

CENTRE UNIVERSITAIRE D'INFORMATIQUE

ACTIVITY REPORT 2008



**UNIVERSITÉ
DE GENÈVE**

**CENTRE UNIVERSITAIRE
D'INFORMATIQUE**



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Foreword



The Centre Universitaire d' Informatique (CUI), one of the oldest computer research centers in the world, is proud to report its activities during 2008. 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 areas as far as Humanities and Biotechnology, Wireless Communication and Services Sciences, Virtual Reality and Software Engineering, Multimedia and Computer Vision to cite only a few of them.

The year of 2008 is an important year on our history as the CUI is for the first time in its history completely reunified with all its laboratories at the campus of Battelle. During this year, the CUI obtained again a record number of important research projects by the new FP7 EU, by the Swiss National Foundation, Hasler Foundation and by different industrial partners. These projects are described in this report. The CUI is proud of the recognition given by such projects and the consequences are detailed in this report as our main scientific activities.

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



In the background: «Voto per la pagnotta» by Randi Hansen

Prof. José Rolim
Director of the CUI
University of Geneva



Advanced Systems Group

Prof. Dimitri Konstantas

ASG

asg.unige.ch

DOMAIN ACTIVITIES

The main research direction of the group is the study of issues related with autonomous and mobile systems and services, including geo-localized information management, trust issues and quality of service of mobile networks.

More specifically the current research areas of the group are:

- Mobile applications and services: location based services and applications, mobile health applications and mobile services' context information;
- Trust for e- and m-services: formalization and implementation of a model based on the human notion of trust, with concepts such as "recommendations" and uncertainty;
- Quality of service in mobile networks: user and history based prediction of wireless networks' end-to-end observed QoS.

TEAM

Director

Dimitri Konstantas
Full professor



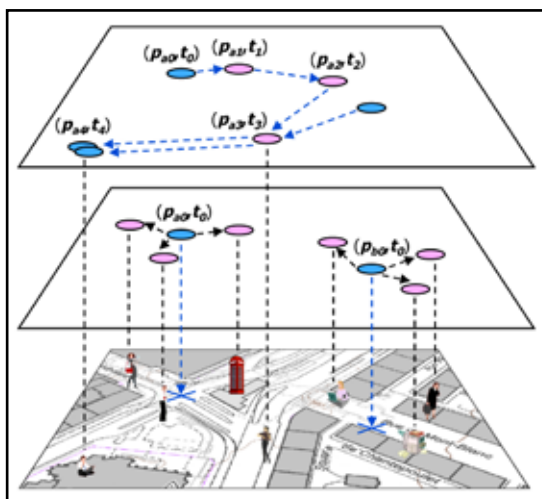
Members

Dr. Jean-Marc Seigneur
Dr. Lemonia Ragia (up to September 2008)
Dr. Vincenzo Pallota (since July 2008)
Dr. Jean-Henry Morin (since September 2008)

PhD students

Michel Deriaz (up to May 2008)
Katarzyna Wac
Alfredo Villalba
Hikari Watanabe
Dejan Munjin
Xavier Titi

Fig 1: Hovering information:
An overlay for mobile content



- Hovering information
- Mobile device / user

Hovering information (blue) will be capable of moving from one location to another (from p_{a0} to p_{a4}) jumping across the intermediate physical devices (pink)

Hovering information (blue) will be linked to a location and optionally time stamped (p_{a0}, 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



PHD THESIS

- Michel Deriaz, «GeoVTag - Trusting Virtual Tags», April 2008

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] Giovanna Di Marzo Serugendo, Alfredo A. Villalba Castro and Dimitri Konstantas, Hovering Information in Works in Progress – Activity Based Computing, IEEE Pervasive Computing Journal, April-June 2008
- [2] 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.

