CENTRE UNIVERSITAIRE D'INFORMATIQUE

ACTIVITY REPORT
2009

UNIVERSITÉ
DE GENÈVE

CENTRE UNIVERSITAIRE
D'INFORMATIQUE

Foreword

2009 was the year of the 450th anniversary celebration of the University of Geneva and the Centre Universitaire d' Informatique (CUI) participated actively on it. By opening the doors to the population, the CUI showed its main research areas to hundreds of young students. The CUI welcomed the opportunity to show to an interested young audience how to manipulate sensors and robots, how to participate in a virtual reality context or how to program interfaces to computers among many other activities.

The CUI, one of the oldest computer research institutions in the world, is proud to report its activities during 2009. As a research center, the CUI is a multidisciplinary center dealing with different aspects of computing with members coming from different faculties of the University of Geneva. In particular, the Faculties of Sciences, Economics and Letters provide the CUI with most of its members. This multidisciplinary aspect is also present in this report by means of significant applications, important publications and several projects in such areas.

The year of 2009 has seen the CUI being honored by many awards and new projects to the different research groups and members.
Awards such as distinguished doctor honoris causa, best papers in international recognized conferences and projects in several multidisciplinary areas are present in this report. 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.

Welcome to the CUI

Prof. José Rolim
Director of the CUI
University of Geneva

Centre Universitaire d'Informatique

ASG

Advanced Systems Group

Prof. Dimitri Konstantas

asg.unige.ch

Advanced Systems Group

asg.unige.ch

Prof. Dimitri Konstantas

Domain activities

During 2009 the AS Group continued its research in three areas of mobile systems: Quality of Service, Trust and Identity Management, and novel paradigms for mobile information management.

From the point of view of research projects, one project came to successful completion (Geo-Tags), and a new project was accepted (TRAINUTRI) in the domain of Ambient Assisted Living, and is scheduled to start early 2010.

From the point of view of personnel at the end of 2009 the group was composed of 7 persons, headed by Prof. Dimitri Konstantas. In June 2009 Mme Katarzyna Wac defended her PhD thesis and gained a one year Post-Doc scholarship from FNRS, for CMU at the United States.

Team
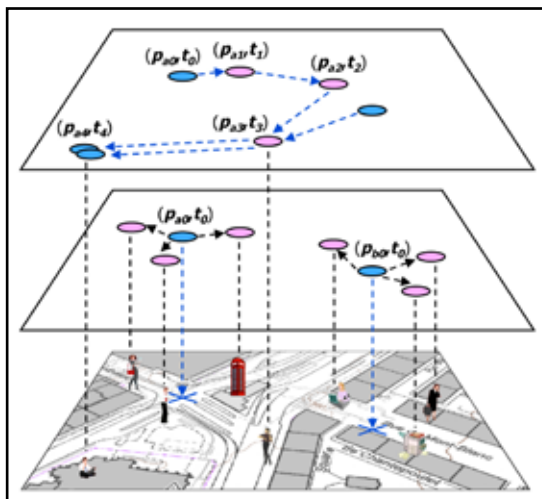
Director
Dimitri Konstantas
Full professor

Members
Dr. Jean-Marc Seigneur (MER)
Dr. Jean-Henry Morin (MER)

PhD students
Katarzyna Wac
Alfredo Villalba
Hikari Watanabe
Dejan Munjin
Xavier Titi

Fig 1: Hovering information:
An overlay for mobile content

Hovering information (blue) will be capable of moving from one location to another (from p_{ao} to p_{a4}) jumping across the intermediate physical devices (pink)

Hovering information (blue) will be linked to a location and optionally time stamped (p_{ao}, t_a). Physically, this information will reside in neighbouring devices (pink) (MANET, Sensor net)

In the absence of fixed infrastructure, hovering information will use all devices in its neighbourhood such as phones, RFIDS, sensors, PDAs, laptops, PCs, etc

— Hovering information

— Mobile device / user

PHD THESIS

- Katarzyna Wac, «Collaborative Sharing of Quality of Service-Information for Mobile Users», June 2009

LIST OF PUBLICATIONS

Refereed papers in international journals

[1] J.-H. Morin, «Exception Based Enterprise Rights Management : Towards a Paradigm Shift in Information Security and Policy Management», International Journal On Advances in Systems and Measurements, issn 1942-261x, vol. 1, no. 1, 2008, pp. 40-49.

[2] K. Wac, M. Bargh, B.-J. van Beijnum, R. Bults, P. Pawar, A. Peddemors. «Power- and Delay-Awareness of Health Telemonitoring Services: the MobiHealth System Case Study.», IEEE Journal on Selected Areas in Communications (JSAC), Special Issue on Wireless and Pervasive Communications in Healthcare, Volume 27, Issue 4, May 2009, Page(s):525 – 536

[3] Susana Jimenez-Murcia, Fernando Fernandez-Aranda, Elias Kalapanidas, Dimitri Konstantas, Todor Ganchev, Otilia Kocsis, Tony Lam, Juan J. Santamaria, Thierry Raguin, Christian Breiteneder, Hannes KAaufmann and Costas Davarakis, «Playmancer Project: A Serious Videogame as an Additional Therapy Tool for Eating and Impulse Control Disorders», accepted for publication to CyberPsychology and Behavior Journal (to appear in 2010), Also presented in the 14th. Annual Cybertherapy & Cyberpsychology Conference, Verbania-Intra, Italy, June 2009.

[4] Costas Davarakis, Fernando Fernandez-Aranda, Susana Jimenez-Murcia, Otilia Kocsis, Todor Ganchev, Hannes Kaufmann, Tony Lam, Dimitri Konstantas, «PlayMancer: Games for Health with Accessibility in Mind», Communications & Strategies Journal, no. 73, January 2009.

Full refereed papers in Conference Proceedings

[5] J.-H. Morin, «Towards Socially-Responsible Management of Personal Information in Social Networks», to appear in proceedings of 6th International Conference on Social Software, BlogTalk 2009, Jeju, Korea, September 15-16, 2009, LNCS, Springer.

[6] K. Wac, R. Bults, B.-J. van Beijnum, et al. Mobile Patient Monitoring: the MobiHealth System (invited paper), 31st Intl Conf of the IEEE Engineering in Medicine and Biology Society (EMBC09), Minneapolis, Minnesota, US, September 2009.

[7] K. Wac, «Towards Quality of Service-Awareness of Mobile Healthcare Services», Intl eHealth, Telemedicine and Health ICT Forum (MedeTel09), ISfTEH Student's Video-conference Session, Luxemburg, April 2009.

[8] P. Pawar, B.-J. van Beijnum, K. Wac, H. Hermens, D. Konstantas, «Towards Location Based QoS-Aware Network Selection Mechanism for the Nomadic Mobile Services», IEEE Consumer Communications and Networking Conference, Special Session on Beyond GPS - Where Navigation meets Consumer Communications (CCNC09), 10 - 13 January 2009, Las Vegas, Nevada, USA, IEEE Communications Society Press.

[9] J.-M. Seigneur, «Local ePolitics Reputation Case Study», in the Proceedings of the 7th International Conference on e-Society, IADIS, 2009.

Fig 2: Virtual Tags tracking with TrackerTag

[10] J.-M. Seigneur and X. Titi, «Reputation-based Telecommunication Network Selection», in the Proceedings of the 7th International Conference on e-Society, IADIS, 2009.

Books and book chapters

[11] K. Wac, P. Prawar, T. Broens, B.-J. van Beijnum, A. van Halteren, «Using SOC in Development of Context-Aware Systems: Domain-Model Approach», chapter in: Enabling Context-Aware Web Services: Methods, Architectures, and Technologies, Quan Z Sheng, Jian Yu, Schahram Dustdar (eds), Chapman and Hall/CRC Publishers, ISBN 978-1-4398-0985-3

[12] K. Wac, M. Hilario, B.-J. van Beijnum, R. Bults, D. Konstantas, «QoSPredictions Service: QoS Support for Proactive Mobile Services», chapter in: Wireless Network Traffic and Quality of Service Support: Trends and Standards, Thomas Lagkas Pantelis Angelidis (Eds), IGI Global Publishers, ISBN 978-1615207718

[13] K. Wac, R. Bults, B.-J. van Beijnum, H. Chen, D. Konstantas, «Toward Mobile Web 2.0-based business methods: Collaborative QoS-information sharing for mobile service users», chapter in: Advances in Electronic Business Series, theme: Mobile and Ubiquitous Commerce: Advanced E-Business Methods, Milena M. Head, Eldon Y. Li (Eds), IGI Global Publishers, ISBN 978-1605663678

[14] J.-H. Morin, «Rethinking DRM Using Exception Management», chapter III, in Handbook of Research on Secure Multimedia Distribution, S. Lian and Y. Zhang (Eds), Information Science Reference (ISR), ISBN: 978-1-60566-262-6, IGI Global, March 2009.

[15] Marc Brogle, Geert Heijenk, Torsten Braun, Dimitri Konstantas (Eds), «Proceedings of the Third ERCIM Workhop on eMobility», University of Twente, Enschede, The Netherlands, May 27 - 28, 2009, ISBN 978-90-365-2846-7.

[16] J.-M. Seigneur and A. Slagell, «Collaborative Security Technologies for Data Assurance Management: Building Systematic Trust», co-editor of the book, ISBN: 978-1-60566-414-9, IGI Global, 2009.

[17] J.-M. Seigneur, «Reputation Management Services», book chapter of "Computer And Information Security Handbook", ISBN-13: 978-0-12-374354-1, Morgan Kauffman, Elsevier, 2009.

[18] T. El Maliki and J.-M. Seigneur, «Identity Management Services», book chapter of "Computer And Information Security Handbook", ISBN-13: 978-0-12-374354-1, Morgan Kauffman, Elsevier, 2009.

Research and technical reports

[19] Dimitri Konstantas, Jean Marc Seigneur (Eds), «Mobile Quality of Service», ISBN 978-2-88903-004-0, December 2009, http://asg.unige.ch/publications/TR09

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- Dimitri Konstantas: Member of the advisory and scientific committee of the IICREST institute, Sofia, Bulgaria.
- Dimitri Konstantas: Vice-Chair of the ERCIM eMobility WG

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

Dimitri Konstantas:
- Co-Chair of the The Second International Workshop on e-Health Services and Technologies (EHST 2009), Sofia, Bulgaria, July 29, 2009

Jean-Marc Seigneur:
- Organisation and chair of the trust/reputation track at the ACM SAC 2009.

Jean-Henry Morin:
- Workshops Chair for the 2009 International Conference on Multimedia Information NEtworking and Security (MINES2009), Wuhan, Hubei, China, Nov 18-20, 2009.
- Co-chair of the Enterprise Digital Rights and Policy Management and Compliance Track in the 8th Annual Security Conference, Las Vegas, NV, USA, April 15-16, 2009
- Chair of the Enterprise & Media DRM track in the International Conference on Internet Monitoring and Protection, ICIMP 2009, May 24-28, 2009 - Venice/Mestre, Italy
- Co-chair of the 6th IEEE International Workshop on Digital Rights Management, Satellite Workshop of 7th IEEE Consumer Communications & Networking Conference (IEEE CCNC 2010), 13th January, 2010, Las Vegas, Nevada

MEMBER OF CONFERENCE PROGRAM COMMITTEES

Dimitri Konstantas:
- WebScience 2009
- WSKS 2009
- I3E 2009
- ICSOFT 2009
- I-WEST 2009

Jean-Marc Seigneur:
- ACM SAC
- IFIP Trust Management International Conference
- International Journal of Networking and Virtual Organization
- Wiley Computational Intelligence International Journal
- Context-Awareness Trust and Web 2.0 Trust Workshop
- World Congress on Privacy, Security, Trust and the Management of e-Business
- Formal Aspects of Security and Trust Workshop
- International Conference on Information Technology
- International Conference on Reputation: Theory and Technology
- International Conference on Network and System Security

Jean-Henry Morin:
- 5th IEEE International Workshop on Digital Rights Management Impact on Consumer Communications, within the 6th Annual IEEE Consumer Communications & Networking Conference, IEEE CCNC 2009, January 13, 2009, Las Vegas, Nevada.
- International Conference on Knowledge Management and Information Sharing, (KMIS 2009), Madeira, Oct 5-8 2009, Portugal
- Second International Workshop on Next Generation Security (WNGS '09), June 25-27, 2009, Korea University, Seoul, Korea. Co-located with 3rd International Conference on Information Security and Assurance (ISA 2009)
- First International Workshop on Global Information Security for an Inclusive Information Society (GloSec 2009), within the Fourth International Conference on Availability, Reliability and Security ARES 2009, March 16-19, 2009, Fukuoka, Japan
- International Symposium on Collaborative Technologies and Systems (CTS 2009), May 18-22, 2009, Baltimore, Maryland, USA
- IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing. CollaborateCom 2009, Nov. 11-14, 2009, Crystal City, Washington D.C., USA.

INVITED TALKS

- Jean-Henry Morin: Speaker at Lift Asia 09, DRM From Dystopia to (Serious) Fun ?, Jeju, South Korea, Sept 17-18, 2009. Talk to be featured in TED Talks on TED.com
- Jean-Henry Morin: Panelist on the Future of DRM panel, US Federal Trade Commission (FTC) and the Technology Law and Public Policy Clinic at the University of Washington School of Law, Digital Rights Management Town Hall, Seattle, Washington, March 25, 2009.

FUNDED RESEARCH PROJECTS
Participation to European projects

PlayMancer
A European Serious Gaming 3D Environment
Funded by the FP7 programme of the EU
Parterns: Systema Technologies S.A. (Coordinator, Greece), TXT e-solutions S.p.A. (Italy), 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)
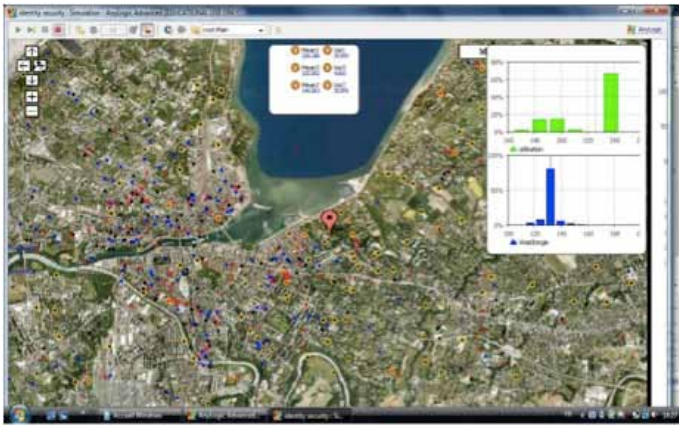Period: November 2007 - October 2010
Website: http://www.playmancer.eu/

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Fig 3: FoxyTag Virtual Tags in the Geneva Area

PERIMETER

User Centric Paradigm for Seamless Mobility in Future Internet

Funded by the FP7 programme of the EU

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 - April 2011

WebSite : http://www.ict-perimeter.eu

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Traffic Monitoring and Analysis

Theory, techniques, tools and applications for the future networks

Funded by : COST Action: IC0703

Partners : Coordinator Forschungszentrum Telekommunikation Wien, Austria

Period: April 2008 - March 2012

Web Site: http://www.cost-tma.eu/

Participation to National projects

Geo-Tags

Trusted geo-spatial tags,

Funded by CTI, Bern

Partners: ArxIT SA, Societe Nautique de Geneve / Porto Central

Period: May 2007 - April 2009

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Monitoring and analysis of wireless networks for a QoS-Prediction Service design and development

Funded by SER (Swiss federal secretariat for research and education)

Period: November 2008 - October 2011

Technology transfer

Jean-Henry Morin: Signature in September 2009 of an MOU with **Fasoo.com**. The scope of the cooperation is to facilitate Exception Management Model-based digital rights management ("DRM") solution by integrating Fasoo Enterprise DRM Suite. The cooperation includes exchange of know-how and technology.

