Jolita Ralyté
Dr. Jean-Marc Seigneur
Dr. Mehdi Snene
Dr. Janowski Jucjan
Dr. Volino Pascal
Dr. David Hausheer
Dr. Katarzyna Wac
Dr. Abdelaziz Khadraoui
Dr. Jose Luis Fernandez-Marquez
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Garryfallos Fragkidis
Mattia Gustarini
Mustafa Kasap
Michael Mesfin
Zerrin Kasap
Bart Kevelham
Dejan Munjin
Niels Nijdam
Wanda Opprecht
Emmanuel Rousseaux
Jérôme Schmid
Aikaterini Stamou
Camille Tardy
Akla-Esso Tchao
Yvain Tisserand
Xavier Titi
Alfredo Villalba Castro
Assane Wade

Director
Giovanna Di Marzo Serugendo
Full professor

Jean-Henry Morin
Associate professor

Dimitri Konstantas
Full professor

Michel Léonard
Full professor

Nadia Magnenat-Thalmann
Honorary professor

Developpers / Designers (PAT)
Sokratis Barmpounakis
Willem Broekema
Richard Bults
Hélène Burton
Michel Deriaz
Marc Fasel
Jody Hausmann
Julien Pession
Kevin Salvi

Fellowships
 Thi Nhu Anh Nguyen

Internship fellows
Karolina Zawieska
Sébastien Vouillot

Visiting Academic Guests
Christopher Joslin
WonSook Lee

Administration
Marie-France Culebras
Lara Broi

Domain activities

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

The Institute of Services Science, founded on January 1st, 2011, is a research institute of the Faculty of Economic and Social Sciences of the University of Geneva. Our mission is to engage with industry, public administration and the public in order to lead and shape the international landscape of research in the domain of Services Science.

As a team of 60 staff members, we are active in **research**, **technology watch**, **creativity** and **teaching**. We are currently participating in 13 research projects (EU/Cost/Swiss funding) in service domains as diverse as: services innovation, large-scale services, services for seniors and services for mobile users.

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

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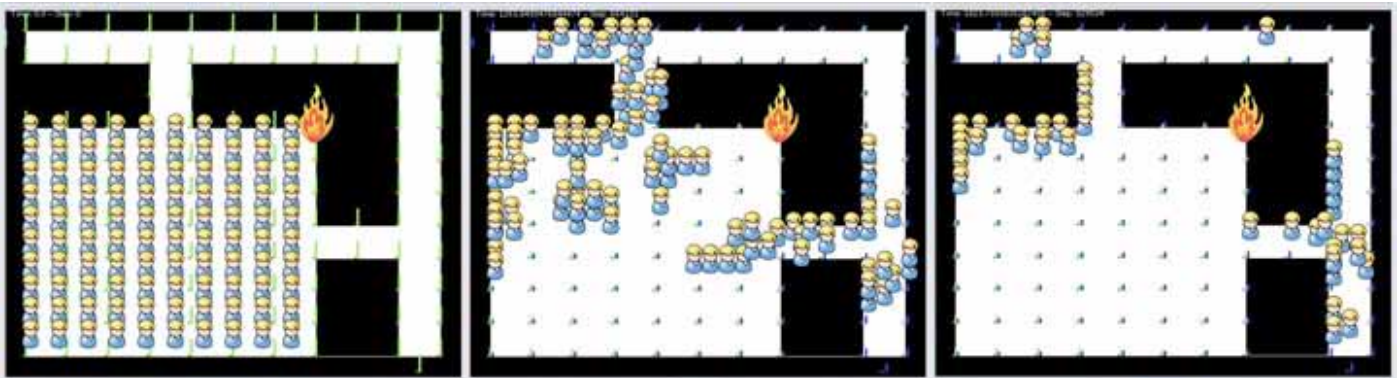

Figure 1: Self-organising Pervasive Ecosystems: A Crowd Evacuation Example

Jean-Henry Morin - Digital Rights & Policy
Our research focuses on the study and design of new approaches and methods addressing some of the complex challenges and issues in managing rights and policies in an increasingly networked and service oriented society. Current research projects and activities cover :
• Exception Management in DRM environment
• Personal Information Management and Awareness Interfaces
• Socialization of Things Objects and Clouds
• Personalization, Privacy and Empowerment in Internet of Things
• Cloud computing and Service Level Agreements (SLA)
• Rights and Policy interface design
• Service innovation and design
• Service tangibilisation, compliance and governance

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

Figure 2: Fasoo Usage Tracer dashboard (Exception Management)

Figure 3: Virtual Try On in action - MIRALab

Dimitri Konstantas - Mobile services

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

Since 2009 we have been applying the results of our fundamental research in QoS, trust, mobile devices' interoperability (mobile server cloud) in the study and development of services for the aging society. In this context we have succeeded acquiring 4 European projects in the Ambient Assisted Living (AAL) program. Our work in this domain concentrates in the study of lifestyle of senior persons (age 65 and more) and the creation of mobile location aware services for monitoring the activities of the users and providing them proactive information regarding activities to do (realising the basic directive for senior persons : do not stay inactive), putting them in contact with other users with similar interests (socialisation), providing them the means for getting help from formal and informal care givers, and even advising them on diet and exercise. In this projects we collaborate with local (Geneva based) industrial partners that are offering services for seniors. The first results of the projects are expected by the end of 2012.

Michel Léonard - MATIS

The MATIS domain is Service Science with all the following dimensions: modeling, design, implementation, transdisciplinarity, sustainability and impact on organizations. All these dimensions are worked following a formal approach to describe, information, the cornerstone of service. Notably, Matis is creating methods and tools around the agile service development

Nadia Magnenat-Thalmann - MIRALab

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

Since 1992, MIRALab has participated in more than 47 European Projects and contributes to the management of two International Conferences, CASA and CGI. Moreover, MIRALab produces 3D showcases for museums, galleries, such as fashion shows or cyberdances with virtual models and clothes. In 2011, MIRALab was working on the following projects: 3D LIFE, AERIAL CROWD, FNRS, FRANCOPHONIE, MULTISCALEHUMAN, PLAYMANCER and SERVIVE. MIRALab has organized various International conferences and workshops.

Figure 4: Developing services for the elderly
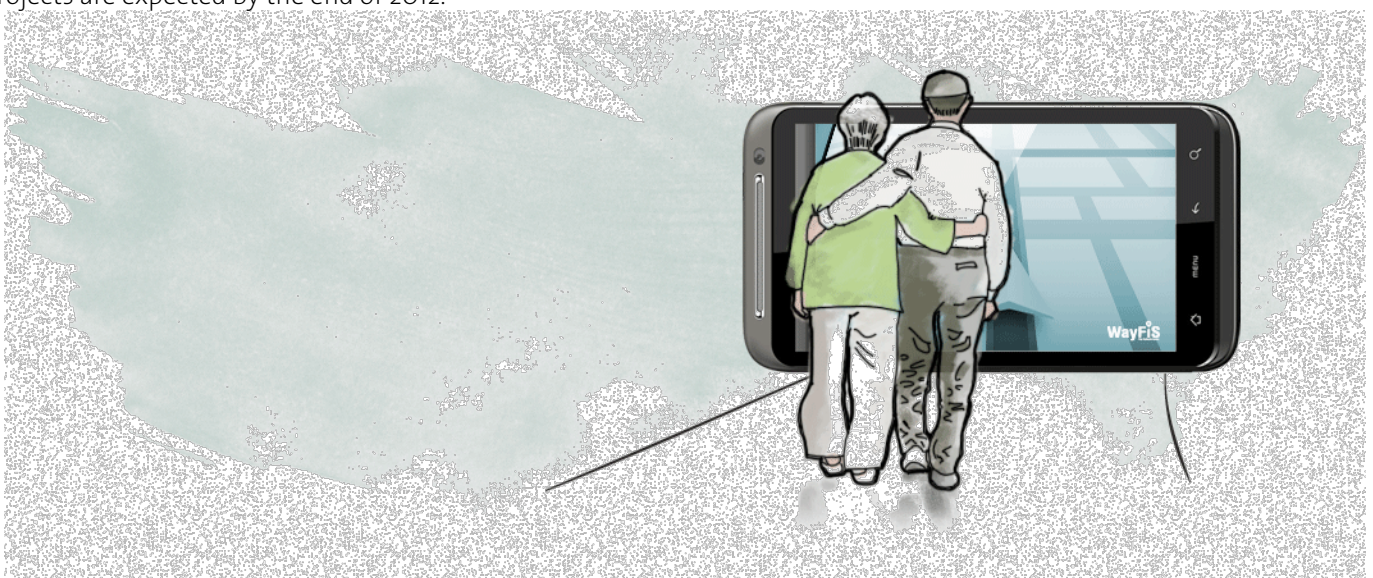
PhD thesis

- Jérôme Schmid, «Knowledge-based deformable models for medical image analysis», MIRALab, January 2011
- Mustafa Kasap, «Generating and Customizing Virtual Human Body Models», MIRALab, January 2011
- Zerrin Kasap, «Modeling Emotions and Memory for Virtual Characters and Social Robots», MIRALab, March 2011

List of publications

Refereed papers in international journals

[1] Franco Zambonelli et al. Self-aware Pervasive Service Ecosystems. Procedia Computer Science, 2011, vol. 7, p. 197-199

[2] Jose Luis Fernandez-Marquez, Giovanna Di Marzo Serugendo, Sara Montagna, Mirko viroli, and Josep Lluisv Arcos. Description and composition of bio-inspired design patterns: a complete overview. Natural Computing Journal. Springer, To appear, 2012.

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Figure 5: TraiNutri project

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[12] Xavier Titi, Carlos Ballester Lafuente and Seigneur Jean-Marc, Trust Management for Selecting Trustworthy Access Points, International Journal of Computer Science Issues (IJCSI), Volume 8, Issue 2, March 2011.