Full refereed papers in Conference Proceedings

- [3] Katarzyna Wac, Mortaza Bargh, Pravin Pawar, Bert-Jan van Beijnum, Arjan Peddemors, Richard Bults, Power and Delay-Aware Mobile Application-Data Flow Adaptation: the MobiHealth System Case Study, 10th IEEE International Conference on e-Health Networking, Applications & Services (HealthCom 2008), July 2008, Singapore, publisher: IEEE Press
- [4] Pravin Pawar, Katarzyna Wac, Bert-Jan van Beijnum, Pierre Maret, Aart van Halteren, Hermie Hermens, Context-Aware Middleware Architecture for Vertical Handover Support to Multi-homed Nomadic Mobile Services, proceedings of the 23rd Annual ACM Symposium on Applied Computing (ACMSACo8), Ceará, Brazil, publisher: ACM Press
- [5] Alfredo A. Villalba Castro, Giovanna Di Marzo Serugendo and Dimitri Konstantas, Hovering Information - Self-Organising Information Using Location-Based Caching Policies, 2nd ERCIM Workshop on eMobility (in conjunction with WWIC 2008), May 30, 2008 - Tampere, Finland.
- [6] A. Villalba Castro, G. Di Marzo Serugendo, D. Konstantas, Hovering Information - Self-Organising Information that Finds its Own Storage, IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing (SUTC'08), Taichung, Taiwan, June 2008
- [7] L. Ragia, M. Deriaz and J.-M. Seigneur, Mobile Location Based Services for Trusted Information in Disaster Management, Proceedings of the 17th International Conference on Information Systems Development IEEE, 2008.
- [8] Michel Deriaz, The Uncertainty of Truth, proceedings of the Sixth Annual Conference on Privacy, Security and Trust, PST2008, October 1-3, 2008, Delta Fredericton, Fredericton, New Brunswick, Canada
- [9] Elias Kalapanidas, Hikari Watanabe, Costas Davarakis, Hannes Kaufmann, Fernando Fernandez Aranda, Tony Lam, Todor Ganchev and Dimitri Konstantas, PlayMancer: A European Serious Gaming 3D Environment, Proceedings of the 2nd International Workshop on e-health Services and Technologies - EHST 2008 in Conjunction with ICSOFT 2008, Porto-Portugal, July 2008, pp 51-59 ISBN 978-989-8111-56-2



Fig 2 & 3: Virtual Tags tracking with TrackerTag

- [10] J. Joo, G. Kim and J.-H. Morin, “How to Manage Business Process as Knowledge Assets based on Ontological Approach: Focusing on Sales Order Process”, in proceedings of KMIS Spring 2008 Conference, Korea Society of Management Information Systems conference, Seoul, Korea, June 13, 2008. (IBM Korea Best Paper Award).
- [11] J.-H. Morin and A. Zeelim-Hovav, “Strategic Value and Drivers behind Organizational Adoption of Enterprise DRM : Setting the Stage”, in proceedings of 7th Annual Security Conference, Las Vegas, NV, USA, June 2-3, 2008.
- [12] J.-H. Morin and M. Pawlak, “Exception-Aware Digital Rights Management Architecture Experimentation” in proceedings of 2008 International Conference on Information Security and Assurance (ISA 2008), IEEE, April 24-26, 2008, Busan, Korea, pp. 518-526

Books and book chapters

- [13] Jean-Marc Seigneur, Social Trust of Virtual Identities, book chapter in Computing with Social Trust and Reputation», ISBN 978-1-84800-355-2, Springer, 2008.
- [14] Jean-Marc Seigneur, AmbiTrust? Immutable and Context-Aware Trust Fusion book chapter in «Trust Management in Virtual Environment», ISBN 81-314-1254-1, Icfai University Press, 2008.
- [15] J.-M. Seigneur, L. Moraru and O. Powell, Survivability of Sensors with Key and Trust Management, book chapter in «Handbook of Research on Wireless Security», ISBN 978-1-59904-899-4, IGI Global, 2008.

Research and technical reports

- [16] Dimitri Konstantas – Jean Marc Seigneur (Eds), Collaborative Location Aware Mobile Services, ISBN 978-2-88903-001-9, October 2008, <http://asg.unige.ch/publications/TRO8>

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 2008), Porto, Portugal, July 4, 2008
- Jean-Marc Seigneur: Organisation and chair of the trust/reputation track at the ACM SAC 2008.