Others

Dimitri Konstantas:
- Expert Evaluator for the Commission of the European Union
- Expert evaluator for the Dutch National Research Foundation
- Expert evaluator for the Canadian National Research Foundation
- Member of the «scientific commitee» of IICREST (Sofia, Bulgaria)
- Member of the «commission de diplômes» HESGE

Jean-Marc Seigneur:
- International expert reviewer for the review of EU-funded projects

Jean-Henry Morin:
- Editorial Board Member of the Journal of Service Science (JSS), the Society of Service Science (SoSS) - http://www.soss.or.kr/
- Editorial Board Member of the International Journal On Advances in Systems and Measurements, IARIA http://www.iariajournals.org/systems_and_measurements/
- Managing Editor of the Annals of Security (ASec) http://annals-security.org
- Co-organizer of Think Services - Think Tank on Service Science and Innovation, an initiative of the department of Information Systems, University of Geneva and the Observatoire Technologique, State of Geneva
- Co-animator of a public forum for questions on Internet & Society for the Swiss television (TSR) : Question sur : http://questions.tsrdecouverte.ch/internet-societe

Teaching

- **Infrastructure de Communications**, Information Systems, Bachelor, 6 ECTS, 56 hours (winter semester), 12 students
- **Communication Multimédia**, Information Systems, Bachelor, 6 ECTS, 56 hours (spring Semester) , 20 students
- **Outils Internet**, Information Systems, Bachelor, 6 ECTS, 56 hours (spring semester), 54 students
- **Programmation Objet**, Information Systems, Bachelor, 6 ECTS, 56 hours (spring semester), 16 students
- **Introduction to Mobile Systems and Services**, Information Systems, Master, 6 ECTS, 56 hours (winter semester), 6 students
- **Programmation des systèmes**, Information Systems, Master, 6 ECTS, 56 hours (winter semester), 6 students
- **Design of Multimedia Services**, Information Systems, Master, 6 ECTS, 56 hours (spring semester), 6 students
- **Advanced Seminar on Industrial & Emerging issues in Information Systems**, Master in Information Systems, 3 ECTS, 14 hours, 5 students
- **Projet Intra-Master**, Master in Information Systems, 3 ECTS, 14 hours, 9 students

Centre Universitaire d'Informatique

CVML

Computer Vision and Multimedia Laboratory

Prof. Thierry Pun
Prof. Sviatoslav Voloshynovskiy
Dr. Stéphane Marchand-Maillet

cvml.unige.ch

Computer Vision and Multimedia Laboratory
Prof. Thierry Pun

cvml.unige.ch

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. Th. 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;
- 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.

Team

Directors
Thierry Pun
Full professor

Sviatoslav Voloshynovskiy
Associate professor

Dr.
Stéphane Marchand-Maillet
(MER)

Members
Dr. Guido Bologna (since Sept. 2009)
Dr. Eric Bruno
Dr. Joep Kierkels (until Sept. 2009)
Dr. Oleksiy Koval

PhD students
Fokko Beekhof
Guillaume Chanel (until June 2009)
Benoît Deville
Farzad Farhadzadeh (since March 2009)
Taras Holotyak
Jana Kludas
Donn Morrison
Mohammad Soleymani
Eniko Szekely
Marc von Wyl (since April 2009)

Engineer-Programmer
Moritz Diephuis (since Oct. 2009)

PhD thesis

- Guillaume Chanel, «Emotion assessment for affective computing based on brain and peripheral signals», July 2009.

List of publications
Refereed papers in international journals

[1] 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, submitted, June 2009.

[2] R. Rytsar, T. Pun, «EEG source reconstruction using global optimization approaches: Genetic Algorithms versus Simulated Annealing», Int. Journal of Tomography and Statistics, Special Issue on Image Processing, Vol. 14 (Special Volume), No. S10. To appear.

[3] M. Soleymani, G. Chanel, J. Kierkels, T. Pun, «Affective characterization of movie scenes based on content analysis and physiological changes», Int. Journal of Semantic Computing, Vol. 3, No. 2, 2009, 235-254.

[4] G. Chanel, J. Kierkels, M. Soleymani, T. Pun, «Short-term emotion assessment in a recall paradigm», Int. Journal of Human-Computer Studies, Vol. 67, 2009, 607-627. (doi:10.1016/j.ijhcs.2009.03.005).

[5] B. Deville, G. Bologna, M. Vinckenbosch, T. Pun, «See Color: Seeing colours with an orchestra», in: Human Machine Interaction, Research Results of the MMI Program, Springer LNCS, Lecture Notes in Computer Science, Vol. 5440, Lalanne, D., Kohlas, J., Eds., 2009, 251-279.

[6] E. Bruno & S. Marchand-Maillet (2009), «Multimodal Preference Aggregation for Multimedia Information Retrieval», Journal of Multimedia, 4(5), 321-329.

Full refereed papers in Conference Proceedings

[7] 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, Subm. Dec. 2009.

[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, Working Notes (at ECDL 2009, 13th Europ. Conf. on Digital Libraries), Sep. 27 - Oct. 2, 2009, Corfu, Greece.

[9] M. Soleymani, J. Davis, T. Pun, «A collaborative personalized affective video retrieval system», ACII 2009, Int. Conf. on Affective Computing and Intelligent Interaction, Sept. 10-12, 2009, Amsterdam, The Netherlands, 588-589 (Demonstration track, with extended abstract and poster).

[10] M. Soleymani, J. Kierkels, G. Chanel, T. Pun, «A Bayesian framework for video affective representation», ACII 2009, Int. Conf. on Affective Computing and Intelligent Interaction, Sept. 10-12, 2009, Amsterdam, The Netherlands, 267-273.

[11] J. Kierkels, M. Soleymani, T. Pun, «Simultaneous exploitation of explicit and implicit tags in affect-based multimedia retrieval», ACII 2009, Int. Conf. on Affective Computing and Intelligent Interaction, Sept. 10-12, 2009, Amsterdam, The Netherlands, 274-279.

[12] J. Kierkels, M. Soleymani, T. Pun, «Queries and tags in affect-based multimedia retrieval», IEEE ICME'09, Int. Conf. on Multimedia and Expo, Special Session on Implicit Tagging, M. Pantic and A. Vinciarelli, Chairs, June 28 - July 3, 2009, New York, NY, USA.

[13] G. Bologna, B. Deville, T. Pun, «Blind navigation along a sinuous path by means of the See ColOr interface», IWINAC, Int. Work-conference on the Interplay between Natural and Artificial Computation, June 22-26, 2009, Santiago de Compostela, Galicia, Spain.

[14] G. Bologna, S. Malandain, B. Deville, T. Pun, «The multi-touch See ColOr interface», ICTA 2009, The 2nd Int. Conf. on Information and Communication Technologies and Accessibility, May 7-9, 2009, Hammamet, Tunisia.

[15] S. Voloshynovskiy, F. Beekhof, O. Koval and T. Holotyak, «On privacy preserving search in large scale distributed systems: a signal processing view on searchable encryption», In International Workshop on Signal Processing in the EncryptEd Domain, Lausanne, Switzerland, September 10, 2009.

[16] S. Voloshynovskiy, O. Koval, T. Holotyak and F. Beekhof, «Privacy enhancement of common randomness based authentication: key rate maximized case», In Proceedings of IEEE International Workshop on Information Forensics and Security, London, UK, 6-9 Dec., 2009.

[17] F. Beekhof, S. Voloshynovskiy, O. Koval and T. Holotyak, «Fast identification algorithms for forensic applications», In Proceedings of IEEE International Workshop on Information Forensics and Security, London, UK, 6-9 Dec., 2009.

[18] S. Voloshynovskiy, O. Koval, F. Beekhof and T. Holotyak, «Binary robust hashing based on probabilistic bit reliability», In Proceedings of IEEE Workshop on Statistical Signal Processing 2009, SSP09, Cardiff, UK, 2009.

[19] S. Voloshynovskiy, O. Koval, F. Beekhof and T. Holotyak, «Multiclass classification based on binary classifiers: on coding matrix design, reliability and maximum number of classes», In Proceedings of IEEE International Workshop on Machine Learning for Signal Processing, September 2-4 2009, Grenoble, France.

[20] F. Beekhof, S. Voloshynovskiy, O. Koval and T. Holotyak, «Multi-class Classifiers based on Binary Classifiers: Performance, Efficiency, and Minimum Coding Matrix Distances», In Proceedings of IEEE International Workshop on Machine Learning for Signal Processing, September 2-4 2009, Grenoble, France.

[21] S. Voloshynovskiy, O. Koval, F. Beekhof and T. Pun, «Random projections based item authentication», In Proceedings of SPIE Photonics West, Electronic Imaging 2009, Media Forensics and Security XI, San Jose, USA, 2009.

[22] S. Voloshynovskiy, O. Koval, F. Beekhof and T. Pun, «Conception and limits of robust perceptual hashing: toward side information assisted hash functions» In Proceedings of SPIE Photonics West, Electronic Imaging 2009, Media Forensics and Security XI, San Jose, USA, 2009.

[23] O. Koval, S. Voloshynovskiy, P. Bas and F. Caire, «On security threats for robust perceptual hashing», In Proceedings of SPIE Photonics West, Electronic Imaging 2009, Media Forensics and Security XI, San Jose, USA, 2009.

[24] E. Bruno, & S. Marchand-Maillet, «Multiview clustering: a late fusion approach using latent models». In Proceedings of the 32nd ACM Special Interest Group on Information Retrieval Conference, SIGIR 09, Boston, USA.

[25] E. Szekely, E. Bruno, & S. Marchand-Maillet, «Distance Transformation for Effective Dimension Reduction of High-Dimensional Data». In 1st International Workshop on Topological Learning (in conjunction with the 18th International Symposium on Methodologies for Intelligent Systems), Prague, Czech Republic.

[26] E. Szekely, E. Bruno, & S. Marchand-Maillet, «Unsupervised Discriminant Embedding in Cluster Spaces. In International Conference on Knowledge Discovery and Information Retrieval (KDIR'09)», Madeira, Portugal.

[27] D. Morrison, S. Marchand-Maillet, & E. Bruno, «Modelling long-term relevance feedback». In Proceedings of the ECIR Workshop on Information Retrieval over Social Networks, Toulouse, FR.

[28] D. Morrison, S. Marchand-Maillet, & E. Bruno, «TagCaptcha: Annotating images with CAPTCHAs». In Proceedings of the Human Computation Workshop (HCOMP2009) - co-located with ACM-KDD 2009, Paris, FR.

[29] S. Marchand-Maillet, E. Szekely & E. Bruno, «Optimizing Strategies for the Exploration of Social-Networks and Associated Data Collections». In Proceedings of the International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS'09) - Special session on «People, Pixels, Peers: Interactive Content in Social Networks», London, UK.

Books ans book chapters

[30] D. Morrison, E. Bruno, & S. Marchand-Maillet, «Capturing the semantics of user interaction: A review and case study». In Web Emergent Intelligence, Springer.

[31] Y. Kompatsiaris, S. Marchand-Maillet, Y. Avrithis, D. Gatica-Perez, N. O'Connor, & T.-S. Chua, «Proceedings of the ACM» International Conference on Image and Video Retrieval ACM Press.

Research and technical reports

[32] E. Szekely, E. Bruno, & S. Marchand-Maillet, «Collection guiding: review of the main strategies fro multimedia collection browsing (No. 09.01)». Route de Drize, 7, CH-1227, Carouge, Switzerland: Viper group - CVMLab, Dept of Computer Science, University of Geneva.

Patents

[33] S. Voloshynovskiy, O. Koval and T. Pun, «Secure item identification and authentication system based on unclonable features», WO. Patent Application No WO 2009/115611, filed 20 March 2009.

International and national advisory committees

- T. Pun: Member of the board of GRETSI - Groupe français de recherche et d'études en traitement du signal et des images (http://www.gretsi.fr).
- 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. Marchand-Maillet: Chair of the Technical Committee 12 of the International Association for Pattern Recognition («Multimedia and Visual Information Systems» - http://www.iapr-tc12.org), 2009-2011
- S. Marchand-Maillet: General co-Chair of ACM-International Conference on Image and Video Retrieval (ACM-CIVR 2009), July 2009, Santorini, Greece. Special Session chair: Eric Bruno. 110 participants, proceedings published by the ACM Digital Library. http://www.civr2009.org

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).

Member of conference program committees

Thierry Pun:

- IEEE ACII 2009 (Int. Conf. on Affective Computing and Intelligent Interaction, Amsterdam, NL SC + Session chair)
- ACBI 2009 (Affective Brain-Computer Interfaces, Amsterdam, NL)

Sviatoslav Voloshynovskiy:

- IWDW2009, International Workshop on Digital Watermarking 2009, Surrey, UK, August 24-26, 2009 (program committee)
- ACM2009, Multimedia and Security Workshop 2009, Princeton, USA, 7-8 September 2009 (program committee)
- SIP2009, The 10th IASTED International Conference on SIGNAL AND IMAGE PROCESSING SIP 2009, August 17-19, 2009, Honolulu, Hawaii, USA (international program committee)
- SPIE2009, Electronic Imaging 2009, Multimedia security and watermarking XI, San Jose, USA, 2009, (program committee)

Stéphane Marchand-Maillet:

- MMM2009
- WWW2009
- ECIR2009
- CBMI2009
- WIAMIS2009
- ACM-SAC-IAR2009
- ACM-SIGIR 2009
- IEEE-ICME2009
- 3AMIGAS2009
- ACM-Multimedia2009 (also Short Papers)
- AIRS2009
- ICSC2009
- ACM-LS-MRMM2009
- IEEE-PCM2009
- AMR2009
- CBTV2009
- DSMSA2009
- ICDM-IMM2009

Invited talks

- T. Pun, «Emotion assessment from physiological signals for adaptation of games difficulty», Invited talk based on the journal paper from G. Chanel, C. Rebetez, M. Betrancourt, T, Pun, ABCI 2009, Affective Brain-Computer Interfaces Workshop, Sept. 9, 2009, in conjunction with ACII 2009, Int. Conf. on Affective Computation and Intelligent Interaction, Sept. 10-12 2009, Amsterdam, The Netherlands.
- T. Pun, J. Kierkels, «Affective computing for multimodal interaction», CHORUS workshop on Affect, Appeal, and Sentiment as Factors Influencing Interaction with Multimedia Information 2009, May 28, 2009, European Commission, Brussels, Belgium. (By invitation).
- J. Kierkels, T. Pun, «Tags and queries in affect-based multimedia retrieval», Petamedia EU project Audit, Delft, The Netherlands, April 2, 2009.
- Multimedia Information Retrieval. Invited talk at INRIA/IRISA Rennes (TexMex group), Rennes, France, 2009.
- S. Marchand-Maillet, «Mining Networked Media Collections». Invited keynote at the 7th International Workshop on Adaptive Multimedia Retrieval (AMR 2009), Madrid, Spain, 2009.
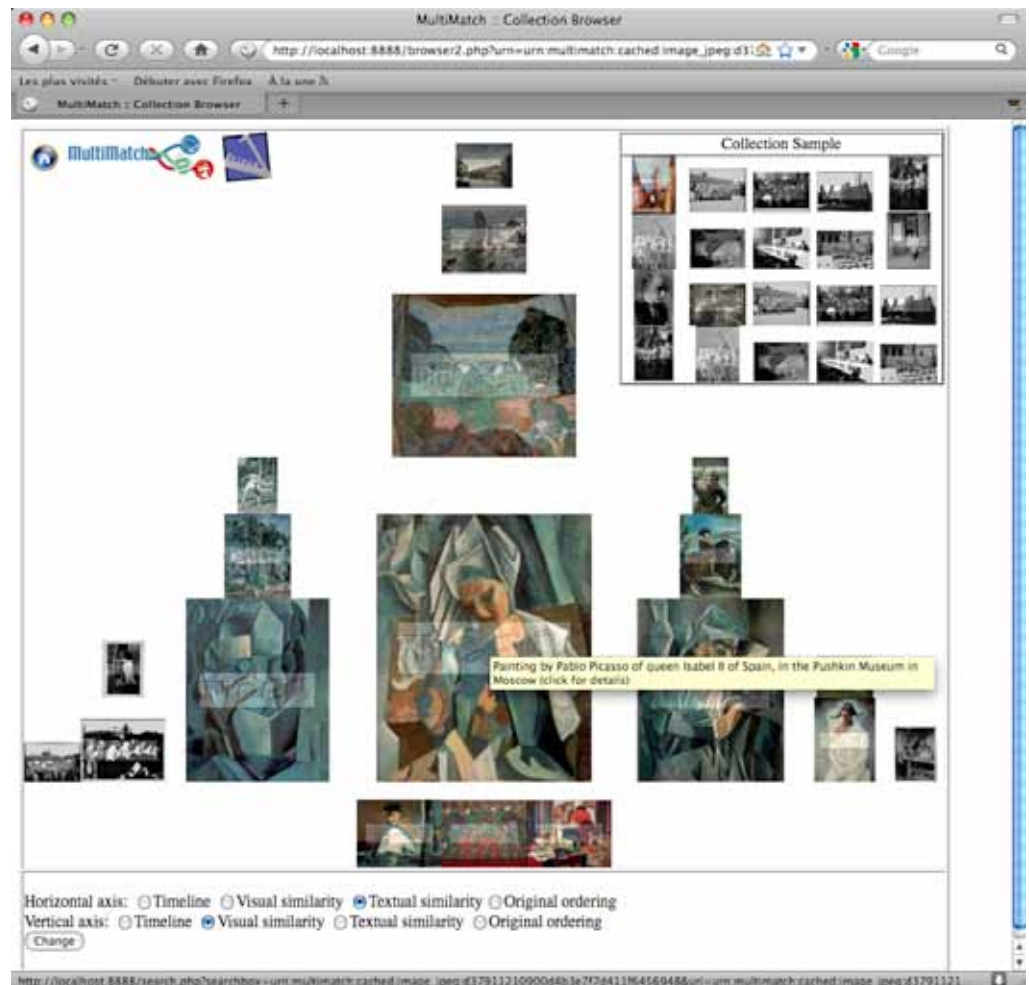