[13] M.Kasap, N.Magnenat-Thalmann, Skeleton-aware size variations in digital mannequins. The Visual Computer, Springer Berlin, Vol. 27, No.4, pp. 263-274, April 2011.

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[20] Jose Luis Fernandez-Marquez, Josep Lluis Arcos, Giovanna Di Marzo Serugendo, Matteo Casadei: Description and Composition of Bio-Inspired Design Pattrns: The Gossip Case. IEEE Int. Conf. on Engineering of Autonomic and Autonomous Systems (EASE'2011), 87-96, IEEE Computer Society, April 2011.

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[23] BIBLION. A data processing system for the analysis of medieval manuscripts, N. Togni, L. Opprecht, L. Moccozet, International Technology, Education and Development Conference (INTED 2011), 2011

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[25] A wiki-based interface to collaboratively annotate 3D models with large texts, G. Coeur, L. Moccozet, 3rd annual International Conference on Education and New Learning Technologies (EDULEARN 2011), 2011

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[27] Jody Hausmann, Katarzyna Wac, Richard Bults, Smart-Phone Based Ambulatory Activity Level Estimation. Society for Ambulatory Assessment 2011 Conference (SAA 2011), Work in Progress Track, Ann Arbor, USA, June 2011.

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Figure 6: Self-Protecting Document Exploiting its Context of Usage

[30] Xavier Titi, Carlos Ballester Lafuente and Seigneur Jean-Marc, Boosting Trustworthy Hotspot QoE Rating With Implicit Hotspot QoS Evidence, IADIS International Conference e-Society, 2011.

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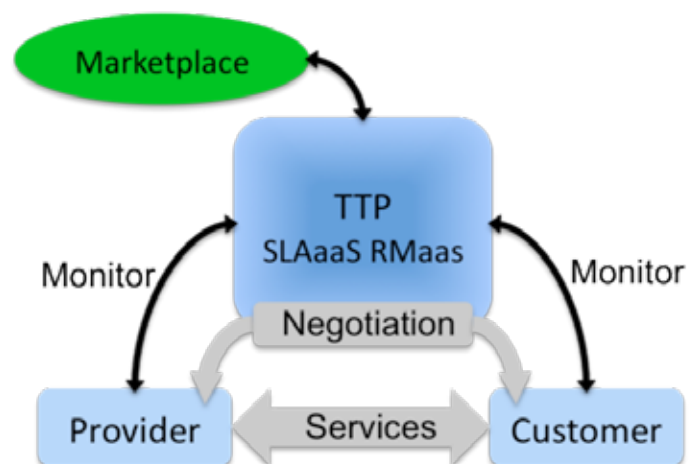
Figure 7: CLOVIS Project : Service Level Agreement as a Sercvice (SLAaaS)

Full refereed papers in Workshop Proceedings

[35] Sara Montagna, Mirko Viroli, Matteo Risoldi, Danilo Pianini, and Giovanna Di Marzo Serugendo. Self-organising pervasive ecosystems: A crowd evacuation example. In Proceedings of the 3rd International Workshop on Software Engineering for Resilient Systems, volume 6968 of Lecture Notes in Computer Science, pages 115-129. Springer-Verlag, 2011.

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1 Anterior

2 Anterosuperior

3 Superior

4 Posterosuperior

5 Posterior

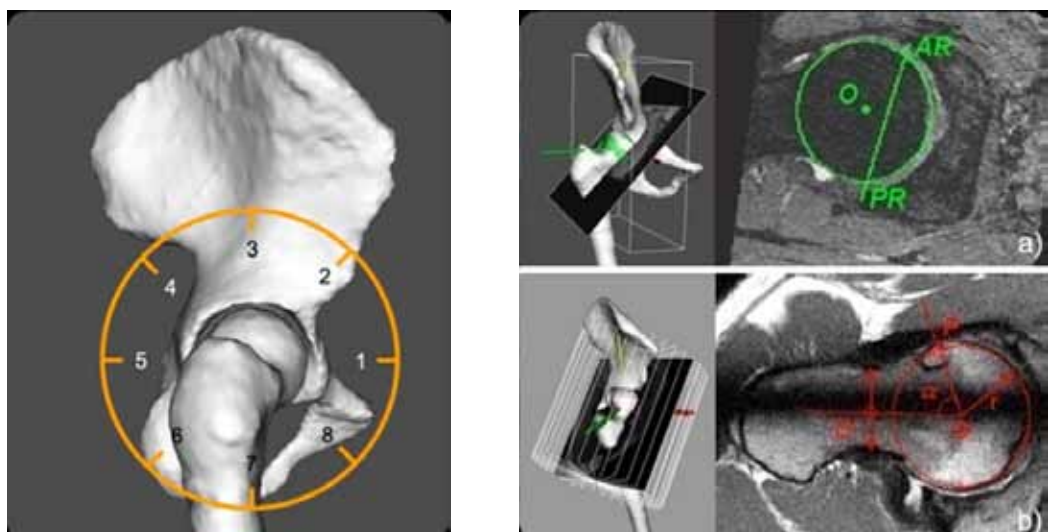6 Inferoposterior

7 Inferior

8 Anteroinferior

Figure 8: Morphological /Radiological Analysis
MIRALab - 3D medical application

42.59

Figure 9: Playmancer game

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International and national advisory committees

Giovanna Di Marzo Serugendo:
- Since 2011: Member of Comité de Direction, CADMOS
- Since 2011: Member of Programme Doctoral Romand d'Informatique (CUSO)
- Since 2011: Programme Director for MSc in Management - Option Information Systems and Services Science
- Since 2011: Programme Director for PhD Programme in Information Systems
- Since 2011: Director of Institute of Services Science
- Steve Hostettler. High-level Petri Net Model Checking – The Symbolic Way. November 2011.
- Jose Luis Fernandez Marquez. Bio-Inspired Mechanisms for Self-Organising Systems. IIIA-CSIC, Barcelona, Spain, 2011.

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

Jean-Marc Seigneur:
- Expert Evaluator for the Commission of the European Union
- Expert Evaluator for the US Air Force Research

Jean-Henry Morin:
- Since 2011: Member of Commission du personnel, Université de Genève
- Since 2011: Program director for BSc in Information Systems and Services Science
- Since 2011: Scientific committee member of the InfoSec program, Formation Continue, HEC Executive

Nadia Magnenat-Thalmann:
- Jury of Ph.D. thesis for New Zealand, France, Sweden, Switzerland and Germany.
- Since 2011: Member of the evaluation committee of the ANR (French National Research Agency), Paris, France
- Since 2011: Member of the evaluation committee of the ENSAIT Textile Institute, Roubaix, France
- Since 2002: Member of the Strategic Advisory Board Committee, City University, Hong Kong, China
- Since 1994: President of the Computer Graphics Association (CGS)
- European Union, FP7 Projects, Brussels.
- Research Grants Council of Singapore.
- Natural Sciences and Engineering Research Council of Canada.
- National Science Foundation USA.
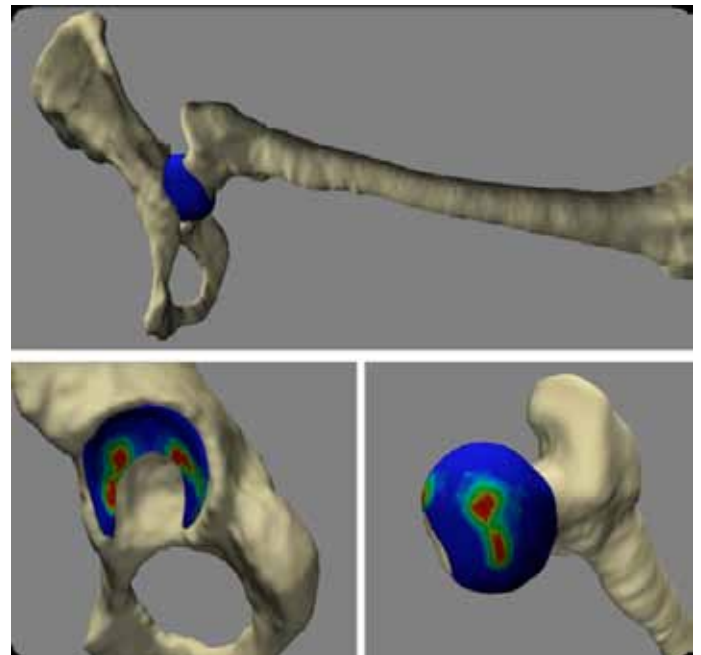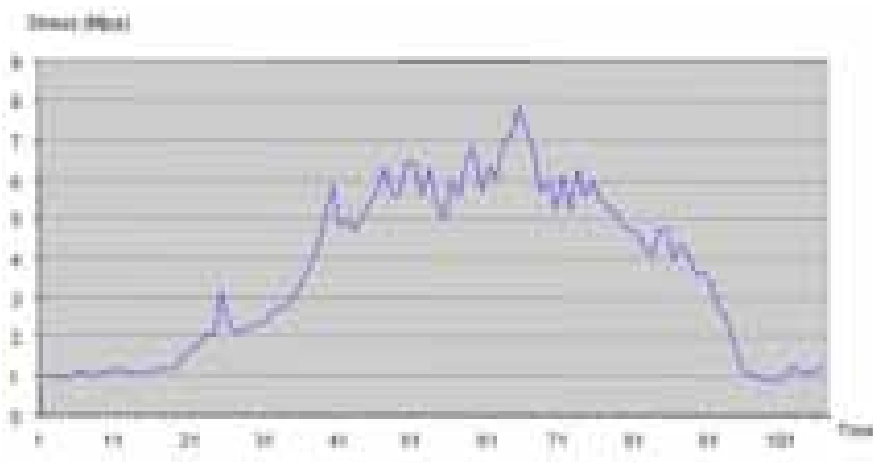- Swiss National Research Foundation.
- Austrian Research Foundation.