MEMBER OF CONFERENCE PROGRAM COMMITTEES

Dimitri Konstantas:

- I3E 2008
- ICSOFT 2008
- MobiKUI 2008
- I-WEST 2008

Jean-Marc Seigneur:

- IFIP Trust Management International Conference 2008
- ACM SAC 2008

Jean-Henry Morin:

- International Symposium on Collaborative Technologies and Systems (CTS 2008), May 19-23, 2008, Irvine, California, USA
- International Conference on Collaborative Computing: Networking, Applications and Worksharing. (CollaborateCom 2008), November 13-16, 2008, Orlando, FL, USA
- Sixth International Workshop On Databases, Information Systems and Peer-to-Peer Computing (DBISP2P 2008), Collocated with VLDB 2008, August 23, 2008, Auckland, New Zealand
- Special Session on Security & Privacy in Pervasive Computing environments (SPPC-08), April 24-26, 2008, Busan, Korea, In Conjunction with 2nd International Conference on Information Security and Assurance (ISA 2008)
- Second International Workshop on Web and Pervasive Security (WPS 2008), March 17-21, 2008, Hong Kong.

Katarzyna Wac:

- 10th Intl Conference on Human-Computer Interaction with Mobile Devices and Services MobileHCI 2008 2-5 Sept 2008, Amsterdam, NL
- 2nd Workshop on Adaptive and Dependable Mobile Ubiquitous Systems ADAMUS 2008
- 7th Intl Conference on Mobile Business (MBUSINESS 2008) held in Barcelona, Spain on July 7-8, 2008

INVITED TALKS

- Dimitri Konstantas: Keynote speaker at the 3rd International Conference on Software and Data Technologies, ICSOFT 2008, User Defined Geo-Referenced Information Management, Porto, Portugal, July 5-8 2008

FUNDED RESEARCH PROJECTS

Participation to European projects

PlayMancer

A European Serious Gaming 3D Environment

Funded by the FP7 programme of the EU

Partners: 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/>

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), Fachhochschule 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>

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

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

In the frame of the Geo-Tags project, the results of the PhD thesis of Mr. M. Deriaz have been implemented as a service by **ArxIT Consulting**.

OTHERS

- **Katarzyna Wac:** Google Global Community Scholarship for workshop organization at Grace Hopper Celebration of Women in Computing, Colorado, USA, 1-4 October 2008
- **Jean-Marc Seigneur:** International expert reviewer for the review of EU FP6 projects and US Air Force project proposals
- **Jean-Henry Morin:** IBM Korea Best Paper Award at the Spring 2008 KMIS conference, Korea Society of Management Information Systems, for the paper "How to Manage Business Process as Knowledge Assets based on Ontological Approach: Focusing on Sales Order Process", Seoul, South Korea, June 13, 2008.
- **Jean-Henry Morin:** Appointed Editorial Board Member of the Journal of Service Science (JSS) by the Society of Service Science (SoSS) for a 3 year term Nov 1st, 2008 (<http://www.soss.or.kr/>)
- **Jean-Henry Morin:** Co-organizer of the 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
- **Michel Deriaz:** 07.05.2008 (fr): Mobile Commerce, L'avertisseur de radars fixes et mobiles collaboratifs FoxyTag, http://www.foxytag.com/press/20080507_Presse-fr.pdf
- **Michel Deriaz:** 07.05.2008 (fr): Presse-fr, L'anti-radar FoxyTag arrive en France http://www.foxytag.com/press/20080507_Presse-fr.pdf
- **Michel Deriaz:** 01.05.2008 (fr): L'essentiel du mobile, Les alertes radars sur son téléphone http://www.foxytag.com/press/20080501_LEssentielDuMobile.pdf
- **Michel Deriaz:** 29.04.2008 (fr): Autodeclics, FoxyTag : un avertisseur de radars sur votre mobile http://www.foxytag.com/press/20080429_Autodeclics.pdf



Fig 4: FoxyTag Virtual Tags in the Lausanne Area

TEACHING

- **Infrastructure de Communications,** Information Systems, Bachelor, 6 ECTS, 56 hours (winter semester), 16 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, 6 students

The image is a composite of two photographs. The top photograph shows a close-up of a building's facade with several windows, some of which have yellow blinds. The bottom photograph shows a person sitting on a grassy lawn in front of a similar building, reading a book. The person is wearing a dark jacket and a patterned skirt. The overall scene is bright and sunny.