Figure 2: Similarity-based collection browser

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

Participation to National projects

Hasler Foundation

SeeColor
Seeing colors with an orchestra, No. MMI - 1968.
Principal investigators: Dr. G. Bologna and Prof. M. Vinckenbosch, Univ. of Applied Sciences/HES-SO, Geneva.
Period: Oct. 2005 – Sept. 2009

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Swiss National Center of Competence in Research (IM)2 - Interactive Multimodal Information Management (Leading House: IDIAP Martigny)
Period: 2002 - 2009.
Website: http://www.im2.ch/

FNRS-SNSF, Swiss National Science Foundation:

Emotion-driven personalized content-based multimedia management
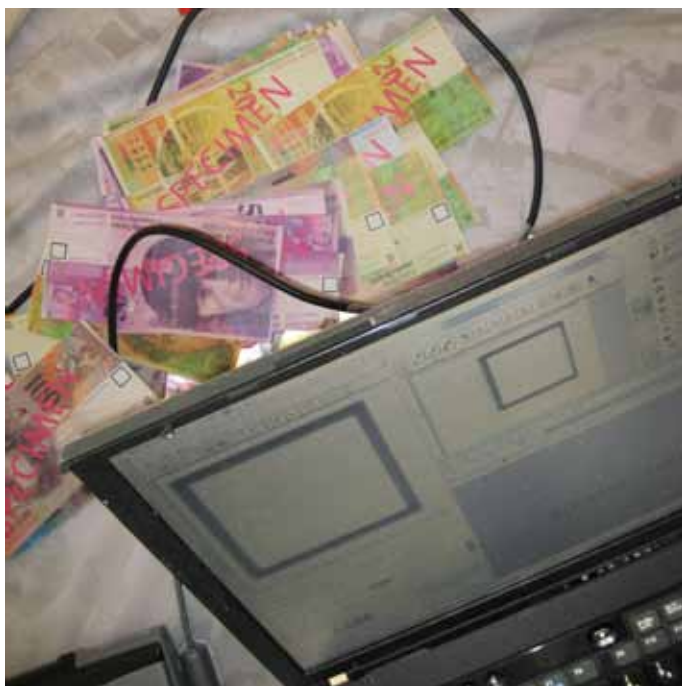SNSF 200020-124774
Period: April 2009 – February 2011

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

Reliable and secure forensic authentication based on random projections and distributed coding
SNSF 200020-121635
Period: October 2008 – August 2010

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Secure unclonable identification/authentication codes based on natural randomness
SNSF 200021-119770
Period: March 2009 – February 2011

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"Economic stabilization": K-Content; Content Abstraction and Retrieval for large-scale mobile service
Principal investigators: Prof. L. van Gool (ETHZ), industrial partner: kooaba AG
SNSF support
Period: October 2009 – September 2011

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Multimodal Fusion for Information Processing and Understanding
SNSF 200021-122036/1
Period: November 2008 – October 2010

———

Collection Guide: Large Scale Multimedia Information Management
SNSF 200020-121842/1
Period: October 2006 – Septembre 2010

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SwiftLink: Machine Learning Strategies for Adaptive Multimedia Navigation
SNSF 200021-119906
Period: April 2009 – March 2011

Industrial funding:

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

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Participation to the NCCR «Affective Sciences»
Thierry Pun is an Associate member of this NCCR.

CVML team in 2008

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

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

Others
Editorial boards
- Eurasip International Journal on Image and Video Processing (Hindawi, http:// www.hindawi.com/journals/ijivp/) (T. Pun).
- Computerized Medical Imaging and Graphics (Elsevier/Pergamon, http://ees.elsevier.com/cmig/) (T. Pun).
- 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).

Special issues
- Various public demonstrations in open days, in particular for the 450th anniversary of the University of Geneva.

Refereeing/reviewing
- Journals, conferences, national funding organizations for various countries.
- T. Pun is reviewer for the European Research Council "Advanced Investigator Grants".
- S. Marchand-Maillet is reviewer for the following national research agencies: SNF (CH), EPSRC (UK), ANR (FR), NWO (NL), FWF (AT), COST (EU)

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

TEACHING

- **Introduction to computer science**, Pharmaceutical Sciences, 1st year Bachelor, 14h. course and 28h. practical work, approx. 40 students. 2 ECTS.
- **Applied cybernetics**, Computer Science, Master, with Prof. C. Pellegrini and Dr. E. Bruno, 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.
- **Introduction to computer science**, Biology, 2nd year Bachelor, 28h. course and 2 x 56h. practical work, approx. 40 students. 6 ECTS.
- **Digital image processing and synthesis**, Computer Science, 3rd year Bachelor, optional for Master and postgraduate students, 56h. course and 56h. practical work, approx. 15 students. 8 ECTS.
- **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. 14 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

GAIL

Geneva Artificial Intelligence Laboratory

Prof. Christian Pellegrini

cui.unige.ch/AI-group

Geneva Artificial Intelligence Laboratory

Prof. Christian Pellegrini

cui.unige.ch/AI-group

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 Computational Linguistics (CLCL) (http://clcl.unige.ch).

Team

Director
Christian Pellegrini
Full professor

Members
Dr. Mélanie Hilario (MER)
Dr. James Henderson (MER)
Dr. Alexandros Kalousis (MA)

Assistants
Dr. Adam Woznica, Post doctoral fellow

PhD students
Huyen Do
Nikhil Garg
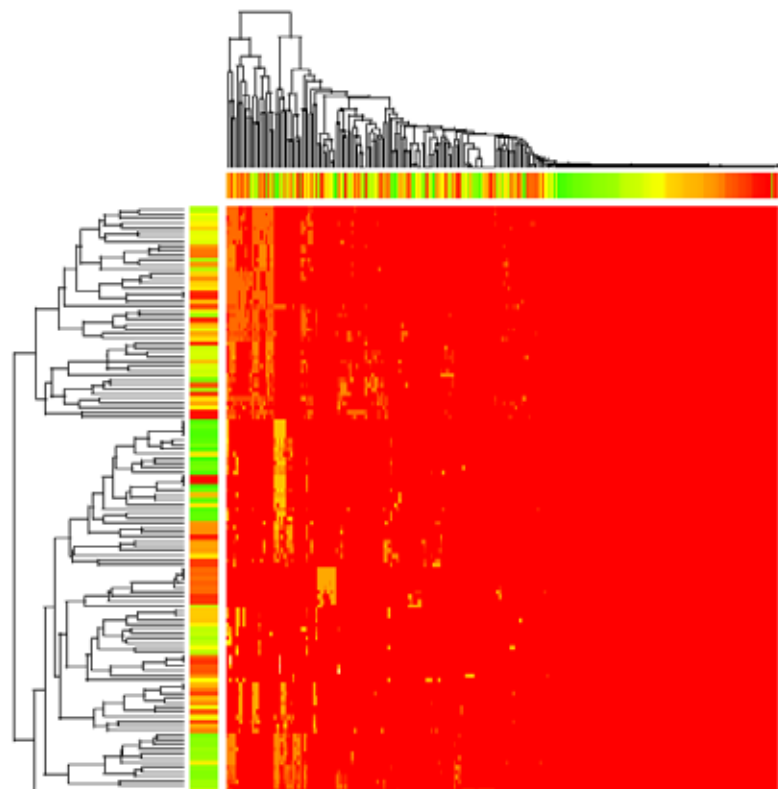Jee-Hyub Kim
Phong Nguyen
Jun Wang
Derry Wijaya

Figure 1: Clusters of bacteria resistance profiles

PhD Thesis
- Julien Prados, «Méthodes pour le pré-traitement et l'extraction des biomarqueurs en spectrométrie de masse», October 2009.

List of publications
Refereed papers in international journals
[1] Kallirroi Georgila, Oliver Lemon, James Henderson, and Johanna Moore, «Automatic annotation of context and speech acts for dialogue corpora», Natural Language Engineering, 15(03):315--353.

Full refereed papers in Conference Proceedings
[2] Theodoros Anagnostopoulos, Christos Anagnostopoulos, Stathes Hadjiefthymiades, Miltos Kyriakakos, Alexandros Kalousis, «Predicting the Location of Mobile Users: A Machine Learning Approach». Proc. ACM International Conference on Pervasive Services (ICPS-2009).

[3] Huyen Do, Alexandros Kalousis, Melanie Hilario (2009), «Feature Weighting using Margin and Radius based Error Bound Optimization in SVMs». European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD-09). Bled, Slovenia.

[4] Huyen Do, Alexandros Kalousis, Adam Woznica, Melanie Hilario, «Margin Radius Based Multiple Kernel Learning». European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD-09). Bled, Slovenia.

[5] Andrea Gesmundo, James Henderson, Paola Merlo, Ivan Titov, «A Latent Variable Model of Synchronous Syntactic-Semantic Parsing for Multiple Languages». In Proc. Thirteenth Conf. on Computational Natural Language Learning: Shared Task (CoNLL-09), Boulder, Colorado, USA.

[6] Melanie Hilario, Alexandros Kalousis, Phong Nguyen, Adam Woznica, «A Data Mining Ontology for Algorithm Selection and Meta-learning». Proc. ECML/PKDD Workshop on Third-Generation Data Mining: Towards Service-Oriented Knowledge Discovery (SoKD-09). Bled, Slovenia.

[7] Lonneke van der Plas, James Henderson, Paola Merlo, «Domain Adaptation with Artificial Data for Semantic Parsing of Speech». In Proc. 2009 Conf. North American Chapter of the Association for Computational Linguistics: Short Papers (NAACL HLT 2009), Boulder, Colorado, USA.

[8] Ivan Titov, James Henderson, Paola Merlo, and Gabriele Musillo, «Online Graph Planarisation for Synchronous Parsing of Semantic and Syntactic Dependencies». In Proc. 2009 International Joint Conferences on Artificial Intelligence (IJCAI-09). Pasadena, California, USA.

Member of conference program committees
James Henderson:
- Program Committees: IWPI 2009, Paris, France. CoNLL 2009, Boulder, Colorado. USA.

Mélanie Hilario:
- Program Committees: European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD-09). Bled, Slovenia. 3rd International Conference on Knowledge Science, Engineering and Management (KSEM-2009). Vienna, Austria. Nov. 25-27, 2009. 5th IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI 2009), Thessaloniki, Greece. April 23-25, 2009. Proc. ECML/PKDD Workshop on Third-Generation Data Mining: Towards Service-Oriented Knowledge Discovery (SoKD-09). Bled, Slovenia. 9èmes Journées Francophones «Extraction et Gestion des Connaissances» (EGC-2009), January 27-30, 2009. Strasbourg, France.

Alexandros Kalousis:
- Program Committees: Conference on Knowledge Discovery and Data Mining (KDD 2009), Paris. European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD-09). Bled, Slovenia.

Invited talks
- Alexandros Kalousis, Stability of Feature Selection Algorithms, Workshop on Feature Selection in Bioinformatics, Ghent, Belgium. May 2009.

Refereeing
- Melanie Hilario: IEEE/ACM Transactions on Computational Biology and Bioinformatics Journal.
- Alexandros Kalousis: ACM Transactions on Knowledge Discovery from Data, Pattern Analysis and Machine Intelligence, Journal of Machine Learning, Journal of Data and Knowledge Engineering.

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

Funded research projects
Participation to European projects

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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DROP-TOP

Integration of DNA, RNA and protein markers in a tool for the prognosis and diagnosis of human disease
FP6 037739
Partners: Progenika (Spain, Coordinator), Institut Curie-CNRS (France), Institut Municipal de Investigacio Medica (Spain), Genewave (France), University of Geneva (Switzerland), University Cyril and Methodius-Faculty of Medicine (FYR-Macedonia), Deutsches Krebsforschungszentrum (Germany)
Period: January 2007 – December 2009
Website: http://www.progenika.com/eu/index.php?option=com_content&task=view&id=233&Itemid=329&lang=en

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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).
Period: February 2009 – January 2012
Website: http://www.e-LICO.eu/

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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

An Adaptive Framework for Learning over Composite Representations

FNRS Project
Period: October 2008 – September 2010

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### Sampling and Regularization for Latent Structure Models with Feature Induction

FNRS Project
Period: October 2009 – August 2011

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Firmenich

Period: September 2009 – January 2010

Teaching

- **Introduction to algorithms**, Computer Science, Bachelor, 8ECTS, 140 hours.
- **Introduction to Artificial Intelligence**, Computer Science, Bachelor, 8 ECTS, 112 hours.
- **Data Mining**, Computer Science, Master, 8 ECTS, 52 hours
- Christian Pellegrini and Adam Woznica also participate in the following courses: **Applied Cybernetics** (prof. T. Pun), **Heuristic Methods of Learning and Optimization** (prof. B. Chopard and M. Tomassini), **Object-Oriented Concepts and Langugages** (prof. P. Dugerdil).
- Other: Machine Learning reading group, open to all CUI PhD students, postdocs, and other researchers. Met every other week, Autumn 2009.
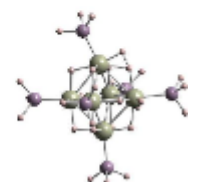- Other: Graduate Student Seminar. Talks by CUI PhD students. Met every other week, Autumn 2009.
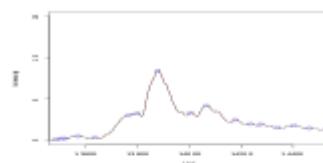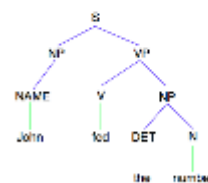
Figure 2: Mining complex data structures

Information System Interface

Prof. Gilles Falquet

ISI

Information System Interfaces

cui.unige.ch/isi

Prof. Gilles Falquet

Domain activities

The main research themes of the ISI 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 ISI group include:
- models and tools to develop and maintain multi-point of view ontologies
- modelling and management of heterogeneous terminological, ontological and linguistic knowledge resources
- the semantic and rhetoric annotation and retrieval of text
- the formal representation of architectural knowledge and the development of knowledge-based systems for architectural design
- the specification of spatial hypertext views on knowledge bases
- usability evaluation of representation techniques for semantic information in 3D virtual environments

Team

Director
Gilles Falquet
Titular professor
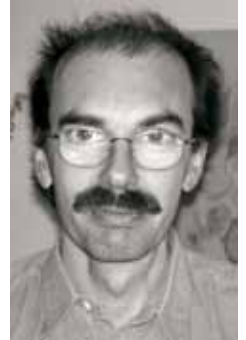
Members
Dr. Claudine Métral (MER)
Dr. Laurent Moccozet (MER)
Dr. Jacques Guyot

PhD students
Kaveh Bazargan
Hélène De Ribaupierre
El Mustapha El Afiti
Nizar Ghoula
Alain Junger
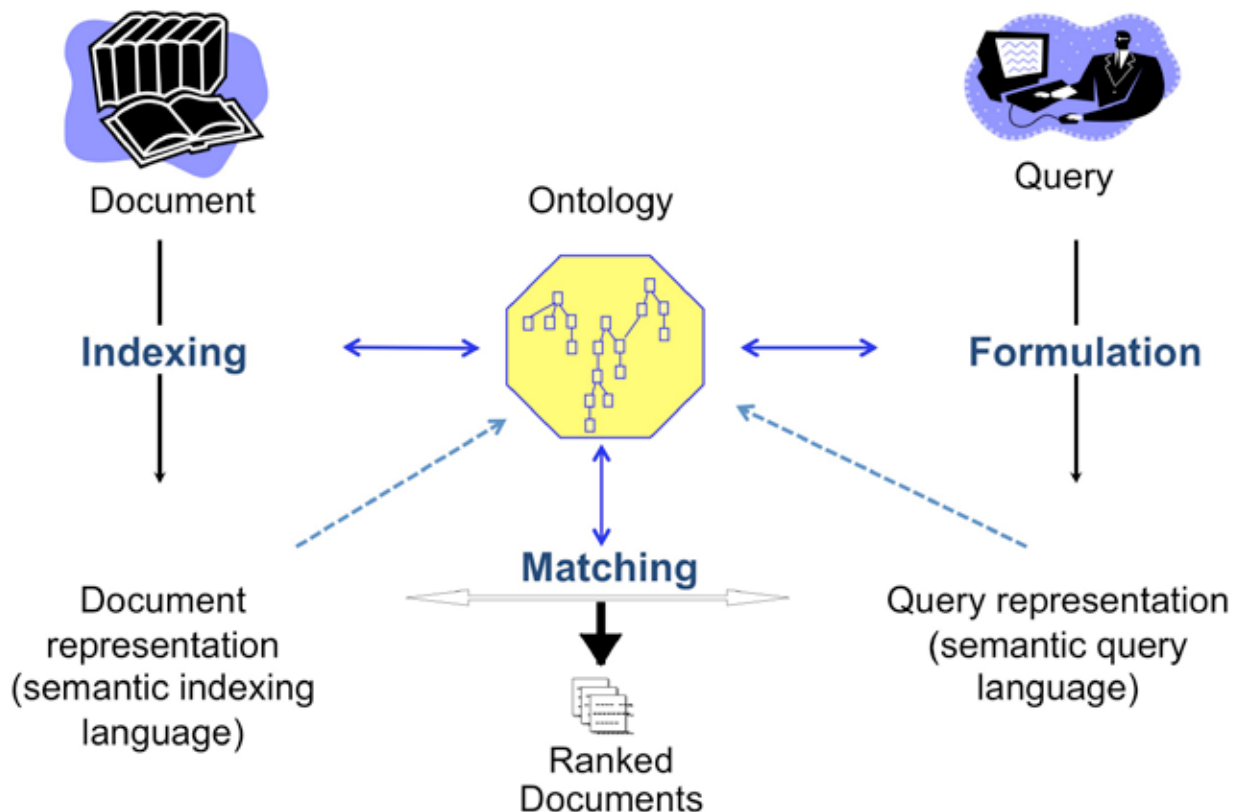Claire-Lise Mottaz Jiang
Saïd Radhouani
Mathieu Vonlanthen

Fig.1: Ontology-based information retrieval

List of publications
Refereed papers in international journals

[1] C. Métral, R. Billen, A.-F. Cutting-Decelle, M. Van Ruymbeke. «Ontology-based approaches for improving the interoperability between 3D urban modelsI», In ITcon, Special Issue on "Bringing urban ontologies into practice", Vol. 15, 2010.