Figure 10 (a&b): Simulation Analysis
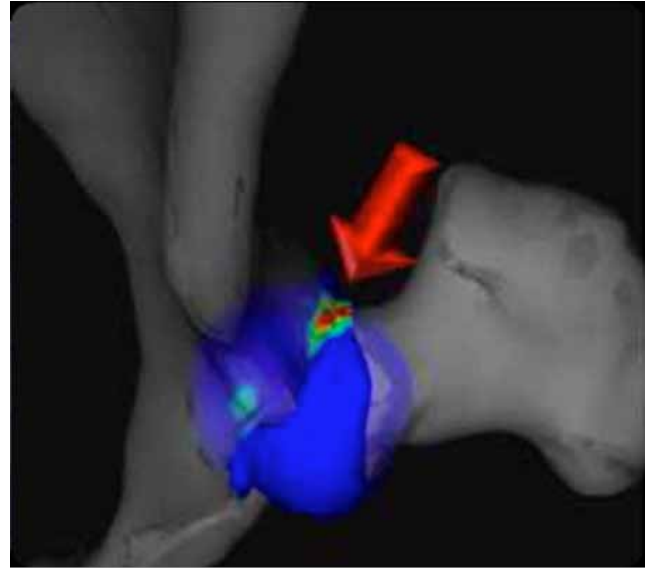MIRALab - 3D medical application

Figure 11: Results correlation
MIRALab - 3D medical application

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

Giovanna Di Marzo Serugendo:
- Co-doctoral School Chair: West Switzerland Doctoral Winter School for Computer Science, Ovronnaz, Switzerland, January 23-27, 2012
- Doctoral School Chair: Doctoral School of the ERCIM Workshop on Software Engineering for Resilient Systems, Geneva, Switzerland, September 29-30, 2011 (SERENE'11)
- Steering committee chair: IEEE International Conference on Self-Adaptive and Self-Organizing Systems Ann Arbor, MI, USA, October 3-7, 2011 (SASO'11-12)

Jose Luis Fernandez Marquez:
- Co-Chair at CM (Coordination Models, Languages and Applications) track on the SAC 2012 (27th ACM Symposium on Applied Computing)
- Publicity Co-Chair at SASO'12 (6th IEEE International Conference on Self-Adaptive and Self-Organizing Systems)

Dimitri Konstantas:
- Chair of the International conference on e-Health Service and technologies 2011, Sofia, Bulgaria, 25-27 July, 2011

Jean-Henry Morin:
- Co-chair of the 7th IEEE International Workshop on Digital Rights Management, Satellite Workshop of 8th IEEE Consumer Communications & Networking Conference (IEEE CCNC 2011), January, 2011, Las Vegas, Nevada.
- Co-chair of the Cloud Computing minitrack, Hawaii International Conference on System Sciences, HICSS-44, Hawaii, January, 2011.

Jolita Ralyté:
- General Chair: IFIP WG 8.1 Working Conference on Method Engineering – ME'11, Paris, France, April 20-22, 2011.
- Publication Chair: 23rd International Conference on Advanced Information Systems Engineering – CAiSE'11, London, UK, June 20-24, 2011.

Michel Léonard:
- General Chair: 2nd International Conference on Exploring Services Science – IESS 1.1, Geneva, Switzerland, February 16-18, 2011.

Katarzyna Wac
- Session Chair: IEEE ICC 2011 Business Forum on eHealth Support in the Future Internet - Viable Business Models for Quality of Service Assurance, Japan, 2011
- Seesion Chair: Adaptive Services (for the eHealth Application Domain), Future Internet Assembly Workshops, May 2011, Budapest

Member of conference program committees

Giovanna Di Marzo Serugendo:
- Hawaii International Conference on System Sciences, Hawaii, January, 2012 (HICSS'12)
- 13th European Workshop on Dependable Computing, Pisa, Italy, May, 2011 (EWDC'11)
- ERCIM Workshop on Software Engineering for Resilient Systems, Geneva, Switzerland, September 29-30, 2011 (SERENE'11)
- Awareness Workshop, Ann Arbor, MI, USA, October 2011
- Workshop on Bio-inspired Algorithms for Distributed Systems, June, Germany, 2011 (BADS'11)
- International Workshop on Self-Organizing Systems, Karlsruhe, Germany, February 2011 (IWSOS'11)

Jose Luis Fernandez Marquez:
- Program Committee member at EASSS2011 (3th European Agent Systems Summer School)
- Program Committee memeber at EMERGE2011 track on the BIONETIC2011 Conference

Laurent Moccozet:
- International Scientific Advisory Board, 4th International Conference of Education, Research and Innovation (ICERI 2011), http://www.iated.org/iceri2011/

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

Katarzyna Wac:
- International Joint Conference on Ambient Intelligence, Special Session on Ambient Assisted Living (Ami 2011)
- 7th International Conference on Network and Service Management (CNSM 2011)
- 2nd International Conference on Serious Gaming (GameDays 2011)
- 6th International Conference on Body Area Networks (BodyNets 2011)
- 14th IEEE International Conference on Computational Science and Engineering (CSE 2011)
- ACM SIGHIT International Health Informatics Symposium (IHI 2011)
- International Conference on e-Health Services and Technologies (ICEHST 2011)
- Workshop on Adaptive and DependAble Mobile Ubiquitous Systems (ADAMUS2011

Jean-Marc Seigneur:
- ACM Augmented Human International Conference, Tokyo, Japan, March 2011
- ACM Symposium of Applied Computing, Trust and Reputation Track Chair, Taiwan, March 2011
- IFIP Trust Management International Conference, Copenhagen, Denmark, July 2011

Jean-Henry Morin:
- 10th Annual Security Conference, May 4-6, 2011, Las Vegas, Nevada, USA
- 2nd European Security Conference, June 13-14, 2011, Orebro, Sweden
- 2nd International Conference on Exploring Service Science, IESS 1.1, Feb. 2011, Geneva, Switzerland
- 3rd International Workshop on Privacy Enhanced Technology and Security Engineering (PETSE 2011), Busan, Korea, 26-28 May 2011
- First International Conference on Advanced Collaborative Networks, Systems and Applications, (COLLA 2011), June 19-24, 2011, Luxembourg
- Sixth International Conference on Internet Monitoring and Protection, (ICIMP 2011), March 20-25, 2011, St. Maarten, The Netherlands Antilles

Abdelaziz Khadraoui:
- IESS 2011, Second International Conference on Exploring Services Sciences, February 2011, Geneva.
- International Conference on Digital Information Processing and Communications, Ostrava, Czech Republic, 2011.
- ICIST 2011, First International Conference on Information Systems and Technologies, Tebessa, 2011.
- International Journal of Intelligent Information and Database Systems (IJIIDS).
- 10th International Conference on Perspectives in Business Informatics Research, Riga, Latvia, from October 6 to 8, 2011
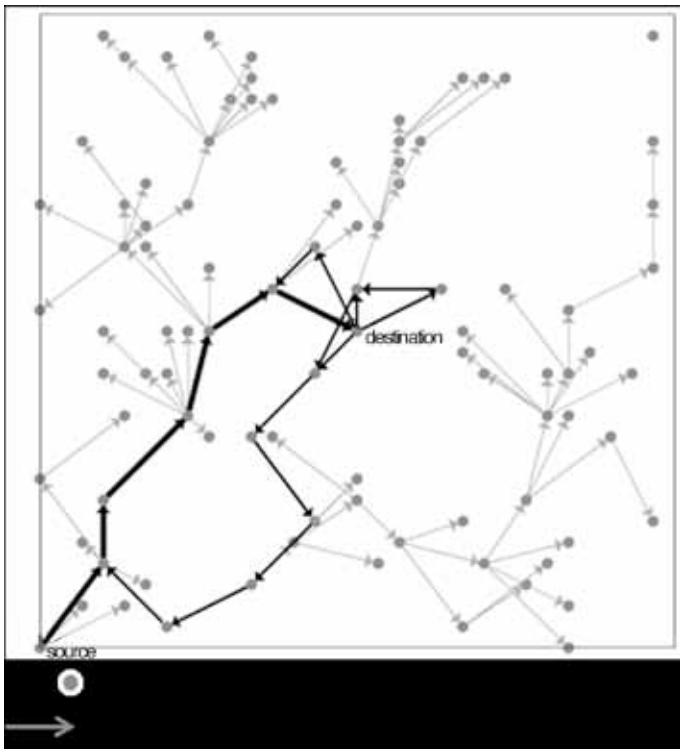

Figure 12: Modeling Self-* Systems using Chemically-Inspired Composable Patterns

Jolita Ralyté:
- CAiSE'11 – 23rd International Conference on Advanced Information Systems Engineering, London, UK, June 2011.
- ER'11 – 30th International Conference on Conceptual Model. Brussels, Belgium, November 2011.
- PoEM'11 – 4th IFIP WG8.1 Working Conference on The Practice of Enterprise Modeling: from Business Strategies to Enterprise Architectures. Oslo, Norway, November 2011.
- REFSQ'11 – 17th Working Conference on Requirements Engineering: Foundation for Software Quality, Essen, Germany, March 2011.
- ICEIS'11 – 13th International Conference on Enterprise Information Systems. Beijing, China, June 2011.
- RCIS'11 – 5th International Conference on Research Challenges in Information Science. Guadeloupe, France, May 2011.
- EMMSAD'11 – International Working Conference on Exploring Modeling Methods in Systems Analysis and Design. London, UK, June 2011.
- IESS 1.1 – 2nd International Conference on Exploring Services Science, Geneva, Switzerland, February 2011.
- ADBIS'11 – East-European Conference on Advances in Databases and Information Systems. Viena, Austria, September 2011.
- CEC'11 – 13th IEEE Conference on Commerce and Enterprise Computing. Luxembourg, September 2011.
- LISS'11 – International Conference on Logistics, Informatics and Service Science. Beijing, China, June 2011.
- ICSOFT'11 – 6th International Conference on Software and Data Technologies. Seville, Spain, July 2011.
- BMSD'11 – International Symposium on Business Modeling and Software Design, Sofia, Bulgaria, July 2011.