Computer Vision and Multimedia Laboratory

Prof. Thierry Pun

CVML

vision.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, Prof. 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) visual data analysis and processing. The applications mostly cover high quality image compression, restoration and denoising for medical imaging and neuroscience, classification and data mining in large nonstructured databases of natural randomness originating from various imaging techniques, mass-spectrometry and bioinformatics. A related research axis concerns analog and digital watermarking, authentication and tamper proofing of both images and text documents. Current research also concerns brand protection using portable devices and wireless communications. A common basis for these researches is the apparatus of non-stationary statistical modeling, distributed coding and robust hashing.

Multimodal Interaction group (MMI, Prof. T. Pun, <http://cvml.unige.ch/MMI>): studies various forms of multimodal interaction between humans, computers, and environment. Some considered interaction modalities are haptic, auditory, and based on physiological signals such as EEG's (electroencephalograms), EMG (electromyograms), plethysmograph for blood pressure, GSR (galvanic skin resistance), skin temperature, breathing rate. Current developments concern emotion recognition and its use for interaction, brain-computer interfaces, brain imaging, 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, completed with other physiological sensors to record heart rate, galvanic skin resistance - GSR, skin temperature, breathing rate, blood pressure, and electromyograms - EMG;
- gTec gMobilab+ mobile physiological signals recording system from Guger Technologies (<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 from EyeTech Digital Systems;
- head-mounted display Emagin z800;
- stereo cameras, e.g. STH-MDCS2 from Videre Design (<http://www.videredesign.com/>);
- micro-PC OQO (<http://www.oqo.com/intl/>) for portable experimentation.

TEAM

Directors

Thierry Pun
Full professor



Sviatoslav Voloshynovskiy
Associate professor



Stéphane Marchand-Maillet
Assistant professor



Members

Dr. Eric Bruno
Dr. Joep Kierkels
Dr. Oleksiy Koval

PhD students

Fokko Beekhof
Guillaume Chanel
Benoît Deville
Jana Kludas
Donn Morrison
Mohammad Soleymani
Eniko Szekely
Renato Villan (until May 2008)
Taras Holotyak (since December 2008)

PHD THESIS

- Renato Villán Sebastián, «Authentication of electro-nic and printed text documents», May 2008