Full refereed papers in Conference Proceedings

[2] K. Bazargan, G. Falquet, and C. Métral. «Une infrastructure d'évaluation pour des techniques de représentation de l'information non-géométrique dans les environnements virtuels 3D». In Proceedings of the 21st International Conference on Association Francophone d'Interaction Homme-Machine (Grenoble, France, October 13 - 16, 2009). IHM '09. ACM, New York, NY, 151-154.

[3] C. Métral, G. Falquet, A.-F. Cutting-Decelle. «Towards Semantically Enriched 3D City Models: an Ontology-Based Approach». In Academic Track of GeoWeb 2009 - Cityscapes, International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences (ISPRS), XXXVIII-3-4/C3, (Kolbe T. H., Zhang H. & Zlatanova S., editors), Vancouver, Canada, 2009.

[4] C. Métral, R. Billen, A.-F. Cutting-Decelle, M. Van Ruymbeke. «Ontology-Based Models for Improving the Interoperability of 3D Urban Information». In Urban Ontologies for an improved communication in urban development projects, J. Teller, A.F. Cutting-Decelle, R. Billen (Eds.), Les Editions de l'Université de Liège, Liège, 2009.

[5] K. Bazargan and G. Falquet. «Specifying the Representation of Non-geometric Information in 3D Virtual Environments». In Proceedings of the 13th international Conference on Human-Computer interaction. Part Ii: Novel interaction Methods and Techniques (San Diego, CA, July 19 - 24, 2009). J. A. Jacko, Ed. Lecture Notes In Computer Science, vol. 5611. Springer-Verlag, Berlin, Heidelberg, 773-782.

[6] J. Guyot, G. Falquet, J. Teller. «Incremental Development of Shared Urban Ontology: the Urbamet Experience». In Urban Ontologies for an Improved Communication in Urban Development Projects, Proc. of the Final Conference of the COST Action C21, Liège, March 2009.

[7] M. Risoldi, V. Amaral, B. Barroca, K. Bazargan, D. Buchs, F. Cretton, G. Falquet, A. Calvé, S. Malandain, and P. Zoss. «A Language and a Methodology for Prototyping User Interfaces for Control Systems». In Human Machine interaction: Research Results of the MMI Program, D. Lalanne and J. Kohlas, Eds. Lecture Notes In Computer Science, vol. 5440. Springer-Verlag, Berlin, Heidelberg, 221-248.

[8] J. Guyot, G. Falquet, S. Radhouani, K. Benzineb. «Analysis of Word Sense Disambiguation-Based Information Retrieval». In 8th Workshop of the Cross-Language Evaluation Forum, CLEF 2008, Revised Selected Papers. C. Peters, et al. (Eds.). Lecture Notes in Computer Science, Springer

[9] L. Moccozet. «Personal Information Ecosystem: A Framework for Immersive Blended Training in Information and Communication Technologies Literacy», In Proc. IEEE International Conference on Digital Ecosystems and Technologies (DEST) 2009, Istanbul, Turkey [CD-ROM], 2009.

Books and book chapters

[10] J. Nogueras-Iso, J. Lacasta, G. Falquet, J. Guyot, J. Teller. «Ontology learning from thesauri: an experience in the urban domain». Chapter in Gargouri, F. and Jaziri, W. (Eds.) Ontology Theory, Management and Design: Advanced Tools and Models. IGI Intl publishing. (to appear)

International and national advisory committees
Gilles Falquet:
- Member of the advisory board. International Journal on Information - Interaction – Intelligence (I3)
- Member of the Management Committee and Working group leader. European COST Action C21 - Towntology

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

Claudine Métral:
- Proposer and Chairwoman. European COST Action TU0801 – Semantic Enrichment of 3D City Models for Sustainable Development
- Member of the Management Committee. European COST Action C21 - Towntology

Member of conference progam committees
Gilles Falquet:
- Comité scientifique de la conference Extraction et Gestion de la Connaissance EGC'09
- Comité scientifique des Journées francophones sur les ontologies. JFO. Lyon, Oct. 2009.

Claudine Métral:
- GeoWeb 2009 - 3D Cityscapes
- IJAEIS 2009

Invited talks
- Claudine Métral, Keynote Speaker at Semantic Enrichment of 3D City Models for Sustainable Development, EuroSDR, Meeting, Paris, May 14th, 2009

Funded research projects
Participation to European projects

Integrating Urban Knowledge into 3D City Models within COST Action C21 «Towntology»
Partners: EPF Lausanne, University of Zurich, University of Geneva (geography), Belgium, France, Italy, Spain, Norway, Finland, UK, Romania
Period: 2006 - 2009

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Semantic Enrichment of 3D City Models for Sustainable Development within COST Action TU0801
Proposer and Chair woman: Claudine Métral (University of Geneva
Partners: 20 participating countries
Website: httl://www.semcity.eu/

Participation to National projects

Ontology-Based Precise Multilingual Information Retrieval
FNS
Period: 2008 - 2010

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Construction automatique de mémoires de traduction pour la traduction assistée par ordinateur et la recherche d'informations multilingues
CTI/KTI
Period: 2008 - 2010

———

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

———

Formalisation et sens du projet architectural
FNS
Partners: interdisciplinaire avec le département de Géographie (requérant principal) et l'institut de Mathématiques de l'Université de Genève
Period: 2008 - 2011

Teaching

- **Outils formels pour les systèmes d'information**, Information Systems, Bachelor course, 6 ECTS, 56 hours, 10 students
- **Algorithmes et structures de données**, Information Systems, Bachelor, 6 ECTS, 56 hours, 10 students
- **Systèmes de représentation des connaissances : principes et applications**, Information Systems, Master course, 6 ECTS, 56 hours, 4 students
- **Interfaces des systèmes d'information**, Information Systems, Master course, 6 ECTS, 56 hours, 15 students
- **Modélisation des bases de données spatiales,** Service course, Information Systems, Master course, 3 ECTS, 28 hours, 45 students
- **Règles et modèles,** Service course, Information Systems, Master course, 3 ECTS, 28 hours, 5 students
- **Space-City,** Service course, Information Systems, Master course, 3 ECTS, 28 hours, 10 students
- **Production de documents web et conception de sites**, Certificat de Formation continue, Information Systems, 1 ECTS, 40 hours, 25 students
- **Création et gestion d'application web interactives**, Certificat de Formation continue, Information Systems, 1 ECTS, 40 hours, 25 students
- **Sites web dynamiques, bases de données et systèmes de gestion de contenu**, Certificat de Formation continue, Information Systems, 1 ECTS, 40 hours, 25 students
- **La 3D comme outil d'expertise, de décision et de communication**, Session de Formation continue, Information Systems, 0 ECTS, 52 hours, 32 students
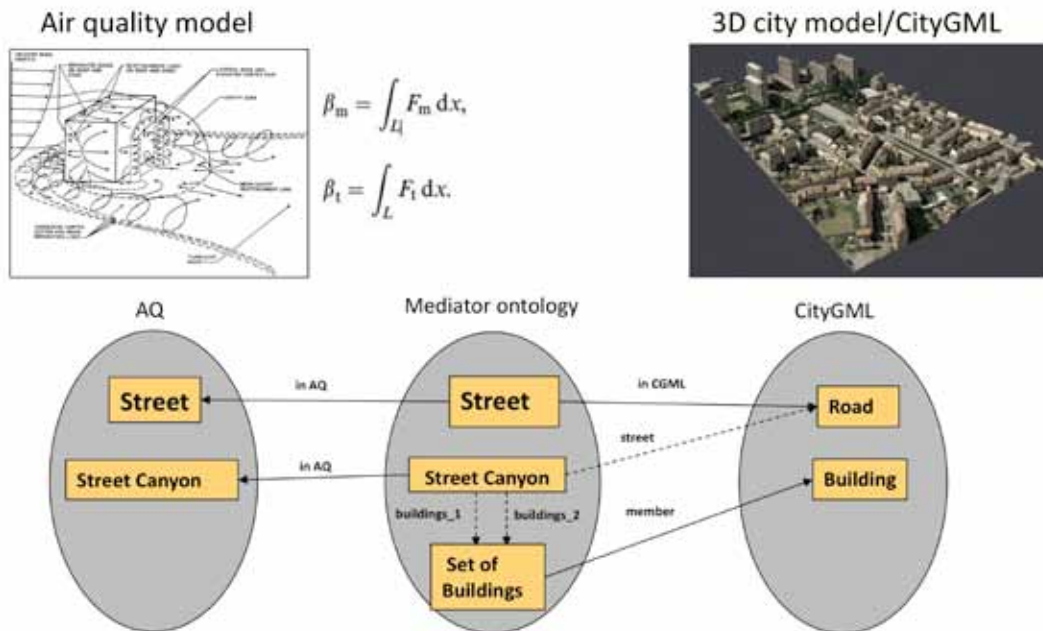

Fig.2: Interconnecting Air Quality Models and 3D City Models through Knowledge Structures

LATL

Laboratory for the Analysis and Technology of Language

Prof. Eric Wehrli

www.latl.unige.ch

Laboratory for the Analysis and Technology of Language
Prof. Eric Wehrli

www.latl.unige.ch

Domain activities

The LATL 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 (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 1qautomatic segmentation, prosody and speaking style modelling.

Team

Director
Eric Wehrli
Full professor

Members
Dr. Paola Merlo (MER)
Mr. Luka Nerima
Dr. Violeta Seretan
Dr. Lonneke van der Plas
Andrea Gesmundo
Asheeh Gulati
Jean-Philippe Goldman
Alexis Kauffmann
Goldjihan Katchajev
Athina Michou
Gabriele Musillo
Kamel Nehbi
Lorenza Russo
Tanja Samardzic
Yves Scherrer
Sandra Schwab

LATL team in 2008

List of publications

Refereed papers in international journals

[1] Violeta Seretan, «Extraction de collocations et leurs équivalents de traduction à partir de corpus parallèles», TAL, 50(1):305–332, 2009.

[2] Violeta Seretan and Eric Wehrli, «Multilingual collocation extraction with a syntactic parser», Language Resources and Evaluation, 43(1), 71–85, 2009.

Full refereed papers in Conference Proceedings

[3] Cedric Boidin, Verena Rieser, Lonneke van der Plas, Oliver Lemon, Jonathan Chevelu, «Predicting how it sounds: Re-ranking dialogue prompts based on TTS quality for adaptive Spoken Dialogue Systems». In Interspeech special session on Machine Learning for Adaptivity in Spoken Dialogue Systems.

[4] Lonneke van der Plas, James Henderson, and Paola Merlo, «Domain Adaptation with Artificial Data for Semantic Parsing of Speech». In Proceedings of North American ACL (NAACL'09), Boulder, Colorado.

[5] Lonneke van der Plas, «Combining Syntactic Co-occurrences and Nearest Neighbours in Distributional Methods to Remedy Data Sparseness». Proceedings of NAACL Workshop on Unsupervised and Minimally Supervised Learning of Lexical Semantics, Boulder, Colorado.

[6] P.-E. Genest, G. Lapalme, L. Nerima, and E. Wehrli, «A Symbolic Summerizer with Two Steps of Sentence Selection for TAC 2009». In Proceedings of the Text Analaysis Conference (TAC) 2009, National Institute of Standards and Technology, Gaithersburg, Maryland, USA.

[7] A. Gesmundo, J. Henderson, P. Merlo and I. Titov, «A Latent Variable Model of Synchronous Syntactic-Semantic Parsing for Multiple Languages», Proceedings of the Conference on Natural Language Learning (CONLL 2009), Shared Task, Boulder, CO.

[8] M. Goudbeek, J.-P. Goldman and K. Scherer. «Emotion dimensions and formant position», Proceedings Interspeech, 2009. Brighton, UK.

[9] M. Goudbeek, J.-P. Goldman and K. Scherer, «Emotion, articulation and voice quality», Poster presented at ISRE 2009, Leuven, Belgium.

[10] Athina Michou and Violeta Seretan, «A tool for multi-word expression extraction in Modern Greek using syntactic parsing». Proceedings of the Demonstrations Session at EACL 2009, Athens, Greece. Association for Computational Linguistics. 45–48.

[11] Paola Merlo and Lonneke van der Plas, «Abstraction and Generalisation in Semantic Role Labels: PropBank, VerbNet or both?» In Proceedings of Association for Computational Linguistics (ACL'09), Singapore.

[12] Violeta Seretan, «An integrated environment for extracting and translating collocations». Proceedings of the Fifth Corpus Linguistics Conference, Liverpool, U.K. July 2009

[13] Ivan Titov, James Henderson, Paola Merlo and Gabriele Musillo, «Online Graph Planarisation for Synchronous Parsing of Semantic and Syntactic Dependencies». Proceedings of International Joint Conference for Artificial Iintelligence 2009, Pasadena, CA.

[14] Yves Scherrer, «Un système de traduction automatique paramétré par des atlas dialectologiques». Traitement Automatique des Langues Naturelles 2009, Senlis, France.

[15] Eric Wehrli, Violeta Seretan, Luka Nerima and Lorenza Russo, «Collocations in a rule-based MT system: A case study evaluation of their translation adequacy». Proceedings of the 13th Annual Meeting of the European Association for Machine Translation, 128–135.

[16] Eric Wehrli, Luka Nerima, Violeta Seretan and Yves Scherrer, «On-line and off-line translation aids for non-native readers». Proceedings of the International Multiconference on Computer Science and Information Technology, Mragowo, Poland, 299–303.

[17] Eric Wehrli, Luka Nerima and Yves Scherrer, «Deep Linguistic Multilingual Translation and Bilingual Dictionaries». 4th Workshop on Statistical Machine Translation, EACL 2009, Athens, Greece.

[18] E. Wehrli and L. Nerima, «L'analyseur syntaxique Fips». In Proceedings of the IWPT'09 ATALA Workshop : What French parsing system ? Paris, France.

Research and technical reports

[19] Yves Scherrer, «A Model for Machine Translation between Standard German and Swiss German Dialects». Mémoire de Prédoctorat, Faculté des Lettres, Université de Genève, June 2009.

[20] Tanja Samardzic, «Semantic roles in natural language processing and in linguistic theory». Mémoire de Prédoctorat, Faculté des Lettres, Université de Genève, September 2009.