INVITED TALKS
Giovanna Di Marzo Serugendo:
- From Chemical Reactions to Ecosystems of Services - The SAPERE Approach - Research Days at Lakeside Labs, Klagenfurt, Austria, July 2011
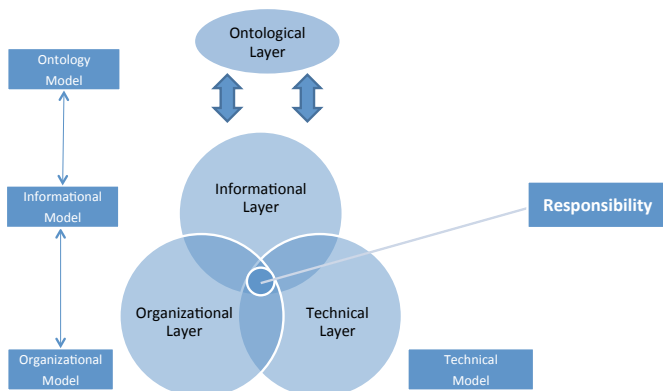

Figure 13: Responsibility Aspects in Service engineering

Katarzyna Wac:
- Performance Prediction for mHealth Applications: A Machine Learning Approach, Multimedia Communications Lab (KOM) Seminar, TU Darmstadt, Germany, May 2011

Jean-Henry Morin:
- Invited talk, A New Digital World Order?, Science Po Europe-Asia Conference, SPEAC 2011, Le Havre, Feb 2011
- Keynote address, Digital Responsibility 2.0, AISTS Executive MBA, May 2011
- Invited talk, Digital Responsibility, National Information Society Agency (NIA), Seoul, South Korea, Nov 9, 2011

Abdelaziz Khadraoui:
- ICIST 2011, First International Conference on Information Systems and Technologies, « Enjeux de l'interopérabilité sémantique des SI dédiés à l'e-gouvernement », Tebessa, April 2011.

Nadia Magnenat-Thalmann:
- Invited speaker - Next generation of Virtual Humans and Social Robots - University of North Carolina, Chapel Hill, USA, November 18, 2011.
- Keynote speaker - Virtual Humans and Social Robots: Our Upcoming Partners - 13th Annual Frontiers in Research Lectures, University of Ottawa, Canada, November 15, 2011.
- Keynote speaker - The making of 3D garments and Virtual Try On - CIDE'2011 Conference, Hangzhou, China, November 6-8, 2011.
- Keynote speaker - Modelling and simulating our own avatars to be part of virtual groups and crowds - CTIT conference, College of Engineering, Dubai, United Emirates, October 26, 27, 2011. http://www.ctit.ae/keynote_speakers.php
- Keynote speaker - Towards truly User-centric convergence of Multimedia - Future Internet Assembly (FIA) 2011, Budapest, Hungary, May 18, 2011.
- Keynote speaker - Haptic Interaction of Hair and Textiles - International Symposium on Virtual Reality Innovation, ISVRI 2011, SUNTEC Singapore International Convention and Exhibition Center, Singapore, March 19, 2011.
- Tutorial speaker - Virtual Humans in Virtual Reality - SUNTEC Singapore International Convention and Exhibition Center, Singapore, March 15, 2011.

REFEREEING
Giovanna Di Marzo Serugendo:
- Computing Journal (2012)
- Theoretical Computer Science, Elsevier (2011)
- Future Generation Computer Systems, Elsevier (2011)
- IEEE Transactions on Software Engineering (2011)
- IEEE Transactions on Computational Intelligence and AI in Games (2011)
- IEEE Transactions on Systems, Man and Cybernetics – Part A: Systems and Humans (2011)

Jose Luis Fernandez Marquez:
- Neurocomputing Journal. Elsevier Editorial (2012)
- Central European Journal of Engineering. Versita Editorial (2012)

Figure 14: ThinkData home page (http://thinkdata.ch)

Katarzyna Wac:
- IEEE Communications Magazine
- International Journal of Medical Informatics (Elsevier)
- IEEE Transactions on Information Technology in Biomedicine

Jolita Ralyté:
- IJISMD – International Journal of Information Systems Modelling and Design
- REJ – Requirements Engineering Journal
- IJSSS – International Journal of Information Systems in the Service Sector Reviews for IS – Information Systems Journal
- SOSYM – Software and Systems Modeling

Nadia Magnenat-Thalmann:
- ACM SIGGRAPH, IEEE Transactions on Visualization and Computer Graphics, IEEE Computer Graphics and Applications, IEEE Computer, Communications of ACM, The Visual Computer, Computer Graphics Forum, Computer Vision, Graphics and Image Processing, Presence, International Journal of Human-Computer Studies, Computers and Graphics, cyberworlds conference, ICAART (International Conference on Agents and Artificial Intelligence), Enactive conference, Multimedia Modelling conference, International Conference on Entertainment Computing (ICEC), International Conference on Signal Processing, Image Processing and Pattern Recognition; GRAPP ("International Conference on Computer Graphics Theory and Applications), Conference on Affective Computing and Intelligent Interaction (ACII 2010), EG Workshop on 3D Object Retrieval, IEEE Virtual Reality Conference 2010, Computer Graphics International, CASA conference, SIGGRAPH/EUROGRAPHICS Symposium on Computer Animation, etc

EDITORIAL RESPONSABILITIES

Giovanna Di Marzo Serugendo:
- Editorial Board Member (2011-): ACM Transactions on Autonomous Adaptive Systems (TAAS)
- Editor-in-chief: (2005-2011): ACM Transactions on Autonomous Adaptive Systems (TAAS)
- Editorial Board Member: Multiagent and Grid Systems - An International Journal. ISSN: 1574-1702.
- Editorial Board Member: International Journal of Intelligent Information and Database Systems. InderScience.

Laurent Moccozet:
- Editorial board member (2009-) revue Technique et Science Informatiques publié par les éditions Hermès-Lavoisier
- Editorial board member (2011-) International Scholarly Research Network Computer Graphics

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

Jolita Ralyté:
- Member of editorial committee of the International Journal of Information Systems Modelling and Design – IJISMD
- Member of editorial committee of the International Journal of Information Systems in the Service Sector - IJISSS

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

EVENTS

Nadia Magnenat-Thalmann:
- MIRALab in collaboration with IMI has demonstrated their Interactive Virtual Try On at the IEEE VR 2011 conference in Singapore, March 19-23, 2011.

- Lift 11 Workshop, iGraffiti: mobile Public Debate in the Urban Space, Geneva, Feb 3, 2011
- ICT Journal, interview of Jean-Henry Morin: «Entre la confiance aveugle et la paranoïa, je propose une logique de confiance éclairée», Nov. 2011. (also published in Le-MondeInformatique, Dec. 27, 2011)
- Le Journal de l'Unige Journal, no 54, Octobre, Novembre, 2011: "48 heures pour sauver le monde", http://www.unige.ch/communication/lejournal/archives/54.pdf
- President of ThinkServices, Think Tank on Services Science and Innovation.

Jose Luis Fernandez Marquez:
- The difficulty of proving all the properties of an emergent system, 101 Challenges for Self-Aware Autonomic Systems, October 2011, http://www.aware-project.eu/akla-esso-tchao.html

Akla-Esso Tchao:
- Adaptability, evolvability, diversity, spatiality, 101 Challenges for Self-Aware Autonomic Systems, October 2011, http://www.aware-project.eu/akla-esso-tchao.html

Workshops
Nadia Magnenat-Thalmann:
- The European Competence Centre, namely Excellence in Media Computing and Communication (EMC2) in conjunction with Fraunhofer Heinrich Hertz Institute has presented an international industry workshop on: The Future of 3D Media, at the Innovation Center Heinrich Hertz Institute (HHI), Berlin, Germany, on November 14, 2011.

Participation in TV and radio programs
Giovanna Di Marzo Serugendo:
- RSR, Les Temps Modernes, January 16th, 2012, http://www.rsr.ch/#/la-1ere/programmes/les-temps-modernes/?date=16-01-2012

Nadia Magnenat-Thalmann:
- Interview of Nadia Magnenat-Thalmann, Radio Cité Genève, in the program La bouteille à moitié pleine, on January 17, 2011.

Press release
Giovanna Di Marzo Serugendo:
- Le Journal de l'Unige Journal, no 53, Octobre, Novembre, 2011:, "Vers un système d'affichage vraiment intelligent", http://www.unige.ch/communication/lejournal/archives/53.pdf
- To model, test and verify self-aware systems, 101 Challenges for Self-Aware Autonomic Systems, October 2011, http://www.aware-project.eu/giovanna-serugendo.html
- Bilan, November 16th 2011, Une bataille s'engage pour maîtriser le flot des données informatiques, http://www.bilan.ch/articles/techno/une-bataille-s%E2%80%99engage-pour-maitriser-le-flot-des-donnees-informatiques
- LakesideLabs interview, July 2010, http://www.youtube.com/watch?v=p-y7aLRLwe0

Jean-Henry Morin:
- Launch of ThinkData.ch (Jan 27, 2012) at IDHEAP in Lausanne. Result of the 2011 work of the ThinkServices TaskGroup on Data, Society and Transparency. http://www.ictjournal.ch/News/2012/01/27/La-protection-des-donnees-en-36-exemples-sur-ThinkDatach.aspx