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] G. Bologna, B. Deville, T. Pun, «On the use of the auditory pathway to represent image scenes in real-time», *Neurocomputing*, 72, 2009, 839-849. Electronic publication: 2008, Article DOI: <http://dx.doi.org/10.1016/j.neucom.2008.06.020>.
- [2] B. Deville, G. Bologna, M. Vinckenbosch, T. Pun, «See Color: Seeing colours with an orchestra», Springer LNCS, Lecture Notes in Computer Science on Man Machine Interaction, Subm. July 2008, revised Nov. 2008.
- [3] S. Voloshynovskiy, O. Koval, F. Perez-Gonzalez, M. Kivanc Mihcak, Informed data-hiding with partial side information at the decoder, *Signal Processing*, submitted for publication, 2008.
- [4] S. Voloshynovskiy, O. Koval, E. Topak, J.E. Vila Forcen, and P. Comesana Alfaro, Partially Reversible Image Data Hiding With Pure Message Communications Over State-Dependent Channel, *Signal Processing*, submitted for publication, 2008.
- [5] S. Voloshynovskiy, O. Koval, R. Villan, F. Beekhof, and T. Pun, Authentication of Biometric Identification Documents via Mobile Devices. *Journal of Electronic Imaging*, vol. 17, issue 1, p. 011014, 2008.
- [6] J. E. Vila-Forcen, S. Voloshynovskiy, O. Koval and F. Pérez-González and T. Pun, Quantization-Based Methods: Additive Attacks Performance Analysis, *LNCS Transactions on Data Hiding and Multimedia Security*, LNCS 4920, p. 70-90, 2008.
- [7] Bruno, E., Moënne-Loccoz, N., & Marchand-Maillet, S. (2008). Design of multimodal dissimilarity spaces for retrieval of multimedia documents. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 30(9), 1520-1533.
- [8] Kludas, J., Bruno, E., & Marchand-Maillet, S. (2008). Can Feature Information Interaction help for Information Fusion in Multimedia Problems?. *Multimedia Tools and Applications Journal special issue on «Metadata Mining for Image Understanding»*, DOI: 10.1007/s11042-008-0251-y.
- [9] Kosinov, S., Bruno, E., & Marchand-Maillet, S. (2008). Spatially-consistent partial matching for intra- and inter-image prototype selection. *Signal Processing: Image Communication special issue on «Semantic Analysis for Interactive Multimedia Services»*, 23, 516-524.
- [10] M. Soleymani, G. Chanel, J. Kierkels, T. Pun, «Affective characterization of movie scenes based on multimedia content analysis and user's physiological emotional responses», *ISM2008*, IEEE International Symposium on Multimedia, December 15-17, 2008, Berkeley, California, USA, 228-235.
- [11] M. Soleymani, G. Chanel, J. Kierkels, T. Pun, «Affective ranking of movie scenes using physiological signals and content analysis», *ACM Multimedia 2008*, Workshop on Many Faces of Multimedia Semantics (MS'08), Oct. 27-31, 2008, Vancouver, BC, Canada, 32-39.
- [12] J. J. M. Kierkels, T. Pun, «Towards detection of interest during movie scenes», *MIAUCE - First Int. Workshop on Multimodal Interactions Analysis of Users in a Controlled Environment*, Chania, Crete, Greece, October 24, 2008 (Post-conf. workshop, ICMI 08, 10th Int. Conf. on Multimodal Interfaces, Oct. 20-24, 2008).
- [13] B. Deville, G. Bologna, M. Vinckenbosch, T. Pun, «Guiding the focus of attention of blind people with visual saliency», *European Conference on Computer Vision (ECCV 2008)*, Oct. 12-18, 2008, Workshop on Computer Vision Applications for the Visually Impaired (CVAVI 08), Marseille, France, Oct. 18, 2008.
- [14] G. Chanel, C. Rebetez, M. Betrancourt, T. Pun, «Boredom, engagement and anxiety as indicators for adaptation to difficulty in games», *11th MindTrek Conference, MindTrek 2008: Entertainment and Media in the Ubiquitous Era*, October 7-9, 2008, Tampere, Finland.
- [15] M. Soleymani, G. Chanel, J. Kierkels, T. Pun, «Valence-arousal representation of movie scenes based on multimedia content analysis and user's physiological emotional responses», *MLMI 2008*, 5th Joint Workshop on Machine Learning and Multimodal Interaction, 8-10 Sept. 2008, Utrecht, The Netherlands (extended abstract and poster).
- [16] G. Bologna, B. Deville, and T. Pun, «Pairing colored socks and following a red serpentine with sounds of musical instruments», *ICAD 08*, Int. Conf. on Auditory Displays, June 24-27, 2008, Paris, France.
- [17] G. Bologna, B. Deville, M. Vinckenbosch and T. Pun, «A perceptual interface for vision substitution in a color matching experiment», *IEEE IJCNN*, Int. Joint Conf. Neural Networks, Part of IEEE World Congress on Computational Intelligence, June 1-6, 2008, Hong Kong.
- [18] B. Deville, G. Bologna, M. Vinckenbosch, T. Pun, «Depth-based detection of salient moving objects in sonified videos for blind users», *VISAPP 2008*, Int. Conf. on Computer Vision Theory and Applications, 22-25 January, 2008, Funchal, Madeira Island, Portugal.
- [19] O. Koval, S. Voloshynovskiy and T. Pun, Privacy-Preserving Multimodal Person and Object Identification, In *10th ACM Workshop on Multimedia & Security «MM&Sec 2008»*, September 22-23, 2008, Oxford, UK.
- [20] S. Voloshynovskiy, O. Koval and T. Pun, Multimodal authentication based on random projections and distributed coding, In *10th ACM Workshop on Multimedia & Security «MM&Sec 2008»*, September 22-23, 2008, Oxford, UK.
- [21] O. Koval, S. Voloshynovskiy and T. Pun, Privacy-Preserving Biometric Person Identification, In *EUSIPCO 2008*, 16th European Signal Processing Conference, Lausanne, Switzerland, August 25-29, 2008.