International and national advisory committees

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

Member of conference program committees

- Twenty-first International Joint Conference on Artificial Intelligence (IJCAI-09), Pasadena, CA.
- Eleventh International Conference on Parsing Technologies (IWPT'09), Paris.
- Thirteenth Conference on Computational Natural Language Learning (CoNLL'09), Boulder, CO.
- ACL 2009 - Parsing and Semantics Sections, NAACL 2009 - Parsing Section, EACL 2009 - Semantics Section.
- ACL/IJCNLP 2009 Workshop «Multiword Expressions: Identification, Interpretation, Disambiguation and Applications (MWE 2009)», Singapore.
- RECITAL 2009, Senlis, France.

Invited talks

- Yves Scherrer, «Machine Translation for Swiss German Dialects», Columbia University, New York, October 2009
- V. Seretan, «Collocation extraction with a multilingual parser: Demonstration for Greek», Department of Philology, Linguistics Division, University of Patras, Greece, 31 March 2009
- V. Seretan, «l'environnement de traitement de collocations de LATL», GETALP - Groupe d'Etude en Traduction/Traitement des Langues et de la Parole, Laboratoire d'Informatique de Grenoble, France, December 2009
- V. Seretan, Master «Industries de la Langue», Le traite-

ment automatique des collocations : modélisation, détection, utilisation, Université Stendhal, Grenoble, France, December 2009
- Lonneke van der Plas, «Les textes, sources inépuisables d'informations: La découverte automatique de mots similaires», Section d'informatique et méthodes mathématiques, Université de Lausanne, December 2009.
- Lonneke van der Plas, «Distributional methods for the extraction of semantically related words», NaTAL09 LORIA, Nancy, France.
- J.-P. Goldman, «Interface Discours Prosodie, Description prosodique semi-automatique et discrimination de styles de parole», Paris, September 2009
- J.-P. Goldman, «Journée Phonologie du Français Contemporain, Un début de caractérisation prosodique de deux variétés suisses romandes», Paris, December 2009
- P. Merlo, «Semantic Role Labelling and Verb Classification», LORIA, Nancy, June 2009.
- P. Merlo, «Learning Facets of Verb Meaning», University of Heidelberg, July 2009.
- P. Merlo, «Synchronous Models of Syntactic and Semantic Parsing», Neuchâtel, SWIGG Conference, April 2009.
- P. Merlo, «Exploiting Language Parallelism: Automatic Construction of a French Semantic Role Labeller», University of Paris 7, November 2009.

Funded research projects
Participation to European projects

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

Développement d'un modèle plurilingue de traitement des langues naturelles
SNFS 100012-103999
Period: July 2008 – June 2010

———

Learning Verb Meaning with Hidden Grammars
Swiss National Science Foundation, grant no. 11-114044
Period: 2006 - 2009

———

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

———

Co-PI - Improving the coherence of machine translation output by modelling inter-sentential relations
Swiss NSF SINERGIA project
Period: 2009 - 2012

Partners: University of Geneva (Lettres and Sciences), IDIAP
———

Co-PI CADMOS project (Center for Advanced Modeling Science) Machine Translation.

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 located in Zürich.

Others
Honours and scientific awards
- Yves Scherrer - Swiss National Fund Fellowship for Prospective Researchers. Visiting scholar at the Center for Computational Learning Systems, Columbia University, New York. September 2009 - June 2010.
- Eric Wehrli, Best presentation award, International Multiconference on Computer Science and Information Technology, Mragowo, Poland, Workshop «Computational Linguistics – Applications» (CLA'10), session «Use of NLP Tools In practical application», October 2009.

Refereeing
- ACL 2008 – Machine Learning and Semantics Sections; Journals: Computational Linguistics, Natural Language Engineering", "Language Resources and Evaluation"

Dissemination
- Portes ouvertes aux collégiens: Word similarity demo, Dialogue system demo, Parsing demo.

Teaching
- **Databases**, Unit of Computer Science for the Humanities, Bachelor, 12 ECTS, 112 hours, 15 students
- **Data Structures and Programming**, Unit of Computer Science for the Humanities, Bachelor, 6 ECTS, 84 hours, 6 students
- **Object Oriented Project**, Unit of Computer Science for the Humanities, Bachelor, 6 ECTS, 84 hours, 6 students
- **Information Communication Technologies**, Unit of Computer Science for the Humanities, Bachelor & Master, 12 ECTS, 140 hours, 16 students
- **Natural Language Processing**, Unit of Computer Science for the Humanities, Master, 12 ECTS, 140 hours, 7 students
- **Informatique I – Introduction à l'algorithmique et à la programmation**, Unit of Computer Science for the Humanities, Bachelor, 6 ECTS, 70 hours, 15 students
- **Informatique I – Programmation Web**, Unit of Computer Science for the Humanities, Bachelor, 6 ECTS, 70 hours, 20 students
- **Empirical Methods in Natural Language Processing : Statistical Machine Translation**, Unit of Computer Science for the Humanities, Master, 12 ECTS, 56 hours, 10 students

MATIS

Geneva Team Database Laboratory

Prof. Michel Léonard

matis.unige.ch

Geneva Team Database Laboratory

Prof. Michel Léonard

matis.unige.ch

Domain activities

The domain of Information System is so exciting that we find a real pleasure to work in this area. Furthermore its utility and its pertinence are now well identified in the world of activities. Nevertheless, an information system becomes larger and larger because of the increasing number of information technologies and because of the huge number of situations where IS are considered as mandatory.

So, now the most important focus is to consider the added value, which is underlying the information systems. Then a new Science is emerging, which was in infancy in the Information system domain: the Services Science. This term was introduced by IBM in 2002. In our approach, we consider service as a mix of informatics, information, regulation, activities, governance, around a cognitive unity and identity.

That's great because this domain is open to interdisciplinary approaches in order to create a transdisciplinary service, which adds value to every discipline and which has its own value. It requires agile approach, evolution capabilities to support innovation processes.

Our research is focused mainly on service engineering in different aspects:
- ontology and regulation with the ontology system KSTERIX;
- innovation process in the domain of e-government;
- formal approach of services;
- integration of services into an information system.

Team

Director
Michel Léonard
Full professor

Members
Dr. Jolita Ralyte (MER)
Dr. Mehdi Snene
Dr. Abdelaziz Khadraoui
Dr. Anastasiya Yurchyshyna

Assistants (PhD students)
Wanda Opprecht

MATIS

MAnagement and Technology of Infomation Sysytems

- Component-based IS engineering
- Distributed IS
- Method engineering
- E-government IS engineering

PhD Thesis

- Nicolas Arni-Bloch, «Ingénierie des services informationnels à l'aide de méthodes situationnelles», Université de Genève, Faculté SES, March 2009.
- M. Richard MUKUNDJI, « Esquisse de modélisation des instruments internationaux du commerce et leur mise en œuvre dans les pays les moins avancés d'Afrique », co-directeur Prof E. Lane, Département de Sciences Politiques, Faculté SES, Université de Genève, July 2009.

List of publications

Refereed papers in international journals

[1] Abdelaziz Khadraoui, Michel Léonard, Thanh Thoa Pham Thi, Markus Helfert, «A Framework for Compliance of Legacy Information Systems with Legal Aspect», AIS Transactions on Enterprise Systems journal, 1867-7134, GITO mbH, pp 15-26, 1(2009).
[2] Mehdi Snene, «Innovation process in financial services: A composing services approach for process acceleration», Service Science Journal. Springer ISSN: 1865-4924 (forthcoming)

Full refereed papers in Conference Proceedings

[3] Mehdi Snene, M. Léonard, «Enabling services creation by discovering knowledge overlap», ISSS09, Germany, February 2009.
[4] Mehdi Snene, «Rethinking service based systems lifecycle: An enhanced security approach for SOA», ICSS09, India, June 2009.
[5] Abdelaziz Khadraoui, Nathalie de Marcellis-Warin, Benoit Aubert, «A conceptual mapping model applied to Canadian regulations on dangerous goods transportation and storage», Risk Analysis: The Evolution of a Science, Baltimore, MD, USA, 2009.
[6] Nicolas Arni-Bloch, Jolita Ralyté, Michel Léonard, «Service-Driven Information Systems Evolution: Handling Integrity Constraints Consistency». In: A. Persson and J. Stirna (Eds.) The practice of Enterprise Modeling, Proceedings of the 2nd IFIP WG 8.1 Working Conference PoEM 2009, LNBIP 39, pp. 191–206, Springer Berlin Heidelberg.
[7] Michel Léonard, Anastasiya Yurchyshyna, «Bridging Ontological Vision and Service-oriented Approach for Development of Cognitive Information Systems», conference COGNITIVE 2009, November 15-20, Athens.
[8] Thang Le-Dinh, Michel Léonard, «A Conceptual Framework for Modelling Service Value Creation Networks", 1st International Workshop on Information Technology for Innovative Services (ITIS-2009), IEEE 12th International Conference on Network-Based Information Systems (NBiS-2009).

International and national advisory committees

- Abdelaziz Khadraoui, Member of the scientific committee, 2009, Enterprise Information Systems Journal (Taylor & Francis Group).

Member of conference program committees

- Jolita Ralyté, Michel Léonard: CAiSE'09 – 221st International Conference on Advanced Information Systems Engineering, Amsterdam, The Netherlands, June 2009.
- Jolita Ralyté: ECIS'09 –17th European Conference on Information Systems, Verona, Italy, June 2009.
- Jolita Ralyté, Michel Léonard: PoEM'09 – IFIP WG8.1 Working Conference on The Practice of Enterprise Modeling: from Business Strategies to Enterprise Architectures, Stockholm, Sweden, November 2009.
- Jolita Ralyté: ICEIS'09 – 11th International Conference on Enterprise Information Systems, Milan, Italy, May 2009.
- Jolita Ralyté: RCIS'09 – 3rd International Conference on Research Challenges in Information Science, Fez, Morocco, May 2009.
- Jolita Ralyté: EMMSAD'09 – 14th International Conference on Exploring Modelling Methods in Systems Analysis and Design, Amsterdam, The Netherlands, June 2009.
- Jolita Ralyté: ICSOFT'09 – 4th International Conference on Software and Data Technologies, Sofia, Bulgaria, July 2009.

Funded research projects
Participation to European projects

DELLIISS
Designing Lifelong Learning for Innovation in Information Services
co-founder

Participation to National projects

Collaboration with CTI (Centre des technologies de l'Etat de Genève)
Specification of business processes in the context of the authorization of building at the Canton of Geneva

Technology transfer
MATIS continuing education – certificate on Information Systems Project Management

Others
- Abdelaziz Khadraoui, courses and seminars: Institutional Information Systems Engineering and E-government (University of Boumerdes)

Refereeing
- Jolita Ralyté: Report of PhD Dissertation presented by Charlotte Hug «Méthode, modèles et outil pour la méta-modélisation des processus d'ingénierie de systèmes d'information», Université de Grenoble 1, France, October 2009
- Michel Léonard: M. Marek Winkler, «Conceptual Modelling for service oriented systems», University of Brno, Tchéquie, pre-thesis, October 2009.
- Jad Saade, «L'outil Internet dans les PMI-PME et les stratégies à adopter : le cas Libanais», Thèse en Sciences de Gestion, Université de Savoie, December 7, 2009, Annecy (opponent).
- Yehia Taher, «Un canevas pour l'adaptation et la substitution de services Web», Doctorat de l'Université Claude Bernard, Lyon I, Spécialité: Informatique, July 2009.

Editorial responsibilities
- Jolita Ralyté: Member of editorial committee of the International Journal of Information Systems Modelling and Design – IJISMD
- Jolita Ralyté: Member of editorial committee of the International Journal of Information Systems in the Service Sector - IJISSS
- Jolita Ralyté: Reviews for JSS – Journal of Systems and Software
- Jolita Ralyté: Reviews for JSSM – Journal of Service Science and Management
- Jolita Ralyté: Reviews for TSE – Transactions on Software Engineering
- Jolita Ralyté: Reviews for ISEBM – Information Systems and e-Business Management
- Jolita Ralyté: Reviews for IJISMD – International Journal of Information Systems Modelling and Design
- Jolita Ralyté: Reviews for EJIS – European Journal of Information Systems
- Jolita Ralyté: Reviews for AES – Advances in Engineering Software
- Jolita Ralyté: Reviews for INFSOF – Information and Software Technology

Teaching
- **Computerized Knowledge management**, Information Systems, 6 ECTS, spring semester, 56 hours course + 56 hours seminar, Master.
- **Information System Project Management**, Information Systems, 6 ECTS, autumn semester, 56 hours course-Master, 30 students.
- **Information system modelling**, Information Systems, 6 ECTS, 56 hours course + 56 hours seminar, Bachelor, 30 students.
- **Methods of database design**, Information Systems, 6 ECTS, winter semester, 56 hours course + 56 hours seminar, Bachelor, 20 students.
- **Information base systems**, Information Systems, 6 ECTS, winter semester, 56 hours course + 56 hours seminar, Bachelor, 20 students.
- **Information system evolution and interoperability**, Information Systems, 6 ECTS, autumn and spring semester, 56 hours course + 56 hours seminar, Master, 15 students.
- **Introduction of Services Science**, Information Systems, 6 ECTS, autumn and spring semester, 56 hours course + 56 hours seminar, Bachelor, 300 students.

MIRALab

MIRALab Laboratory

Prof. Nadia Magnenat-Thalmann

www.miralab.ch

MIRALab Laboratory

www.miralab.ch

Prof. Nadia Magnenat-Thalmann

Domain activities

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 the team has participated in more than 30 European Projects. In 2009, MIRALab was working on the following projects: 3D ANATOMICAL HUMAN, CALVIN, CO-ME, FOCUS K 3D, FNRS, FRANCOPHONIE, INDIGO, INTERMEDIA, LEAPFROG IP, PLAYMANCER and SERVIVE, as well as in International conferences, often organised in Switzerland by MIRALab.

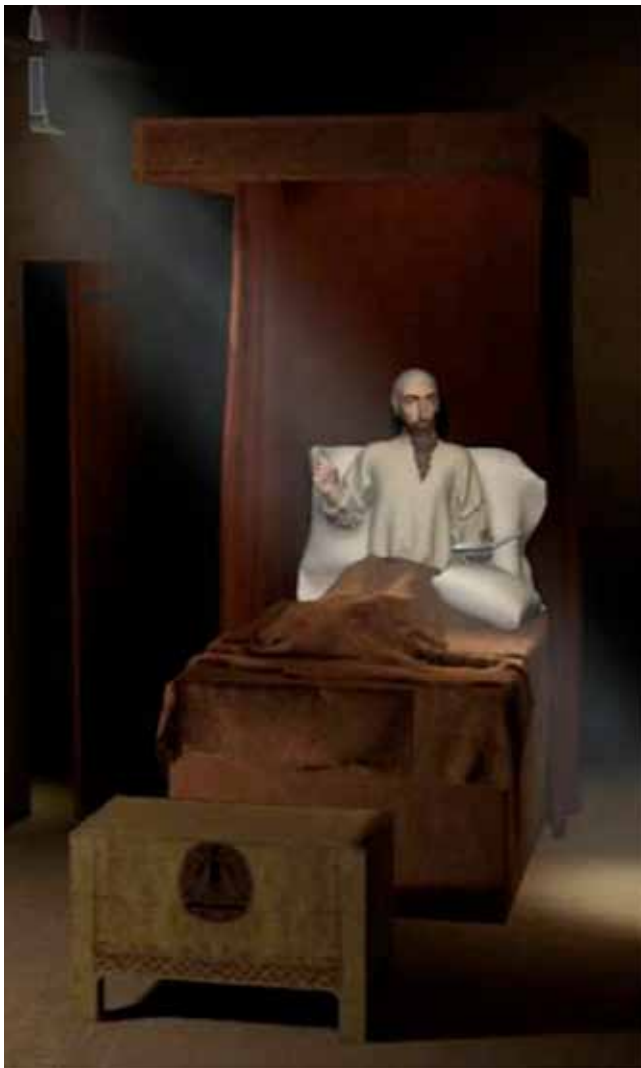The following are some images of our work:

Fig.1: Calvin - Scene «Lever»

Team

Director
Nadia Magnenat-Thalmann
Full professor

Assistants (PhD students)
Lazhari Assassi
Maher Ben Moussa
Ugo Bonanni
Sylvain Chagué
Caecilia Charbonnier
Jody Haussmann
Etienne Lyard
Mustafa Kasap
Zerrin Kasap
Bart Kevelham
Mélanie Montagnol
Niels Nijdam
Jérôme Schmid
Yeonha An

Senior researchers
Seunghyun Han (Post Doc)
Jinman Kim (Post Doc)
Georgios Papagiannakis (Post Doc)
Dimitris Protopsaltou (Post Doc)
Pascal Volino (Post Doc)
Marlène Arévalo
Nedjma Cadi-Yazli