Other achievements
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

Figure 16: X-risk for Finma BCP Implementation (Financial Activities)
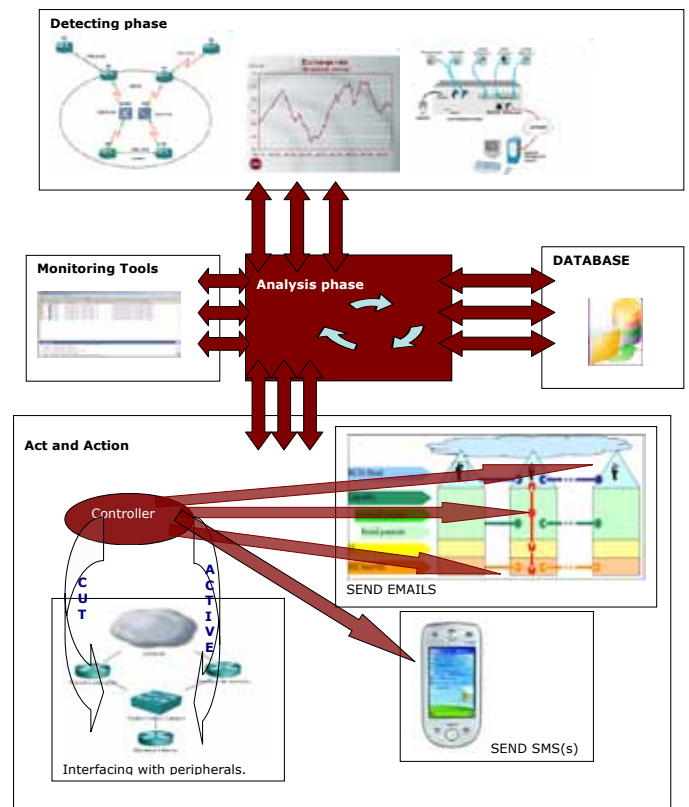
Katarzyna Wac:
- Grantee of the Office of Behavioral and Social Sciences Research of National Institutes of Health (USA), for participation in mHealth Winter Institute, Washington, USA, 2011, co-located with the mHealth summit.

Jolita Ralyté:
- Research seminar: Modélisation des processus: perspectives et techniques. Tutorial at the University of Paris 1 – Sorbonne, France, September 2011.
- Research seminar: Situational Method Engineering: Achievements, Trends & Challenges. Research seminar at the City University of Dublin, Ireland, June 2011.

COURSES AND TUTORIALS

Giovanna Di Marzo Serugendo:
- January 2012 - West Switzerland Doctoral Winter School for Computer Science 2012 (3h)

Katarzyna Wac:
- Performance evaluation of mobile services: measurements-based methodology and example assessment techniques, International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI'11), Stockholm, Sweden, 30 August - 2 September 2011 (3h)

FUNDED RESEARCH PROJECTS
Participation to European projects

SAPERE
Self-Aware Pervasive Service Ecosystems
EU funded project, FET Proactive, FP7- ICT-2009.8.5

Principal investigator: University of Geneva.
Partners: University of Modena e Reggio Emilia (Italy), University of Bolpgna (Italy), University of Geneva (Switzerland), University of Linz (Austria), University of St-Andrews (UK)
Period: October 2010 – September 2013
Website: http://www.sapere-project.eu

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

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Figure 17: Context-Aware Display

PERIMETER
User Centric Paradigm for Seamless Mobility in Future Internet
EU FP7 project.
Partners: Grupo Corporativo GFI Informatica (GFI), Traffix Systems Ltd (TxS), Université de Genève (UNIGE), Fachochschule Vorarlberg GmbH (FHV), Waterford Institute of Technology (WIT), Blekinge Institute of Technology (BTH), Technische Universität Berlin (TUB), Turkcell Iletisim Hizmetleri A.S (TC), Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), Telefonica I+D (TID)
Period: May 2008 – Avril 2011
Website: http://www.ict-perimeter.eu

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Figure 18: Geometrical points detection and tracking for facial emotion recognition

ULOOP

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

———

3D Life

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

———

FRANCOPHONIE

«Accès au patrimoine vestimentaire contemporain et traditionnel francophone»
Period: December 2008 - December 2011
Type: Fonds Francophone des Inforoutes
Partners: Université de Beyrouth - Liban, Musée de Mahdia - Tunisie

———

MULTISCALEHUMAN

Multi-scale Biological Modalities for Physiological Human Articulation
Period: October 2010 - September 2015
Type: European Research
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
Website: http://multiscalehuman.miralab.ch/

———

PLAYMANCER

«Serious Gaming 3D Environment»
Period : November 2007 - May 2011
Type: European Research
Website: http://www.playmancer.eu
Partners: 8 partners (Systema Technologies S.A. – Greece, Netunion s.a.r.l. – Switzerland, University of Patras, The Wire Communications Laboratory – Greece, Technische Universitaet Wien – Austria, Fundacio privada institut d'investigacio biomedica de bellvitge – Spain, MIRALab, University of Geneva – Switzerland, National Center of Science and Research «Demokritos» – Greece, Serious Games Interactive (SGI) – Denmark, Roessingh Research Development BV (RRD) - Nederlands)

———

SERVIVE

«SERVice oriented Intelligent Value adding nEtwork for Clothing-SMEs embarking in Mass-Customization»
Period : September 2008 - August 2011
Type: European Research
Partners: 15 partners (Adidas AG – Germany, Athens Technology Center – Greece, Customax – Netherlands, Digital Humans – Switzerland, Hohenstein Institute – Germany, Institut français du textile et de l'habillement – France, MIRALab, University of Geneva – Switzerland, National Center of Science and Research «Demokritos» – Greece, Nottingham Trent University - Great Britain, RWTH-Aachen – Germany, Silva & Sistelo SA – Portugal, StudioDemetra – Italy, Team Colours Ltd. – Great Britain, The University of Arts London – Great Britain, Unicatum – Germany)
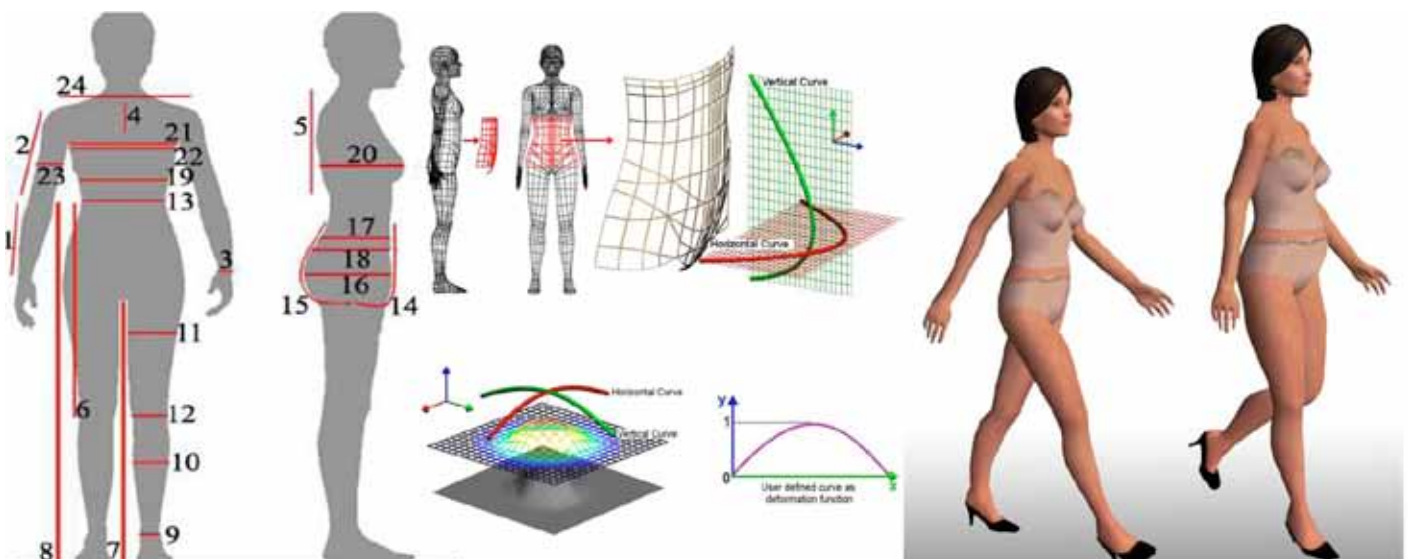
Figure 19: Avatar personalization and animation MIRALab

Participation to National projects

CLOVIS
FNS project 136316
Period: October 2011 – September 2013
Website: http://p3.snf.ch/project-136316

———

eGov.STICS
CTI project (Etat de Genève)
Period: September 2011 – December 2012

———

Servmed
E-health services
Partners: Etablissements Hospitaliers de la Côte (EHC), University of Geneva (Michel Léonard, Mehdi Snene)
Period: September 2010 – September 2011
Website: fit.unige.ch/caremap

———

K-map for Social Societies
Advanced and adaptable browsers for scientific activties
Partners: Social department SES University of Geneva (Mehdi Snene)
Period: May 2011

———

Eva-roc
Social workflow for evaluation and audit process management
Partners: University of Geneva (Mehdi Snene)
Period: September 2011

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Aerial Crowd
«Swiss National Research Foundation Project: Aerial Crowd: Populating Mixed Reality Cities»
Period: February 2011 - January 2013
Partners: 4 partners (Ecole Polytechnique Féderale de Lausanne, Computer Vision Laboratory (CVLab) – Switzerland, Ecole Polytechnique Féderale de Lausanne, Virtual Reality Laboratory (VRLab) – Switzerland, ETHZ Computer Vision Laboratory – Switzerland, MIRALab, University of Geneva – Switzerland)

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FNRS-REAL
«Swiss National Research Foundation Project: Realistic Computer Human Animation using Medical Modelling»
Period : October 2010 - September 2012
Type: Swiss Research
Partner: 4 partners (Ecole Polytechnique Féderale de Lausanne, Computer Vision Laboratory (CVLab) – Switzerland, Ecole Polytechnique Féderale de Lausanne, Virtual Reality Laboratory (VRLab) – Switzerland, ETHZ Computer Vision Laboratory – Switzerland, MIRALab, University of Geneva – Switzerland)