Full refereed papers in Conference Proceedings

- [10] M. Soleymani, G. Chanel, J. Kierkels, T. Pun, «Affective characterization of movie scenes based on multimedia content analysis and user's physiological emotional responses», *ISM2008*, IEEE International Symposium on Multimedia, December 15-17, 2008, Berkeley, California, USA, 228-235.

- [22] M. Haroutunian, S. Tonoyan, O. Koval, and S. Voloshynovskiy, On Reversible Information Hiding System, 2008 IEEE International Symposium on Information Theory, ISIT 2008, July 6 -July 11, 2008, Toronto, Canada.
- [23] S. Voloshynovskiy, O. Koval, F. Beekhof and T. Pun, Uncloable identification and authentication based on reference list decoding, In SECSI - Secure Component and System Identification, Berlin, Germany, March 17-18, 2008.
- [24] F. Beekhof, O. Koval, R. Villán, S. Voloshynovskiy and E. Topak, Document Forensics based on Steganographic Anti-Counterfeiting Markings and Mobile Architectures, In First International Conference on Forensic Applications and Techniques in Telecommunications, Information and Multimedia (E-Forensics 2008), Adelaide, Australia, 23 January 2008.
- [25] F. Beekhof, S. Voloshynovskiy, O. Koval and R. Villán, Secure Surface Identification Codes, In Proceedings of SPIE Photonics West, Electronic Imaging 2008, Security and watermarking of multimedia contents X, San Jose, USA, 2008.
- [26] O. Koval, S. Voloshynovskiy, F. Beekhof and T. Pun, Security Analysis of Robust Perceptual Hashing, In Proceedings of SPIE Photonics West, Electronic Imaging 2008, Security and watermarking of multimedia contents X, San Jose, USA, 2008.
- [27] O. Koval, S. Voloshynovskiy, F. Beekhof and T. Pun, Analysis of physical unclonable identification based on reference list decoding, In Proceedings of SPIE Photonics West, Electronic Imaging 2008, Security and watermarking of multimedia contents X, San Jose, USA, 2008.
- [28] O. Koval, S. Voloshynovskiy, F. Beekhof and T. Pun, Error exponent analysis of person identification based on fusion of dependent/independent modalities: multiple hypothesis testing case, In Proceedings of SPIE Photonics West, Electronic Imaging 2008, Security and watermarking of multimedia contents X, San Jose, USA, 2008.
- [29] Kludas, J., Bruno, E., & Marchand-Maillet, S. (2008). Can Feature Information Interaction help for Information Fusion in Multimedia Problems?. In First International Workshop on Metadata Mining for Image Understanding, Funchal, Madeira.
- [30] Kludas, J., Bruno, E., & Marchand-Maillet, S. (2008). Exploiting Synergistic and Redundant Features for Multimedia Document Classification. In 32nd Annual Conference of the German Classification Society - Advances in Data Analysis, Data Handling and Business Intelligence (GfKI 2008), Hamburg, Germany.
- [31] Kludas, J., Marchand-Maillet, S., & Bruno, E. (2008). Exploiting document feature interactions for efficient information fusion in high dimensional spaces. In Proceedings of the First International Workshops on Image Processing Theory, Tools and Applications (IPTA'2008), Sousse, Tunisia.
- [32] Morrison, D., Marchand-Maillet, S., & Bruno, E. (2008). Semantic clustering of images using patterns of relevance feedback. In Proceedings of the 6th International Workshop on Content-based Multimedia Indexing (CBMI'2008), London, UK.

BOOKS AND BOOK CHAPTERS

- [33] S. Voloshynovskiy, O. Koval and T. Pun, Secure item identification and authentication system based on unclonable features, U.S. Patent Application No 61/038,084, filed 20 March 2008.