Administration
Ghislaine Wharton

Fig 2: Networks - Chloe@University

Fig 3: Virtual try on - Step 2: Choose your garment

Step1: Motion recording   Step2: 3D anatomical calibration   Step3: 3D bones poses computation
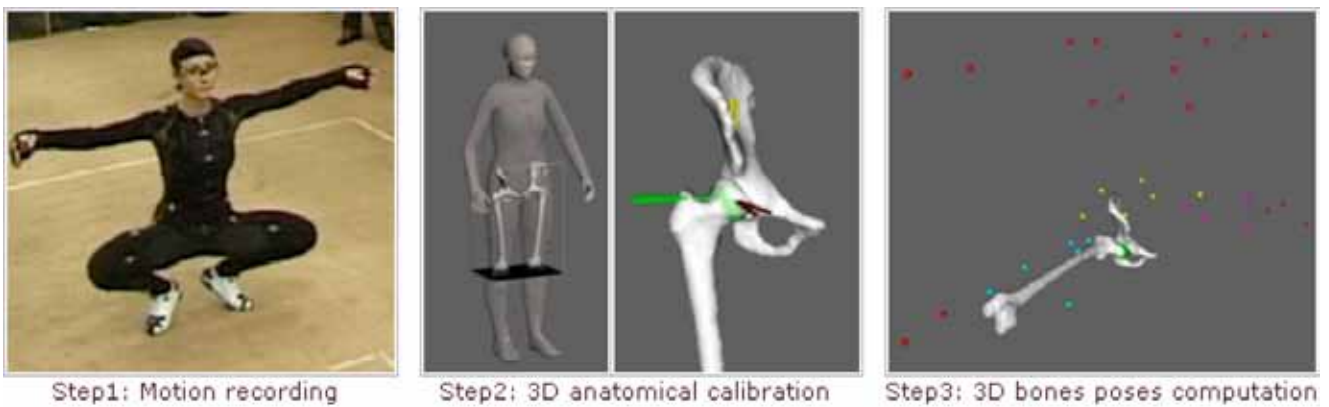
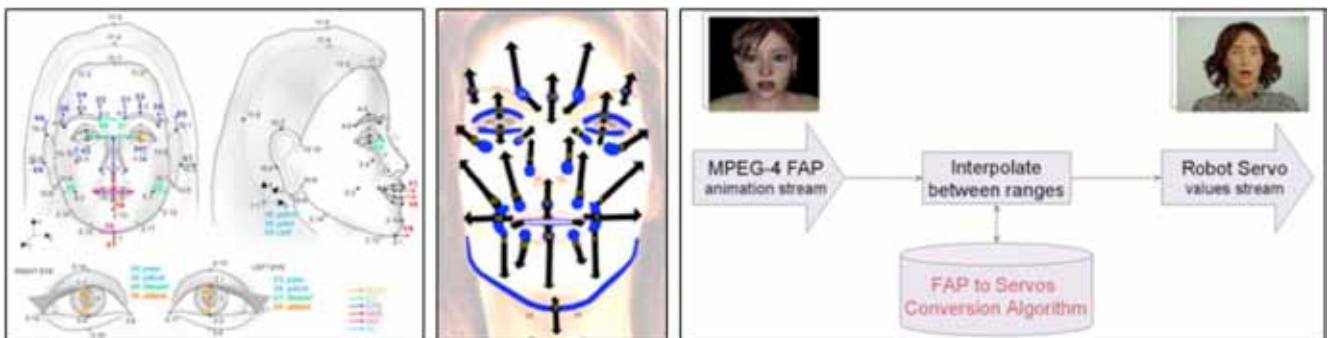Fig. 4: Medical - Hip joint kinematics estimation

Fig. 5: Facial expression robot - Conversion from MPEG-4 animation to robotic animation

List of publications

Refereed papers in international journals

[1] U. Bonanni, P. Kmoch, N. Magnenat-Thalmann. «Interaction Metaphors for Modeling Hair using Haptic Interfaces». International Journal of CAD/CAM, Society of CAD/CAM Engineers, 9, 1, 2009.

[2] P. Volino, N. Magnenat-Thalmann, F. Faure. «A Simple Approach to Nonlinear Tensile Stiffness for Accurate Cloth Simulation». ACM Transactions on Graphics, ACM, 28, 4, pp. 105-116, August 2009.

[3] C. Charbonnier, F. Kolo-Christophe, S.R. Duc, C.W.A. Pfirrmann, J. Menetrey, V.B. Duthon, N. Magnenat-Thalmann, C. Becker, P. Hoffmeyer. «Extreme Motion as a Potential Initiator of Hip Osteoarthritis». Swiss Med Wkly, Suppl. 173, 139(23-24):18S, 2009.

[4] V.B. Duthon, J. Menetrey, F. Kolo-Christophe, C. Charbonnier, S.R. Duc, C.W.A. Pfirrmann, N. Magnenat-Thalmann, C. Becker, P. Hoffmeyer. «Professional Dancers' Hip: Correlation of Clinical and MRI Findings». Swiss Med Wkly, Suppl. 173, 139(23-24):18S, 2009.

[5] M. Kasap, P. Chadhuri, N. Magnenat-Thalmann. «Fast EMG-Data Driven Skin Deformation». Computer Animation and Virtual Worlds Journal (Accepted), John Wiley and Sons, Vol. 20, No. 2-3, pp. 153-161, 2009.

[6] Z. Kasap, M. Ben Moussa, P. Chaudhuri, N. Magnenat-Thalmann. «Making Them Remember—Emotional Virtual Characters with Memory». IEEE Computer Graphics and Applications, 29, 2, pp. 20-29, March 2009.

[7] B. Gilles, F. Kolo-Christophe, N. Magnenat-Thalmann, C. Becker, S. Duc, J. Menetrey, P. Hoffmeyer. «MRI-based Assessment of Hip Joint Translations». Journal of Biomechanics, 42(9):1201-1205, 2009.

[8] C. Charbonnier, L. Assassi, P. Volino, N. Magnenat-Thalmann. «Motion Study of the Hip Joint in Extreme Postures». Vis Comput, Springer-Verlag, Vol. 25, No. 9, pp. 873-882, 2009.

[9] L. Assassi, C. Charbonnier, J. Schmid, P. Volino, N. Magnenat-Thalmann. «From MRI to Anatomical Simulation of the Hip Joint». Computer Animation and Virtual Worlds Journal, Special Issue on Physiological Human, John Wiley and Sons, 20(1):53-66, 2009

Full refereed papers in Conference Proceedings

[10] L. Assassi, P. Volino, N. Magnenat-Thalmann. «Physically-based simulation of ballet dancer's hip». SIGGRAPH ASIA 2009, Yokohama, Japan, December 16-19 2009, 2009.

[11] M. Ben Moussa, N. Magnenat-Thalmann. «Applying Affect Recognition in Serious Games: The PlayMancer Project». The Second International Workshop on Motion in Games (MIG 2009), Lecture Notes in Computer Science, Springer, 5884, pp. 53-62, 2009.

[12] M. Kasap, N. Magnenat-Thalmann. «Sizing Avatars from Skin Weights». Proc. of the 16th ACM Symposium on Virtual Reality Software and Technology (VRST 2009), ACM Digital Library, November 2009.

[13] J. Schmid, N. Nijdam, S. Han, J. Kim, N. Magnenat-Thalmann. «Interactive Segmentation of Volumetric Medical Images for Collaborative Telemedicine». Modelling the Physiological Human, Proc. 3D Physiological Human Workshop, Springer, 5903, pp. 13-24, December 2009.

[14] N. Magnenat-Thalmann and Z. Kasap. «Virtual Humans in Serious Games». International Conference on CyberWorlds, IEEE Computer Society, pp. 71-79, September 2009.

[15] U. Bonanni, P. Kmoch and N. Magnenat-Thalmann. «Haptic Interaction with One-Dimensional Structures». Proc. of the 16th ACM Symposium on Virtual Reality Software and Technology (VRST 2009), ACM, 2009.

[16] N. Magnenat-Thalmann, U. Bonanni, P. Volino and L. Assassi. «Hair, Cloth and Soft Tissues: The Influence of Mechanical Properties on the Real-Time Dynamics of Deformable Objects». Proc. of the 6th Workshop on Virtual Reality Interaction and Physical Simulation (VRIPHYS 2009), The Eurographics Association, 2009.

[17] N. Magnenat-Thalmann, U. Bonanni, P. Volino. «Physical Behavior of Deformable Hair and Clothes: What Is Common?». Proc. of the 11th IEEE International conference on Computer-Aided Design and Computer Graphics (CAD/Graphics 2009), IEEE Comp. Soc., 2009.

[18] P. Kmoch, U. Bonanni, N. Magnenat-Thalmann. «Hair Simulation Model for Real-Time Environments». Proc. of the Computer Graphics International Conference (CGI 2009), ACM, pp. 5-12, 2009.

[19] U. Bonanni, P. Kmoch, N. Magnenat-Thalmann. «Tool-based Hairstyling Metaphors». Proc. of the 11th IEEE International conference on Computer-Aided Design and Computer Graphics (CAD/Graphics 2009), IEEE Comp. Soc., pp. 122-127, 2009.

[20] N. Magnenat-Thalmann, J. Schmid, H. Delingette, M. Agus, and J. A. Iglesias Guitian. «3D Anatomical Modelling and Simulation Concepts». Proc. of EUROGRAPHICS 2009 (Tutorial Notes), Eurographics Association, pp. 241-247, June 2009.

[21] C. Charbonnier, J. Schmid, F. Kolo-Christophe, N. Magnenat-Thalmann, C. Becker, P. Hoffmeyer. «Virtual Hip Joint: from Computer Graphics to Computer-Assisted Diagnosis». Eurographics 2009 - First Medical Prize, Eurographics Association, Munich, Germany, pp. 1-4, April 2009.

Books and book chapters

[22] Nadia Magnenat-Thalmann, Jian Zhang and David D. Feng, «Recent Advances in the 3D Physiological Human», Springer, 2009.

[23] Nadia Magnenat-Thalmann, «Modelling the Physiological Human», Proc. 3D Physiological Human Workshop, 3DPH 2009, Zermatt, Switzerland, Springer, November/December 2009.

Research and technical reports

Several technical reports for the following projects: 3D ANATOMICAL HUMAN, CALVIN, CO-ME, FOCUS K 3D, FNRS, FRANCOPHONIE, INDIGO, INTERMEDIA, LEAPFROG IP, PLAYMANCER and SERVIVE.

International and national advisory committees

- 2009: Member of the Evaluation Interdisciplinary Committee of Government of Quebec, (CEM), February 5-6, 2009, Quebec City, Canada
- 2007-2009: Independent expert for evaluation and research proposals, EuropeanCommission, Information Society and Media, Directorate General, Brussels, Belgium.
  Invited in the Group of User Centric Media, European Commission, Information Society and Media.
- 2004-2009: Expert to Assess Grants Proposal for Research Grants Council, Hong Kong, China
- 2003-2009: Expert for National grants, University of Singapore.
- 2002- Present: Member of the Strategic Advisory Board Committee, City University, Hong Kong, China.
- 2000- Present: Member of the "3ème cycle romand d'informatique", Conférence universitaire de la Suisse occidentale (CUSO), Switzerland.
- 1994- Present: President of the Computer Graphics Association (CGS)

Invited talks and Keynotes

- Modelling Socially Intelligent Virtual Humans, VRCAI (Virtual-Reality Continuum and its applications in Industry) organized by ACM SIGGRAPH, Yokohama, Japan, December 14,2009.
- Towards truly-Centric Convergence of Multimedia, UCMEDIA09 (User Centric Media) organized by ICT, Venice, Italy, December 9, 2009.
- Emotional Humans and Social Robots for Interactive Games applications MIG09 (Motion in Games Conference), organized by University of Twente, Zeist, Holland, November 22, 2009.
- Hair, Cloth and Soft Tissues : The influence of Mechanical Properties on the Real-time Dynamics of deformable objects, VRIPHYS'2009 (Virtual Reality Interaction and Physical Simulation), organized by Eurographics Association, Karlsruhe, Germany, November 5, 2009.
- Virtual Humans in Serious Games, Cyberworlds Conference, organized by IEEE, Bradford, England, 7 September 2009.
- Physical Behavior of Deformable Hair and Clothes: What is Common? CAD/Graphics'2009 Conference (computer-Aided Design and Computer Graphics), organized by IEEE, Yellow Mountain, China, August 19, 2009.
- Wireless Sensor Networks and Cooperating Objects, workshop organized by the Frauenhofer Institute, Darmstadt, Germany, Friday March 13, 2009.
- L'infographie à la découverte du corps humain, organized by the University of Geneva Hospital, Geneva, Switzerland, February 3, 2009
- Virtual Humans and Virtual Worlds : Past, Present, Future, presentation for the obtention of the doctor honoris causa In natural Sciences, University of Hanover, Hannover, Germany, January 22, 2009
- INTERMEDIA PROJECT : Avenues of Research, Multimedia Modeling (MMM'2009) in Sofia Antipolis, Nice, France, Friday, January 9, 2009

Funded research projects
Participation to European projects

SERVIVE
«SERVice oriented Intelligent Value adding nEtwork for Clothing-SMEs embarking in Mass-Customization»
Period : September 2008 - August 2011
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)

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PLAYMANCER
«Serious Gaming 3D Environment»
Period : November 2007 - October 2010
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)

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FOCUSK3D
«FOster the Comprehension, adoption and USe of Knowledge intensive technologies for coding and sharing 3D media content in consolidated and emerging application communities»
Period : March 2008 - February 2010
Website : http://focusk3d.eu/
Partners: 9 partners (C.N.R. – Istituto di Matematica Applicata e Tecnologie Informatiche – Dept. Of Genova – Italy, Center for Research and Technology - Thessaly - Laboratory for Information Technology , Systems and Services (LITSS) – Greece, Ecole Polytechnique Féderale de Lausanne, Virtual Reality Laboratory (VRLab) – Switzerland, INRIA – France, Max-Planck-Institutfür Informatik – Germany, MIRALab, University of Geneva – Switzerland, Stiftelsen for industriell og teknisk forskning ved Norges Tekniske Høgskole – Norway, Utrecht University – Netherlands)

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INDIGO
«Interaction with Personality and Dialogue Enabled Robots»
Period: February 2007- July 2009
Website: http://www.ics.forth.gr/indigo/
Partners: 9 partners (Acapela Group - Belgium, Albert-Ludwigs University of Freiburg - Germany, Athens University of Economics and Business - Greece, Foundation for Research & Technology - Hellas Institute of Computer Science - Greece, Foundation of the Hellenic World - Greece, Hanson Robotics - U.S., National Centre for Scientific Research «Demokritos» - Greece, Neobotix / GPS - Germany, University of Edinburgh - United Kingdom

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FRANCOPHONIE
«Accès au patrimoine vestimentaire contemporain et traditionnel francophone»
Period: December 2006 - September 2009
Type: Fonds Francophone des Inforoutes
Partners: Université de Beyrouth - Liban, Musée de Mahdia - Tunisie

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INTERMEDIA
«Interactive Media with Personal Networked Devices»
Period: October 2006 – September 2010
Website: http://intermedia.miralab.unige.ch
Partners: 16 partners (MIRALab, Université de Genève - Switzerland (coordinator), Interdisciplinair instituut voor BreedBandTechnologie VZW - Belgium, Industrial Systems Institute / Integrated Research Information Society - Greece, Lancaster University - United Kingdom, Rheinisch-Westfaelische Technische Hochschule Aachen - Germany, Università degli Studi di Genova - Italy, Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V. - Germany, Klagenfurt University - Austria, Ecole Polytechnique Fédérale de Lausanne - Switzerland, Groupe des Ecoles de Télécommunications - France, Information and Communications University - Korea, Intracom S.A. Telecom Solutions - Greece, OFFIS e.V. - Germany, Consiglio Nazionale Delle Ricerche - Italy, Telefónica Investigación y Desarrollo Sociedad Anónima Unipersonal - Spain, Carleton University - Canada)

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3DAH - 3D Anatomical Human
«3D Anatomical Functional Models for the Human Musculoskeletal System»
Period : October 2006 – September 2010
Website : http://3dah.miralab.unige.ch/
Partners: 8 partners (MIRALab, University of Geneva - Switzerland, Istituti Ortopedici Rizzoli – Italy, University College London – Great Britain, Institut National de Recherche en Informatique et Automatique – France , Visual Computing Group, CRS4 - Italy, Ecole Polytechnique Fédérale de Lausanne – Switzerland, Vrije Universiteit Brussel – Belgium, Center for Sensory-Motor Interaction, Aalborg University - Denmark)