Figure 20: General view of SPiN-X system
with its different components

Teaching
Giovanna Di Marzo Serugendo:
• **Introduction à la pensée informatique**, ISS, Bachelor course, 3 ECTS, 42 hours, 22 students
• **Assessment of Information Systems**, ISS, Master course, 3 ECTS, 42 hours, 62 students
• **Bases de données**, ISS, Bachelor course, 6 ECTS, 21 hours, 20 students
• **Services foundation**, ISS, Master course, 3 ECTS, 42 hours, 7 students
• **Contextualisation et Qualité des Services**, ISS, Bachelor course, 6 ECTS, 84 hours, 4 students
• **Social and Legal Issues in Informatics**, ISS, Master course, 3 ECTS, 84 hours
• **Design Science Research**, ISS, Master course, 3 ECTS, 84 hours

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

Figure 21: Prediction calculation with the result
(S: Semantic Prediction based on Interconnected News)

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

Jean-Marc Seigneur:
- **Services Internet**, ISS, Bachelor course, 6 ECTS, 56 hours, 16 students
- **Intégration et Déploiement de Services Informatisés**, ISS, Bachelor course, 6 ECTS, 56 hours, 13 students
- **e-Réputation**, ISS, Formation continue InfoSec, 2 hours, 30 students

Jean-Henry Morin:
- **Systèmes d'Information et Applications**, ISS, Bachelor course, 3 ECTS, 28 hours, 165 students
- **Introduction à la Sécurité, Ethique et Règlementation des Services**, ISS, Bachelor course, 3 ECTS, 28 hours, 7 students
- **Design Science**, ISS, Bachelor course, 6 ECTS, 56 hours, 10 students
- **Systèmes d'Information d'Entreprise**, ISS, Bachelor course, 6 ECTS, 56 hours, 8 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, 6 students
- **Service Innovation Lab**, ISS (shared with Laurent Moccozet), 3 ECTS, 28 hours, 8 students
- **DRM Technologies**, ISS, Formation continue InfoSec, 2 hours, 30 students

- **Evolution et Perspectives en Technologies de l'Information et de la Communication**, Bachelor en lettres et sciences humaines, pilier sciences de l'information et de la communication, chargé d'enseignement à la Faculté lettres et sciences humaines, Université de Neuchâtel, 5 ECTS, 28 hours, 78 students

Jolita Ralyté:
- **Project Management**, ISS, Bachelor course, 3 ECTS, 28 hours, 15 students
- **Requirements Analysis**, ISS, Bachelor course, 3 ECTS, 28 hours, 15 students

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

Aziz Khadraoui:
- **Service Institutional Strategies**, ISS, Master course, 6 ECTS, 56 hours, 7 students

Michel Léonard:
- **Models and Design**, ISS (with Aziz Khadraoui, Wanda Opprecht), Master course, 56 hours, 7 students
- **Introduction to Service Science**, ISS (with Laurent Moccozet, Camille Tardy, Wanda Opprecht), Bachelor course, 56 hours, 300 students
- **Modélisation et Réalisation de service**, ISS (with Mehdi Snene), Bachelor course, 56 hours, 15 students
- **Principes de modélisation de services**, ISS (with Mehdi Snene), Bachelor course, 56 hours, 25 students
- **Bases de données**, ISS (with Giovanna di Marzo Serugendo, Wanda Opprecht), Bachelor course, 56 hours, 25 students
- **Business Development with Services**, ISS (with Wanda Opprecht), Master course, 56 hours, 7 students

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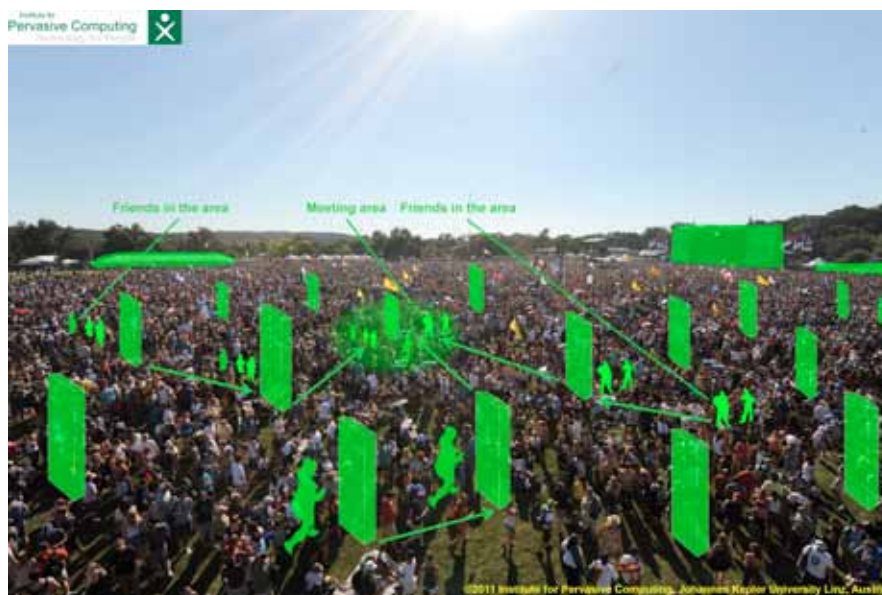

Figure 22: Collaborative Displays for Crowd Steering

Faculty of Economic and Social Sciences

Institute of Knowledge Integration and Access to Knowledge Repositories

KE

Institute of Knowledge Integration and Access to Knowledge Repositories

Domain activities

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

Current research directions of the group include:
* the modelling and management of knowledge resources (from formal ontologies to (multilingual) text corpora), with applications in the urban and architectural domain
* the semantic and rhetoric indexing of scientific documents for precise information retrieval
* the design of semantic digital libraries and their interactive user interfaces
* the formal representation of architectural knowledge and the development of knowledge-based systems for architectural design
* usability evaluations of representation techniques for semantic information in 3D virtual environments

Team

Directors
Gilles Falquet
Associate professor

Claudine Métral
MER

Laurent Moccozet
MER

Senior researchers
Dr. Jacques Guyot
Dr. Kaveh Bazargan Harandi

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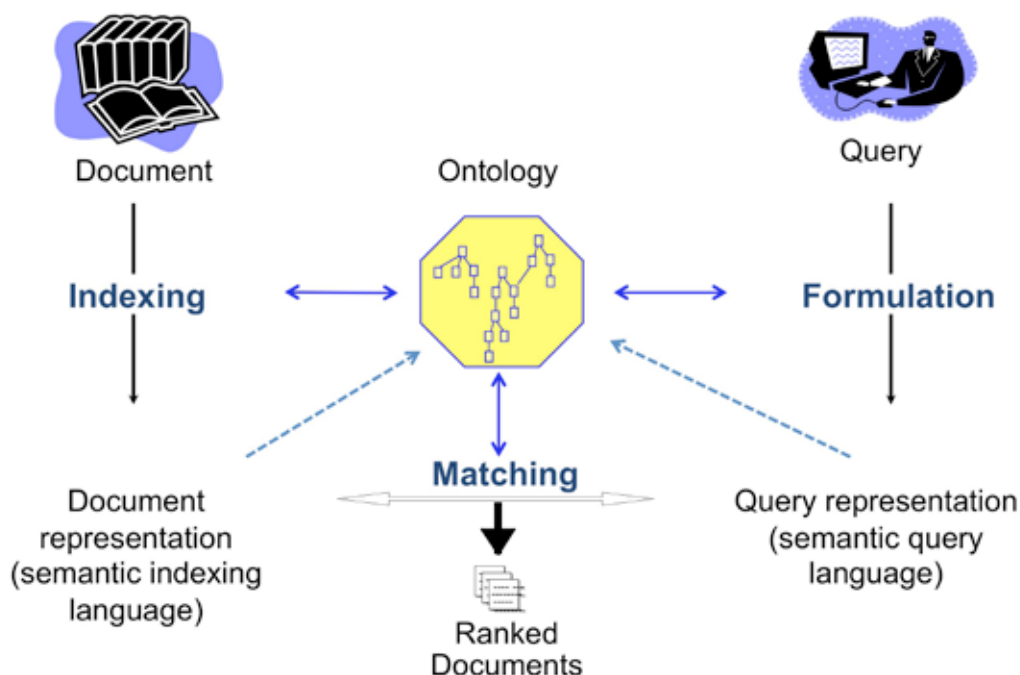Alain Junger
Camille Tardy
Mathieu Vonlanthen

Fig.1: Ontology-based information retrieval

PhD Thesis

- Kaveh Bazargan Harandi, «Abstract Information Visualization in Interactive 3D Virtual Environments: Conceptualization and Usability Evaluation», March 2011

List of publications

Full refereed papers in Conference Proceedings

[1] H. De Ribaupierre and G. Falquet, «New trends for reading scientific documents», In Proc. BooksOnline'11 Workshop of the CIKM Conf., Glasgow, 2011.

[2] J. Lacasta, J. Nogueras-Iso, J. Teller, G. Falquet, «Transformation of a keyword indexed collection into a semantic repository: applicability to the urban domain», In Proc. Theory and Practice of Digital Libraries, Berlin, 2011. Lecture Notes in Computer Science 6966, Springer.

[3] N. Ghoula, H. de Ribaupierre, C. Tardy, G. Falquet, «Opérations sur des ressources hétérogènes dans un entrepôt de données à base d'ontologie», In Actes des 4e journées francophones sur les ontologies, Montréal, Canada, 2011.

Books and book chapters

[4] G. Falquet, C. Métral, J. Teller, C. Tweed (Eds.), «Ontologies in Urban Development Projects». Springer, 2011.

[5] P. Bourque, R. Bouaziz, G. Falquet (Eds.), «Actes des 4e journées francophones sur les ontologies», Montréal, Canada, 22-23 juin 2011. (to appear in ACM digital library)

[6] G. Falquet, J. Guyot, «Ontologies and multilingualism», In Ontologies in Urban Development Projects G. Falquet, C. Métral, J. Teller, C. Tweed (Eds.). Springer, 2011.