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. Voloshynovskiy: Management Committee member of European Network of Excellence Ecrypt (<http://www.ecrypt.eu.org/>)
- S. Marchand-Maillet: Member of the Technical 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: Member of the Technical Board of the EU STREP MultiMATCH (<http://www.multimatch.eu>)

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- ICPR 2008, Int. Conf. on Pattern Recognition, Organizing Committee, track co-chair, Tampa, Florida, USA

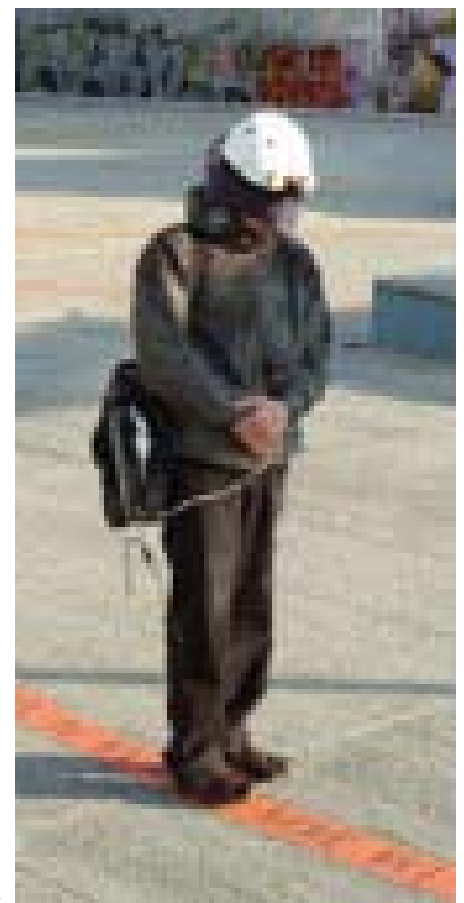


Figure 1: A blindfolded person following a red serpentine line by means of musical sounds only (SeeColor project, Hasler Foundation, with the HES-SO Geneva).

MEMBER OF CONFERENCE PROGRAM COMMITTEES

Thierry Pun:

- ICPR 2008 (Tampa, FL, USA)

Sviatoslav Voloshynovskiy:

- Electronic Imaging 2008, Security, Steganography, and Watermarking of Multimedia Contents X, San Jose, USA, January, 2008.
- The 9th IASTED International Conference on Signal and Image Processing SIP2008, Kailua-Kona, USA, August 18-20, 2008 (program committee)
- ACM2008, Multimedia and Security Workshop 2008, Oxford, UK, September 2008 (program committee).
- EUSIPCO2008, 16th European Signal Processing Conference 2008, Lausanne, Switzerland, August 2008 (technical program committee).
- IWDW2008, International Workshop on Digital Watermarking 2008, Busan, Korea, in November 10-12, 2008 (program committee).

Stéphane Marchand-Maillet:

- ACM SIGIR 2008, Singapore, July 2008 (PC member and Mentor).
- ACM-CIVR 2008, Niagara Falls, CA, 2008 (PC and Best Paper committee member)
- ICPR 2008 (Tampa, FL, USA)
- ACM Multimedia 2008, Vancouver, Canada (PC member and Full and Short Paper tracks)
- Adaptive Multimedia Retrieval 2008, Berlin, Germany, June 2008
- VISUAL 2008,
- Machine Learning for Multimedia Interaction MLMI2008, Utrecht, NL, 2008.
- IEEE International Conference on Image Processing, ICIP2008, San Diego, CA, 2008
- EUSIPCO 2008, 16th European Signal Processing Conference 2008, Lausanne, Switzerland, August 2008 (technical program committee).
- International Workshop on Content-based Multimedia Indexing, CBMI2008, London, UK, 2008.
- WWW 2008 (Rich Media Track), Beijing, China, 2008 (PC member)
- ACM-Symposium on Applied Computing (Information Access and Retrieval track), Ceara, Brazil, 2008 (PC member)
- International conference on Semantic and digital Media Technologies, SAMT2008, Koblenz, Germany, 2008 (PC member)