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LEAPFROG IP
«Leadership for European Apparel Production From Research along Original Guidelines (Integrated Project)
Period : May 2005 – July 2009
Website : www.leapfrog-eu.org/
Partners: 38 partners (Euratex – Belgium, ANTEX, Angles Textil – Spain, ATC, Athens Technology Center – Greece, Bekleidungsphysiologisches, Institut Hohenstein – Germany, D'Appolonia – Italy, DITF- ITV – Germany, ENEA – Italy, IFTH, Institut Français Textile Habillement – France, Lectra S.A. – France, Philipp Moll office for modern sewing technology – Germany, TNO – Netherlands, University of Cambridge, Cavendish Laboratory – Great Britain, MIRALab, University of Geneva – Switzerland, DIMEC, Dipartimento di Meccanica e Costruzione delle Macchine - Universita degli Studi di Genova, CENTEXBEL, Wetenschappelijk en Technisch Centrum van de Belgische Textielnijverheid, Grado Zero Espace S.r.l., Angles Textil SA, Ermenegildo Zegna, STAM S.r.l., Universita Politecnica delle Marche, Philipp Moll - office for modern sewing technology, LECTRA SA, University of Cambridge, Bivolino.com, Wilhelm Zuleeg GmbH, TXT e-Solutions GmbH, Hugo Boss AG, CSGI - Consorzio per lo Sviluppo dei Sistemi a Grande interfase, Assyst - Gesellschaft fur Automatisierung, Software und Systeme GmbH, KUKA-InnoTec GmbH, Groupe Flory SA., Fratelli Piacenza Spa, Browzwear International Ltd., CITEVE - Centro Tecnologico das Industrias Textil e do Vestuario de Portugal, Ten Cate Advanced Textiles bv, COLOR WEB GmbH by Peppermint, ROBOT, European Commission

Funded research projects
Participation to National projects

CO-ME
«The Computer Aided and Image Guided Medical Interventions»
Period: January 2001 - June 2009
Website: co-me.ch
Partners: 3 main partners (Ecole Polytechnique Fédérale de Lausanne - Switzerland, Hôpital Universitaire de Genève (HUGE) - Switzerland, MIRALab, University of Geneva - Switzerland)

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FNRS 2008
«Swiss National Research Foundation Project: Cross-Modal Interaction with Deformable Objects for web publication»
Period : October 2008 - September 2010
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)

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FNRS 2008b

«Swiss National Research Foundation Project: Aerial Crowd project desciption for web publication»
Period : October 2008 - September 2010
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)

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Calvin

«A day in the Life of John Calvin»
Period : June 2008 - October 2009
Main partner: International Museum of the Reformation, Geneva, Switzerland

OTHERS

Honours and scientific awards

- Dr. Honoris Causa in Natural Sciences from the Leibniz University of Hannover on 22nd of January 2009.
- First Medical Prize for a collaboration between medical Doctors and MIRALab researchers, Eurographics 2009. (This year, together with her PhD students and colleagues from Medical Hospital of Geneva, she was awarded the First Medical Price from Eurographics 2009)

Courses and tutorials

- Eurographics 2009, tutorial given in Real-Time Individualized Virtual Humans, Muenchen, Monday 30, 2009
- Eurographics 2009, tutorial organized and given in 3D Anatomical Modelling and Simulation Concepts, Muenchen, Tuesday 31, 2009

Refereeing

- Jury of Ph.D. thesis for New Zealand, France, Sweden, Switzerland and Germany.
- European Union, FP7 Projects, Brussels.
- Research Grants Council of Singapore.
- Natural Sciences and Engineering Research Council of Canada.
- National Science Foundation USA.
- Swiss National Research Foundation.
- Austrian Research Foundation.

- ACM SIGGRAPH, IEEE Transactions on Visualization and Computer Graphics, IEEE Computer Graphics and Applications, IEEE Computer, Communications of ACM, The Visual Computer, Computer Graphics Forum, Computer Vision, Graphics and Image Processing, Presence, International Journal of Human-Computer Studies, Computers and Graphics, cyberworlds conference, ICAART (International Conference on Agents and Artificial Intelligence), Enactive conference, Multimedia Modelling conference, International Conference on Entertainment Computing (ICEC), International Conference on Signal Processing, Image Processing and Pattern Recognition; GRAPP ("International Conference on Computer Graphics Theory and Applications), Conference on Affective Computing and Intelligent Interaction (ACII 2009), EG Workshop on 3D Object Retrieval, IEEE Virtual Reality Conference 2009, Computer Graphics International, CASA conference, SIGGRAPH/EUROGRAPHICS Symposium on Computer Animation, etc

Editorial responsibilities

- 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 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.
- 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.

Computer-Generated Films, Live Shows and Exhibitions

- Virtual Hip Joint, Eurographics Medical 1st Prize, 2009
- A day in the Life of John Calvin, Exhibition at the International Museum of the Reformation in Geneva, from April 24th to November 1st 2009
- La danse dans tous ses états, Conference-Exhibition at the University of Geneva for the 450th anniversary of the University, June 13th 2009

TEACHING

MIRALab proposes several Student Interships and Master Thesis for motivated students that are finishing their studies and would like to do a project with us. MIRALab's thesis are especially focused towards the fields of Computer Animation, Informatics and Multimedia.

SMV

Software Modelling and Verification

Prof. Didier Buchs

Software Modelling and Verification

Prof. Didier Buchs

smv.unige.ch

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)

SMV team in 2008: Ang Chen, Luis Pedro, Steve Hostettler, Levi Lùcio, Didier Buchs, Matteo Risoldi, Alexis Marechal, Andrey Berlizev, (not on picture: Alban Linard)

Team

Director
Didier Buchs
Associate professor

Senior researcher
Dr. Levi Lúcio (Post Doc)
Dr. Alban Linard (Post Doc)

Assistants (PhD students)
Andrey Berlizev
Ang Chen
Luis Pedro
Steve Hostettler
Alexis Marechal
Matteo Risoldi

Administration
Anne-Isabelle Giuntini

PhD Thesis

- Luis Pedro, «A Systematic Language Engineering Approach for Prototyping Domain Specific Modelling Languages». 23 january 2009.
- Ang Chen, «Business Process Formal Models A Multi-Dimensional Compositional Approach for Business Process Semantic Engineering», September 2009.

List of publications

Full refereed papers in Conference Proceedings

[1] Bruno Barroca, Levi Lucio, Didier Buchs, Vasco Amaral and Luis Pedro. «DSL Composition for model-based test generation», Electronic Communications of the EASST, volume 21, 2009.

[2] Didier Buchs, Steve Hostettler, Alexis Marechal and Matteo Risoldi. «AlPiNA : An Algebraic Petri Net Analyzer», TACAS, Springer Verlag.

[3] Luis Pedro, Matteo Risoldi, Didier Buchs, Bruno Barroca, Vasco Amaral: «Composing Visual Syntax for Domain Specific Languages». HCI (2) 2009: 889-898

[4] Didier Buchs, and Steve Hostettler (2009). «Managing Complexity in Model Checking with Decision Diagrams for Algebraic Petri Net». International Workshop on Petri Nets and Software Engineering, ed. by Daniel Moldt, pp. 255-271.

[5] Didier Buchs, Levi Lucio, Ang Chen, «Model Checking Techniques for Test Generation from Business Process Models», RST'09, LNCS, Brest, june 2009.

[6] Didier Buchs and Steve Hostettler. «Σ-decisions diagrams». TERMGRAPH09, ETAPS09, York, march 2009.

Books and book chapters

[7] M. Risoldi, V. Amaral, B. Barroca, K. Bazargan, D. Buchs, F. Cretton, G. Falquet, A. LeCalvé, S. Malandain and P. Zoss, «A language and a methodology for prototyping user interfaces for control systems». In Lalanne D. & Kohlas J. (eds.), Human Machine Interaction, LNCS 5440, State-of-the-Art Surveys, Springer-Verlag, Berlin/Heidelberg, 2009, pp. 223-252

THE BATIC³S PROCESS PHASES

Research and technical reports

[8] Didier Buchs, Steve Hostettler : «Clustered State Space Generation», Technical report 206, Centre Universitaire D'Informatique, Université de Genève, Ed. D.Buchs, January 2009.

[9] Levi Lucio, Steve Hostettler : «MultiSet Decisions Diagrams», Technical report 205, Centre Universitaire D'Informatique, Université de Genève, Ed. D.Buchs, January 2009.

[10] Didier Buchs, Steve Hostettler : «Sigma Decisions Diagrams», Technical report 204, Centre Universitaire D'Informatique, Université de Genève, Ed. D.Buchs, January 2009

## International and national advisory committees

- Rapporteur PhD jury Olivier Buchwalder, «A Domain-Specific Language for Modeling and Implementing Web Applications», EPFL, February 2009.
- Rapporteur PhD jury Benoît Ries, «SESAME: a Model-driven Process for the Test Selection of Small-Size Safety-Related Embedded Software», University of Luxembourg, February 2009.
- Rapporteur PhD jury Alban Linard, «Sémantique paramétrable des Diagrammes de Décision : une démarche vers l'unification», University Paris 6, September 2009.
- Rapporteur PhD jury Alexandre Hamez, «Génération efficace de grands espaces d'états», University Paris 6, December 2009.

Member of conference program committees

- PC of RSP09, Paris, June 2009.
- PNSE 09, Paris, June 2009.
- OrgMod09, Paris, June 2009.
- PC chair and reviewer of Modeva09, Denver, Colorado, USA.
- HCII 09.
- PC of RSP10, ICATPN10, PNSE10, Serene10. General Chair of SuMO 2010.

Invited talks

- Didier Buchs, DSL Engineering, Verity workshop, Newcastle, November 2009.
- Didier Buchs, Projet Interreg Valid, La roche sur Foron, May 2009.
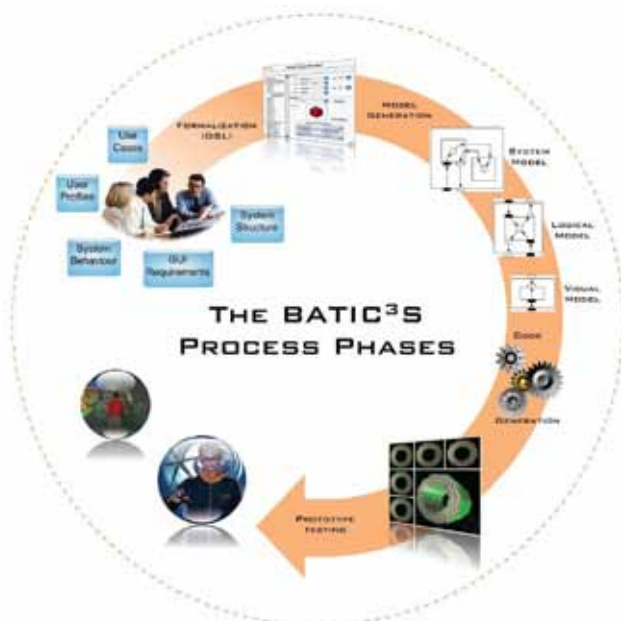
Funded research projects
Participation to European projects

Interreg TestIndus
Period: May 2008 - December 2009
Partners: Univ. Besançon , UniGE, LEIRIOS, CTI, CLIO

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CORA
(sub task of VERIFY project)
Partners: University of Luxembourg

Participation to National projects

Comedia
Hasler project
Period: July 2007 – December 2009

Others
- Didier Buchs: Editor board of TOPNOC, LNCS, Springer Verlag.
- Didier Buchs: Steering committee of Rapid System Prototyping Symposium.

Institutional projects
- Didier Buchs, FIT in IT, Sion, 2009
- Alexis Marechal, FIT in IT, Nyon, 2009
- Robot programation for collegians, 450th of University of Geneva

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, 7 students
- **Concurrency and Distribution**, (Optional), Computer Science, Master, 4 ECTS, 56 hours, 9 students
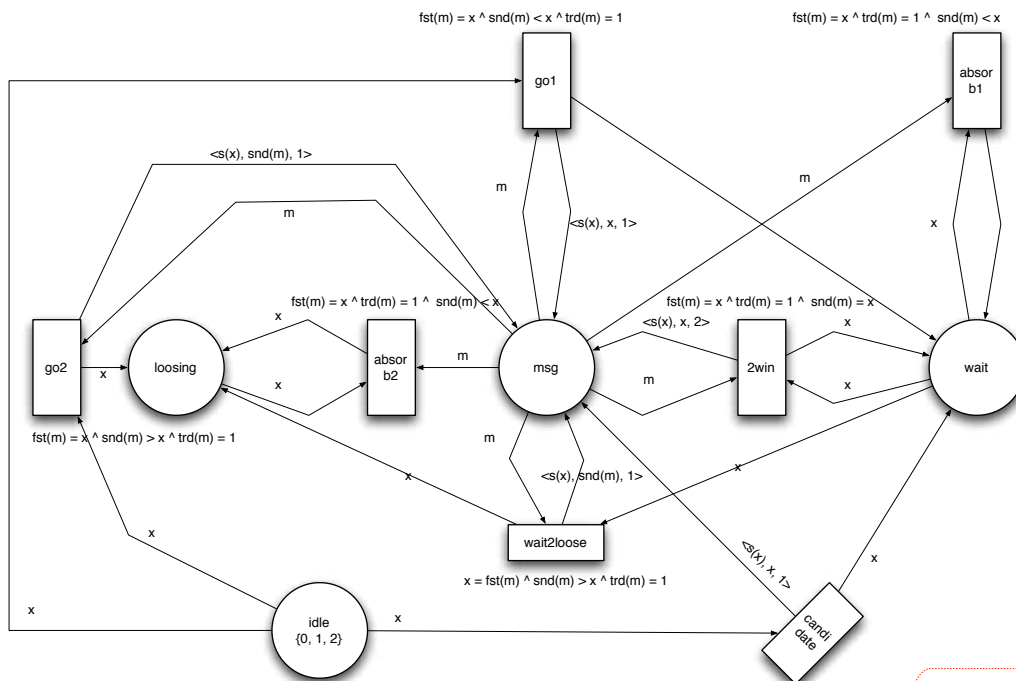
The model of the leader election protocol
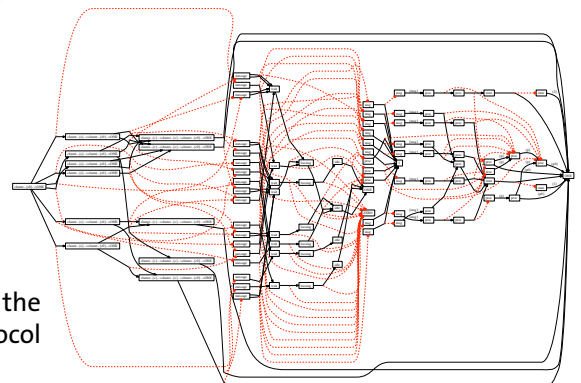
The state space of the
leader election protocol

SPC

Scientific and Parallel Computing

Prof. Bastien Chopard

spc.unige.ch

Scientific and Parallel Computing

Prof. Bastien Chopard

spc.unige.ch

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.

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.

TEAM

Director
Bastien Chopard
Associate professor

Members
Jean-Luc Falcone
Rafik Ouared

Assistants
Olivier Marcou
Andrea Parmigiani
Bernd Stahl
Daniel Lagrava
Christophe Charpilloz
Kae Tsunematsu
Mohamed Ben Belgacem

Administration
Anne-Isabelle Giuntini

Complex network corresponding to the metabolic pathway for Homo Sapiens (from KEGG database)

PhD thesis

- Antoine Huyghe, «Innovative DNA microarray design for bacterial flora composition evaluation» , December 2009

List of publications

Refereed papers in international journals

[1] B. Chopard, J.-L. Falcone and J. Latt, «The lattice Boltzmann advection-diffusion model revisited», Eur. Phys. J. Special Topics 171, 245-249 (2009)

[2] A.Parmigiani, B.Chopard, J.Latt, C.Huber, O.Bachmann, «Application of the multi distribution function lattice Boltzmann approach to thermal flows», European Physical Journal, Special Topics 171, 37--43 (2009)

[3] Alfonso Caiazzo, Jean-Luc Falcone, Bastien Chopard and Alfons G. Hoekstra, «Asymptotic analysis of Complex Automata models for reaction-diffusion systems», Applied Numerical Mathematics 59 (2009) 2023-2034

Full refereed papers in Conference Proceedings

[4] Rafik Ouared, Bastien Chopard, Daniel Rufenacht, K. O. Lovblad and V. M. Pereira, «Thrombosis Engineering in Intracranial Aneurysms using a Lattice Boltzmann Numerical Method». Medical Physics and Biomedical Engineering World Congress WC2009, Munich Sept 7-12, 2009 IFMBE Proceedings, ISSN1680-0737, Vol 25/4, pp. 1538--1541, Springer Berlin Heidelberg, 2010,DOI 10.1007/978-3-642-03882-2_408

[5] Miki Hirabayashi, Makoto Ohta, Daniel A. Rüfenacht, and Bastien Chopard, «Computational studies on characteristic fluid behavior in the stented cerebral aneurysm», APS meeting Pittsburg. March 18, 2009

[6] A. Caiazzo, D. Evans, J.-L. Falcone, J. Hegewald, E. Lorenz, B. Stahl, D. Wang, J. Bernsdorf, B. Chopard, J. Gunn, R. Hose, M. Krafczyk, P. Lawford, R. Smallwood, D. Walker, and A.G. Hoekstra. «Towards a Complex Automata Multiscale Model of In-stent Restenosis». in Lecture Notes in Computer Science. 2009: Springer, Berlin, Heidelberg.