[7] C. Métral, A.-F. Cutting-Decelle, «Ontologies for interconnecting urban models». In Ontologies in Urban Development Projects, G. Falquet, C. Métral, J. Teller, C. Tweed (Eds.). Springer, 2011.

[8] J. Nogueras-Iso, J. Lacasta, J. Teller, G. Falquet, J. Guyot, «Transformation of urban knowledge sources to ontologies», In Ontologies in Urban Development Projects G. Falquet, C. Métral, J. Teller, C. Tweed (Eds.). Springer, 2011.

International and national advisory committees

Gilles Falquet:

- Member of the scientific advisory board, International Journal on Information - Interaction – Intelligence (I3), Advances in Knowledge Discovery and Management

Laurent Moccozet:

- Membre du comité de rédaction de RSTI : Revue des Sciences et Technologies de l'Information, http://tsi.revuesonline.com/

Conference organization as chair or co-chair

Gilles Falquet:

- 4e Journées francophones sur les ontologies, JFO 2011, co-chair, Montréal, 22-23 June 2011

Member of conference progam committees

Gilles Falquet:

- Member of the scientific committee. BooksOnline 2011.
- Comité scientifique de la conférence Extraction et Gestion de la Connaissance EGC'12

Claudine Métral:

- Member of the Scientific Committee of the Conference Reliability and Statistics in Transportation and Communication - RelStat'11, Riga, Latvia, 19-22 October 2011

Funded research projects

Participation to National projects

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

———

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

———

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

———

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

OTHERS

Best paper award: International Conference on Theory and Practice of Digital Libraries (TPDL), Berlin, 2011, J. Lacasta, J. Nogueras-Iso, J. Teller, G. Falquet, «Transformation of a keyword indexed collection into a semantic repository: applicability to the urban domain», In Proc. Theory and Practice of Digital Libraries, Berlin, 2011. Lecture Notes in Computer Science 6966, Springer.

TEACHING

- **Fondements formels des systèmes d'information**, ICLE, Bachelor course, 6 ECTS, 56 hours, 12 students
- **Algorithme appliquée**, ICLE, Bachelor, 6 ECTS, 56 hours, 10 students
- **Interfaces des systèmes d'information**, ICLE, Bachelor SES & Master Sciences course, 6 ECTS, 56 hours, 15 students
- **Knowledge representation**, ICLE, Master course, 6 ECTS, 56 hours, 16 students
- **Trandisciplinary platforms for services**, ICLE, Master course, 6 ECTS, 56 hours, 6 students
- **Systèmes d'information de l'environnement**, Master en sciences de l'environnement (MUSE) course, 6 ECTS, 10 hours, 51 students
- **Modélisation des bases de données spatiales,** Certificat complémentaire de mathématiques, Service course, 3 ECTS, 28 hours, 45 students
- **Space-City: Modèles urbains 3D,** ICLE, Master, Service course, 3 ECTS, 28 hours, 12 students

Air quality model
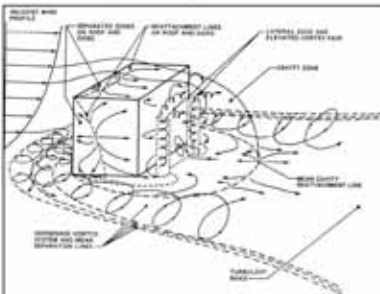
$$\beta_{\mathrm{m}} = \int_{L_|} F_{\mathrm{m}}\, \mathrm{d}x,$$

$$\beta_{\mathrm{t}} = \int_{L} F_{\mathrm{t}}\, \mathrm{d}x.$$

3D city model/CityGML
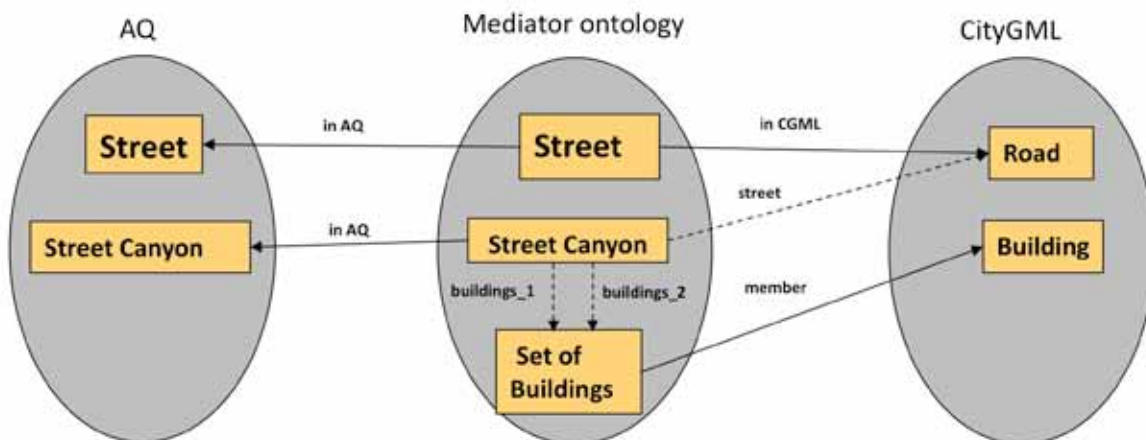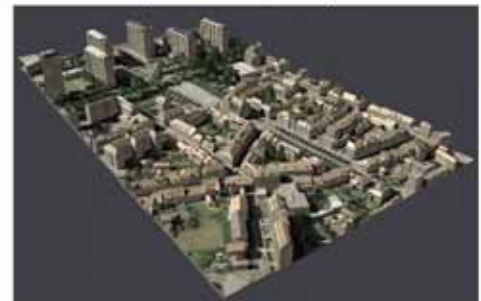
Fig.2: Interconnecting Air Quality Models and 3D City Models through Knowledge Structures

Centre Universitaire d'Informatique

Faculty of Humanities
Linguistic Department

LATL

Laboratory for the Analysis and Technology of Language

latl.unige.ch

Laboratory for the Analysis and Technology of Language

Domain activities

The LATL (http://www.latl.unige.ch/) develops research, prototypes, and open source software for several facets of natural language processing. The main areas of research are automatic analysis of sentence structure (parsing) and its meaning, and the development of lexicons and dictionaries. Parsing is at the core of several applications: text-to-speech synthesis, terminological extraction, computer-assisted language learning, text mining, and machine translation. This goal is pursued through the two main methodologies available today: the development of large-scale and robust grammar-based systems and the development of adaptive systems that learn from large amounts of data. The systems developed at LATL span several languages: French, English, German, Italian, and other languages are underway (Greek, Spanish, Japanese, Arabic, Czech, Chinese, and Catalan). The LATL group collaborates closely with the AI group through the subgroup in computational linguistics and computational learning (http://clcl.unige.ch) in the development of adaptive data-driven systems for several parsing-based tasks, such as investigations of shallow levels of meaning representations and spoken-language understanding for dialogue systems. It is also involved in speech processing, specifically, in automatic segmentation, prosody and speaking style modelling.

Team

Director
Eric Wehrli
Full professor

Paola Merlo
Associate professor

Senior researchers
Dr. Effi Geogala
Luka Nerima
Dr. Lonneke van der Plas

Assistants (PhD students)
Asheesh Gulati
Jean-Philippe Goldman
Alexis Kauffmann
Goldjihan Katchajev
Kamel Nehbi
Lorenza Russo
Tanja Samardzic
Yves Scherrer

Administration
Eva Capitao

PhD Thesis

- Sébastien L'Haire, «Traitement automatique des langues et apprentissage des langues assisté par ordinateur: bilan, résultats et perspectives», Supervisor: Eric Wehrli, June 2011

List of publications

Full refereed papers in Conference Proceedings

[1] Antoine Auchlin, Jean-Philippe Goldman, Anne Catherine Simon, «Pauses avec et sans prise de souffle : typologie acoustique et fonctionnelle», Colloque «(Dés-) organisation de l'oral ? de la segmentation à l'interprétation» 24-25 Mar 2011, Rennes, France

[2] Mao-Hsu Chen, Jean-Philippe Goldman, Ho-hsien Pan, Janice Fon, «Taiwan Min EasyAlign: an automatic phonetic alignment tool under Praat», UPenn Alignment Workshop, Jan 2011

[3] J-Ph Goldman, «EasyAlign: an automatic phonetic alignment tool under Praat», Proceedings of InterSpeech, September 2011 , Firenze, Italy.

[4] Lonneke van der Plas, Paola Merlo and James Henderson, 2011, «Scaling Up Cross-lingual Semantic Annotation Transfer», Proceedings of the Association for Computational Linguistics, Portland, OR, pp. 299-304.

[5] Lorenza Russo, Eric Wehrli (2011), «La traduction automatique des séquences clitiques dans un traducteur à base de règles», TALN 2011 (Traitement automatique du Langage Naturel) (18th edition), Montpellier, France, June-July, (6 pages).

[6] Lorenza Russo, «La traduction automatique entre langues proches : le cas de l'italien et du français.», Actes des XXIV Journées de Linguistique (JDL), Université Laval - Québec, Québec, Ciral, pp. 141-153, March.

[7] Lorenza Russo, Yves Scherrer, Jean-Philippe Goldman, Sharid Loágica, Luka Nerima and Eric Wehrli, «Étude inter-langues de la distribution et des ambiguïtés syntaxiques des pronoms». In Proceedings of the TALN 2011 Conference, June 2011, Montpellier, France.

[8] Tanja Samardzic, «Automatic word alignment in a parallel Slovene-Serbian corpus». In Serbian language and literature in the South Slavic context. Belgrade: Logo, 88-121. (in Serbian)

[9] Tanja Samardzic, «Language corpora as a source of new data for lexicographic description of Serbian». International Slavic conference papers 40/1. Belgrade: International Slavic centre. (in Serbian).