Books and book chapters

[7] B. Chopard, «Cellular Automata Modeling of Physical Systems», pp 865-892 Springer Encyclopedia of Complexity and Systems Science, 2009 ISBN 978-0-387-75888-6

[8] B. Chopard, «Basics of Grid refinement in Lattice Boltzmann», in Lectures on Lattice Boltzmann Methods for complex fluid flows, Stefano Ubertini et al (Edt), p. 120, Science4 Press, ISBN 9788896504000. 2009

[9] B. Chopard, «High performance computing in Lattice Boltzmann models», in Lectures on Lattice Boltzmann Methods for complex fluid flows, Stefano Ubertini et al (Edt), p. 120, Science4 Press, ISBN 9788896504000. 2009

[10] «Focus on Recent Advances in Particle Methods for Fluid Dynamics», Special Issue in J. Stat. Mech. Theo. Exp (JSTAT), Paulo C Philippi and Bastien Chopard Eds, 2009

International and national advisory committees

Bastien Chopard:

- September 2009, Expert in the PhD committee for Orestis Malaspinas, EPFL, Lausanne Switzerland
- November 2009, Expert in the PhD committee for Lucas Augsburger, EPFL, Lausanne Switzerland
- November 2009, Expert in the PhD committee for Jordi Vidal Rodriguez, University of Amsterdam, The Netherlands
- September 2009- 2013, President of the Comité de Direction de CADMOS, UNIGE, UNIL, EPFL, Switzerland

Conference organization as chair or co-chair

- Toward a biomechanical modeling of cerebral aneurysms, COST P19 Meeting, Co-Chair, UNIGE, December 11, 2009

Member of conference program committees

- Discrete Simulation of Fluid Dynamics, Peking University, Beijing, China, July, 6-10, 2009

Invited talks

- Core to core worksop, Tohoku University, Multiscale-multiphysics framework based on the Lattice Boltzmann method, June 5, Sendai, Japan
- ECCS - European Conference on Complex Systems, Emergence of sub-markets in a simple economical model, workshop «Dynamics on and of Complex Networks III», 21-25 September 2009, University of Warwick, UK

Funded research projects
Participation to European projects

@neurIST project (IP)
Integrated biomedical informatics for the management of cerebral aneurysms
Period: January 2006 - February 2010
28 partners
Web Site: http://www.aneurist.org

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COAST project (STREP)
Complex Automata for modelling and simulation of complex systems
Period: September 2006 - February 2010
Partners: University of Amsterdam, University Sheffield, TU Braunschweig, NEC, Germany, University of Geneva
Web Site: http://www.complex-automata.org

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Member of the **COST P19 project**

Participation to National projects

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

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Numerical simulations of volcanic phenomena by Lattice-Boltzmann methods
FN - 200021-11635
Partners: University of Washington (USA), Berkley (USA), University of Geneva (Switzerland)
Period: June 2007 - May 2010

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Control of irrigation canals : a Lattice Boltzmann Approach
FN - 200020-117770
Partners: University of Perpignan (France), ESISAR, Grenoble-INP (France), University of Geneva (Switzerland)
Period: November 2007 - April 2009

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SWITCH AAA project - Virtual EZ-Grid
FN - 200020-117770
Partners: HEPIA, USI, University of Geneva (Switzerland)
Period: July 2009 - July 2010

Others
Courses and tutorials
- Co-organisation du cours 3e cycle: programmation Multicore, November 2009, UNIGE

Refeereeing
- Reviewing for many international journals and conferences

Editorial responsibilities
- Int. J. of Mod Phys C
- J. of Cellular Automata,
- Natural Computing Journal (NACO).
- Int. J. Unconv Comp.

Other duties
- Groupe Leader à l'Inst. Suisse de Bioinformatique (SIB)
- President CIFS, member COINF
- Representant UNIGE de SwiNG (Swiss National Grid Association)

MISC
- Invited professor, ESISAR, Grenoble-INP Jan-March 2009
- Congé scientifique: Jan-June 2009

Teaching
- **Heuristique et méthode d'optimisation**, Computer Science, Master, 8 ECTS, 112 hours, 10 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**, Computer Science, Master, 4 ECTS, 56 hours, 20 students
- **Methodes numériques et simulations en physique**, Computer Science, 4 ECTS, 56 hours, 10 students

Theoretical Computer Science

Prof. José Rolim

Theoretical Computer Science

Prof. José Rolim

tcs.unige.ch

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

Members
Dr. Pierre Leone (MER)
Dr. Aubin Jarry (MA)
Dr. Eduardo Solana (CC)
Dr. Florian Huc

Assistants
Marios Karagiannis
Konstantinos Chantzis
Tigran Tonoyan
Hakob Aslanyan
Luminita Moraru
Thibaud Guenegou
Pierre Repetto
Anthony Gasperin

Example of a clustered sensor network

PhD thesis
- Luminita Moraru, «Geographic Routing with Obstacle Detection and Avoidance in Wireless Sensor Networks», December 2009

List of publications
Refereed papers in international journals
[1] Aubin Jarry, Stéphane Pérennes. «Disjoint paths in symmetric digraphs». Discrete Applied Mathematics 157(1): 90-97, 2009

[2] Omid Amini, Florian Huc, Stéphane Pérennes. «On the Path-Width of Planar Graphs». SIAM Journal on Discrete Mathematics 23(3): 1311-1316, 2009

[3] Pierre Leone, Sotiris Nikoletseas, José Rolim. «Stochastic Models and Adaptive Algorithms for Energy Balance in Sensor Networks», Theory of Computing Systems Journal (TOCS), published online February 2009.

Full refereed papers in Conference Proceedings
[4] Florian Huc, Aubin Jarry, Pierre Leone, Luminita Moraru, Sotiris E. Nikoletseas, José D. P. Rolim. «Early Obstacle Detection and Avoidance for All to All Traffic Pattern in Wireless Sensor Networks». 5th International Workshop on Algorithmic Aspects of Wireless Sensor Networks. ALGOSENSORS 2009: 102-115

[5] Athanasios Kinalis, Sotiris E. Nikoletseas, Dimitra Patroumpa, José D. P. Rolim. «Biased Sink Mobility with Adaptive Stop Times for Low Latency Data Collection in Sensor Networks». GLOBECOM 2009: 1-6

[6] Marios Karagiannis, Loannis Chatzigiannakis, Jose Rolim. «WSNGE: A Platform for Simulating Complex Wireless Sensor Networks Supporting Rich Network Visualization and Online Interactivity», San Diego, California, USA, March 22 - 27, 2009, 42nd Annual Simulation Symposium (ANSS'09)]

[7] Pierre Leone, Marina Papatriantafilou, Elad Michael Schiller. «Relocation Analysis of Stabilizing MAC Algorithms for Large-Scale Mobile Ad Hoc Networks». In the proceedings of 5th International Workshop on Algorithmic Aspects of Wireless Sensor Networks ALGOSENSORS 2009: 203-217

[8] Pierre Leone, Marina Papatriantafilou, Elad Michael Schiller. «Relocation Analysis of Stabilizing MAC». In the proceedings of the 11th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS 2009) SSS 2009: 791-792

Books and book chapters
[8] Luminita Moraru, Pierre Leone and José Rolim. «On the minimization of the impact of obstacles on data delivery in the context of global computing», 2009.

[9] Sotiris Nikoletseas, Olivier Powell and José Rolim. «Geographic Routing of Sensor Data around Voids and Obstacles», in the Book «Intelligent Techniques for Warehousing and Mining Sensor Network Data», Editor Alfredo Cuzzocrea, 2009.

[10] Irit Dinur, Klaus Jansen, Joseph Naor, José D. P. Rolim. «Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques», 12th International Workshop, APPROX 2009, and 13th International Workshop, RANDOM 2009, Berkeley, CA, USA, August 21-23, 2009. Proceedings Springer 2009

Research and technical reports
[11] Florian Huc, Aubin Jarry. «VRAC: Virtual Raw Anchor Coordinates Routing in Sensor Networks», Concepts and Experimental Protocol CoRR abs/0904.3611, 2009

[12] Florian Huc, Aubin Jarry. «VRAC: Simulation Results #1» CoRR abs/0910.4024: (2009)

International and national advisory committees
- Sarit - Swiss Association for Research in Information Technology - member of the board: Professor José Rolim
- Institut Universitaire de France - 2009 - expert for Computer Science : Professor José Rolim

Conference organization as chair or co-chair
- 12th Intl. Workshop on Approximation Algorithms for Combinatorial Optimization Problems - APPROX 2009, 21-23 August 2009, HP Auditorium UC Berkeley, USA - chair: Professor José Rolim
- 13th Intl. Workshop on Randomization and Computation - RANDOM 2009, 21-23 August 2009, HP Auditorium UC Berkeley, USA - chair Professor Jose Rolim
- 5th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS '09)- Marina Del Rey, California, USA - Monday, June 8 - Wednesday, June 10, 2009.- steering committee chair: Professor Jose Rolim
- 8th International Symposium on Experimental Algorithms. June, 3-6, 2009, Dortmund, Germany. SEA 2009 - steering committee chair: Professor Jose rolim

Member of conference program committees

- 23rd IEEE International Parallel and Distributed Processing Symposium -IPDPS 2009. Monday, 25 May to Friday, 29 May -Rome, Italy- steering committee member - Professor Jose Rolim
- 5th International Workshop on Algorithmic Aspects of Wireless Sensor Networks - Algosensors 2009 - July 10th -11th 2009, Rhodes, Greece in conjunction with ICALP 2009. steering committee member and program committee member - Professor Jose Rolim
- FCT 2009 -17th International Symposium on Fundamentals of Computation Theory, September 2-4, 2009, Wrocław, Poland - Program committee member Professor Jose Rolim
- ICALP 2009 - 36th International Colloquium on Automata, Languages and Programming. Rhodes, Greece; July 5-12. Program committee member - track C: Professor José Rolim
- 15th International Conference on Parallel and Distributed Systems (ICPADS'09), Dec. 8~11, Shenzhen, China- Program committee member - track C: Professor José Rolim
- IPDPS 2009 TCPP PhD Forum – 23th IEEE International Parallel & Distributed Processing Symposium TCPP PhD Forum, Rome, Italy, May 23-29, 2009 – Program Committee: Pierre Leone
- IADIS International Conference on Wireless Applications and Computing, Algarbe, Portugal, 17-19 June 2009: Program Committee: Pierre Leone
- ICETE 2009- IEEE 7th International Joint Conference on e-Business and Telecommunications - July 7-10, 2009 - Milan, Italy, Program committee member: Jose Rolim

Invited talks

- «Efficient Tracking of Moving Targets by Passively Handling Traces in Sensor Networks», Jose Rolim (UNIGE) - General Assembly Meeting Fronts - Bertinoro, Italy, January 22-23, 2009: Professor José Rolim
- FRONTS 2nd Winter School - Invited talk on Tracking - Braunschweig, Germany, October 12-16, 2009: Professor José Rolim

Funded research projects
Participation to European projects

AEOLUS
Algorithmic Principles for Building Efficient Overlay Computers
UE6 – 015964
Period: September 2005 – February 2009

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

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

Participation to National projects

Power Aware Computing in Embedded Systems
FNRS 200020-116084
Period: May 2007 – April 2009

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Power Aware Computing in Embedded Systems
FNRS 200020-124396
Period: May 2009 – April 2010

Others

- Member of the Editorial Board of International Journal of Distributed Sensor Networks, Taylor and Francis Publisher: Professor José Rolim
- Member of the Editorial Board of the Journal "Algorithms", MDPI Publisher: Pierre Leone
- IIIème cycle romand d'informatique, Organization of the seminar " Programming multicore Computers", in collaboration with Professors Bastien Chopard (Unige), Pascal Felber (Unine), Speakers Doug Binks (Intel), Tim Harris (Microsoft Research), Alex Duran (UPC): Pierre Leone

Teaching

- **Distributed Algorithms for Wireless Sensor Networks**, Computer Science, Master, 4 ECTS, 80 hours
- **Langages Formels**, Computer Science, 3 ECTS, Bachelor, 80 hours
- **Calculabilité et Complexité**, Computer Science, 4 ECTS, Bachelor, 80 hours
- **Cryptographie**, Computer Science, 4 ECTS, Bachelor, 80 hours
- **Algorithmique**, Computer Science, Bachelor, 4 ECTS, 80 hours, in collaboration with Bastien Chopard
- **Algorithmique pour le web**, Computer Science, 4 ECTS, Master, 80 hours
- **Introduction a l'informatique pour les biologistes**, Computer Science, 160 hours
- **Elements of multiuser information theory and wireless communications**, Computer Science, 6 ECTS, 120 hours, in collaboration with Sviatoslav Voloshynovskyy and Oleksiy Koval
- **Programmation des systemes**, Computer Science, 4 ECTS, Bachelor, 80 hours
- **Réseaux**, Computer Science, 4 ECTS, Bachelor, 160 hours
- **Seminaire avancé TCSensor**, Computer Science, Doctoral course, 80 hours

Administrative Staff

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%).

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 12'500 books and 110 specialized reviews.
• **Dorothée Hauser** is head librarian;
• **Amélia Bossard** is librarian.

Administrative Staff in 2008: Nicolas Mayencourt, Marie-France Culebras, Daniel Agulleiro, Céline Marleix-Bardeau, Germaine Gusthiot, Anne-Isabelle Giuntini, Dorothée Hauser, Amélia Bossard, Elie Zagury. Photography by Mélanie Montagnol

Centre Universitaire d'Informatique

Financial Report

2009

CUI

Staff	CHF 1'004'218.-
• Academic	CHF 281'304.-
• Administrative and Technical	CHF 572'723.-
• Employer's social contributions	CHF 150'191.-
Operating costs - Investment	CHF 163'851.-
Operating costs - Others	CHF 211'000.-
Library	CHF 47'207.-
CUI subtotal	**CHF 1'426'276.-**

Computer Science Department, Faculty of sciences

Staff	CHF 3'079'769.-
• Academic	CHF 2'418'419.-
• Administrative and Technical	CHF 156'606.-
• Employer's social contributions	CHF 504'744.-
Operating costs - Investment	CHF 90'000.-
Operating costs - Others	CHF 26'000.-
Department subtotal	**CHF 3'195'769.-**

Information Systems Department, Faculty of economic and social sciences

Staff	CHF 1'933'527.-
• Academic	CHF 1'571'852.-
• Administrative and Technical	CHF 44'771.-
• Employer's social contributions	CHF 316'904.-
Operating costs - Investment	CHF 11'000.-
Operating costs - Others	CHF 6'500.-
Department subtotal	**CHF 1'951'027.-**

Unit of Computer Science for the Humanities, Faculty of humanities

Staff - Academic, incl. Charges (estimation)	CHF 670'334.-
Operating costs	CHF 25'000.-
Department subtotal	**CHF 695'334.-**

TOTAL BUDGET	CHF 7'268'406.-

Computer Science Department, Faculty of sciences

UE-funded Projects   CHF 1'496'206.-
Swiss-funded Projects   CHF 1'342'568.-
Department subtotal   **CHF 2'838'774.-**

Information Systems Department, Faculty of economic and social sciences

UE-funded Projects   CHF 1'493'314.-
Swiss-funded Projects   CHF 752'521.-
Department subtotal   **CHF 2'245'835.-**

Unit of Computer Science for the Humanities, Faculty of humanities

UE-funded Projects   CHF 349'290.-
Swiss-funded Projects   CHF 309'886.-
Department subtotal   **CHF 659'176.-**

TOTAL CREDIT   **CHF 5'743'785.-**

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