[10] Y. Scherrer, L. Russo, J.-Ph. Goldman, S. Loáiciga, L. Nerima, É. Wehrli, «La traduction automatique des pronoms: Problèmes et perspectives», TALN'11 Montpellier, France, May 2011

[11] Yves Scherrer, Lorenza Russo, Jean-Philippe Goldman, Sharid Loáiciga, Luka Nerima and Éric Wehrli, «Étude inter-langues de la distribution et des ambiguïtés syntaxiques des pronoms». TALN 2011, Montpellier.

[12] Yves Scherrer, «Syntactic transformations for Swiss German dialects». First Workshop on Algorithms and Resources for Modelling of Dialects and Language Varieties, EMNLP 2011, Edinburgh.

[13] Yves Scherrer, «Morphology generation for Swiss German dialects». Second Workshop on Systems and Frameworks for Computational Morphology (SFCM 2011), Zurich.

Books and book chapters

[14] Lorenza Russo, Eric Wehrli, «Traduction automatique et aide terminologique. Le traducteur en contexte TwiC et le traducteur de phrases Its-2», Cristina Vallini, Anna De Meo, Valeria Caruso (eds.), Traduttori e traduzioni, Liguori, Naples, Italy, pp. 301-310, September (ISBN/ISSN:978-88-207-4275-1).

[15] Lonneke van der Plas, Jörg Tiedemann, and Jean-Luc Manguin «Synonym acquisition across domains and languages», Chapter in V. Pallotta, A. Soro, and E. Vargiu, ed., Advances in Distributed Agent-based Retrieval Tools, Studies in Computational Intelligence pp.41-58 Springer-Verlag, Berlin. 361, June 2011

[16] Lonneke van der Plas, Jörg Tiedemann, and Ismail Fahmi, «Automatic extraction of medical term variants from multilingual parallel translations», Chapter in A. van den Bosch, and G. Bouma, ed., Interactive Multi-modal Question Answering. Theory and Applications of Natural Language Processing. pp149-170 Springer Verlag, Berlin. May 2011

International and national advisory committees

- Paola Merlo, Elected Member of the Executive Board for the Association for Computational Linguistics , 2009 - 2012.

Conference organization as chair or co-chair

- Paola Merlo, general chair, EMNLP 2011, Conference on Empirical Methods in Natural Language Processing — July 27–31, 2011 — Edinburgh, Scotland, UK.

Member of conference program committees

- TALN 2011 - 18e Conférence sur le Traitement Automatique des Langues Naturelles Montpellier, France, June 2011.
- The 48th Annual Meeting of the Association for Computational Linguistics (ACL 2011), June 2011, Portland, Oregon.

Invited talks

- Seminaire de Recherche - CENTAL- Louvain-la-Neuve - 8 avril 2011 - Analyse prosodique outillée pour l'étude de phonostyle
- IDP 09 , septembre 2011. Analyse des variations macro-prosodiques dans un corpus de parole expressive : détection de changements d'ambiance proso-discursive , avec A. Auchlin, Anne Catherine Simon
- Journées sur les accents du français -novembre 2011- L'accent régional dans quatre variétés de français en Belgique : perception du degré d'accent et paramètres prosodiques. avec Alice Bardiaux et Anne Catherine Simon
- Journées sur les accents du français -novembre 2011- Etude acoustique de l'accentuation pénultième en français de Suisse romande , avec Mathieu Avanzi Isabelle Racine Sandra Schwab
- Journées PFC-Paris 12 décembre 2011 «Étude acoustique de l'accentuation pénultième dans trois variétés de français»

- Lorenza Russo, «L'apporto della linguistica computazionale alla traduzione automatica», seminar «Introduzione alla ricerca traduttologica» (Prof. A. Lavieri) , Palermo, Italy, April 2011
- Lorenza Russo, Yves Scherrer, Jean-Philippe Goldman, «Applications of Fips», Workshop on Automatic Language Analysis: Fips and Freeling ressources, Barcelona, Spain, January 2011
- Yves Scherrer: Maschinelle Übersetzung für die schweizerdeutsche Dialektlandschaft. 17. Arbeitstagung zur alemannischen Dialektologie, Strasbourg.
- Yves Scherrer: Normalization as lexicon induction. Workshop on normalizing data of non-standard varieties, Zurich.
- Yves Scherrer: Neue dialektometrische Versuche mit schweizerdeutschem Dialektmaterial. Geolinguistik-Workshop, Freiburg i. Br.

Funded research projects
Participation to European projects

PARLANCE
Probabilistic Adaptive Real-Time Learning And Natural Conversational Engine
Period: 2011 - 2014.
Partners: collaboration with Computer Science Department, Faculty of Sciences, UNIGE

——

CLASSiC
Computational Learning in Adaptive Systems for Spoken Conversation
Period: March 2008 - February 2011.
Partners: University of Edinburgh (coordinator), Cambridge University, Ecole Supérieure d'Eléctricité (Metz), France Telecom.
Web Site: http://www.classic-project.org/

Participation to National projects

Multilingual Translation Model Based on Object-Oriented design: improvements and enhancements
SNFS

——

Corpus-based Explorations of Cross-Linguistic Syntactic and Semantic Parallelism
Swiss NSF, grant no. 11-114044
Period: 2008 - 2011

——

SINERGIA: Improving the coherence of machine translation output by modelling inter-sentential relations
Swiss NSF project
Principal Investigator: Andrei Popescu-Belis (IDIAP)
co-Principal Investigators: Jacques Moeschler, Paola Merlo, Sandrine Zufferey, James Henderson
Period: 2009 - 2012
Partners: University of Geneva (Lettres and Sciences), IDIAP

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

Others
- Workshop on Automatic Language Analysis: The Fips and Freetext resources. Joint Workshop with Universitat Politècnica de Catalunya, Universitat de Barcelona and Université de Genève, January 2011, Barcelona, Spain.
- Participation in the translation shared task (French - English, English - French) in EMNLP 2011 Sixth Workshop on Statistical Machine Translation, July, 2011, Edinburgh, UK.

Teaching
- **Databases**, Computer Science for the Humanities, Bachelor, 12 ECTS, 112 hours, 12 students
- **Informatics II - Data Structures and Object Oriented Programming**, Computer Science for the Humanities, Bachelor, 4 ECTS, 56 hours, 9 students
- **Informatics II - Java seminar**, Computer Science for the Humanities, Bachelor, 2 ECTS, 28 hours, 9 students
- **Informatics II - Object Oriented Project**, Computer Science for the Humanities, Bachelor, 6 ECTS, 56 hours, 16 students
- **Information and Communication Technologies**, Computer Science for the Humanities, Bachelor & Master, 12 ECTS, 112 hours, 32 students
- **Web programming**, Computer Science for the Humanities, Bachelor, 6 ECTS, 68 hours, 12 students
- **Informatics I – Introduction à l'algorithmique et à la programmation**, Computer Science for the Humanities, Bachelor, 6 ECTS, 68 hours, 12 students
- **Empirical Methods in Natural Language Processing: Statistical Machine Translation**, Computer Science for the Humanities, Master, 12 ECTS, 56 hours, 6 students
- **Empirical Methods and Scripting Languages**, Computer Science for the Humanities - Bachelor, Computer Science - Master, 12 ECTS, 56 hours, 10 students
- **Natural Language Processing**, Computer Science for the Humanities, Master, 12 ECTS, 140 hours, 7 students

Administrative Staff

Centre Universitaire d'Informatique

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

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

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

Marie-France Culebras, Germaine Gusthiot, Anne-Isabelle Giuntini

IT: Two systems-engineers manage the basic computer infrastructure of CUI (data storage, backups, servers, network, etc.) using Linux 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;

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 12'000 books and 30 specialized paper journals.
• **Dorothée Hauser** is head librarian;
• **Amélia Bossard** is librarian.

Dorothée Hauser, Amélia Bossard

Nicolas Mayencourt, Elie Zagury, Daniel Agulleiro

Centre Universitaire d'Informatique

Financial Report

CUI

Staff	CHF 905'946.-
• Academic	CHF 289'961.-
• Administrative and Technical	CHF 479'682.-
• Employer's social contributions	CHF 136'303.-
Operating costs - Investment	CHF 124'799.-
Operating costs - Others	CHF 211'000.-
Library	CHF 0.-
CUI SUBTOTAL	**CHF 1'241'745.-**

Faculty of sciences (Computer Science Department)

Staff	CHF 3'167'481.-
• Academic	CHF 2'477'528.-
• Administrative and Technical	CHF 163'639.-
• Employer's social contributions	CHF 526'314.-
Operating costs - Investment	CHF 137'063.-
Operating costs - Others	CHF 11'000.-
Sciences SUBTOTAL	**CHF 3'315'544.-**

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

Staff	CHF 2'063'039.-
• Academic	CHF 1'631'469.-
• Administrative and Technical	CHF 37'091.-
• Employer's social contributions	CHF 394'479.-
Operating costs - Investment	CHF 11'380.-
Operating costs - Others	CHF 0.-
SES SUBTOTAL	**CHF 2'074'419.-**

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

Staff - Academic, incl. Charges (estimation)	CHF 765'103.-
Operating costs	CHF 20'000.-
Humanities SUBTOTAL	**CHF 785'103.-**

TOTAL BUDGET	**CHF 7'416'811.-**

External funding obtained by the professors   Credit

Faculty of sciences (Computer Science Department)

UE-funded Projects	CHF 1'444'382.-
Swiss-funded Projects	CHF 1'612'725.-
Sciences subtotal	**CHF 3'057'107.-**

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

UE-funded Projects	CHF 1'085'463.-
Swiss-funded Projects	CHF 708'230.-
SES subtotal	**CHF 1'793'693.-**

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

UE-funded Projects	CHF 59'167.-
Swiss-funded Projects	CHF 154'488.-
Humanities subtotal	**CHF 213'655.-**

TOTAL CREDIT   **CHF 4'850'800.-**

UNIVERSITY OF GENEVA
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CH-1227 Carouge
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