INVITED TALKS

- M. Soleymani and T. Pun, «Affective representation of movie scenes based on multimedia content analysis and user's physiological emotional responses», and «Overview of research at the Computer Vision and Multimedia Laboratory, Multimodal Interaction Group», Dec. 15, 2008, NEC Laboratories America, Cupertino, CA, USA.
- S. Voloshynovskiy, O. Koval, T. Pun, "Product security and anticounterfeiting using mobile devices: art to protect", U-NICA Group, Liechtenstein, Oct. 2008.
- J. Dittman and S. Voloshynovskiy, WAVILA* (Watermarking) overview Lessons learned from 4.5 years of WAVILA, ECRYPT: Challenges and Perspectives for Academia and Industry, Antwerp, Belgium, 27 - 29 May 2008.
- P. Bas and S. Voloshynovskiy, Theoretical Analysis of Watermarking Security and Development of Practical Systems, ECRYPT: Challenges and Perspectives for Academia and Industry, Antwerp, Belgium, 27 - 29 May 2008.
- Kludas, J., Marchand-Maillet, S., & Bruno, E. (2008). Exploiting document feature interactions for efficient information fusion in high dimensional spaces. In Proceedings of the First International Workshops on Image Processing Theory, Tools and Applications (IPTA'2008), Sousse, Tunisia.

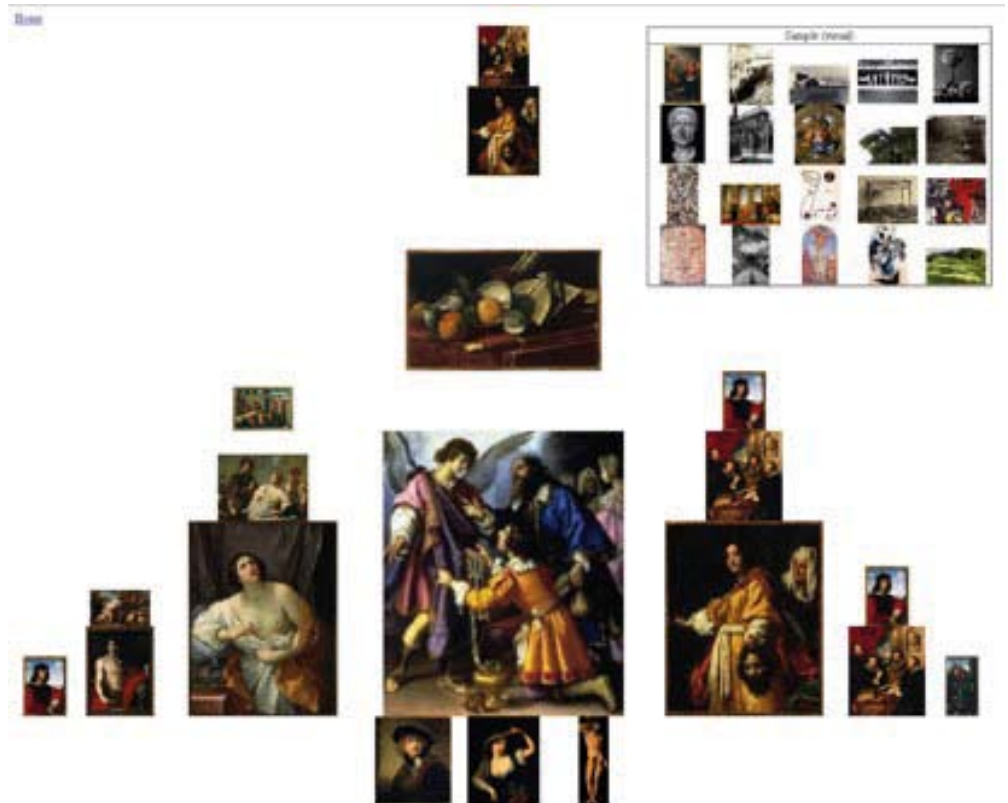


Figure 2: Similarity-based collection browser

FUNDED RESEARCH PROJECTS

Participation to European projects

MultiMatch

Multilingual/MultiMedia Access to Cultural Heritage

IST FP6-STREP

No. IST-2006-033104

Period: May 2006 – October 2008

Website: <http://www.multimatch.eu/>

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. 2008

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 200021-113274/1.

Period: March 2007 – February 2009

SNF Professorship grant “Information-theoretic framework for documents and brands protection based on digital data-hiding”

SNSF PP002-114613

Period: April 2007 – December 2008

Information-theoretic document authentication and self-recovering based on digital data-hiding

SNSF 200021-111643

Period: September 2006 – August 2008

Reliable and secure forensic authentication based on random projections and distributed coding

SNSF 200020-121635

Period: September 2008 – August 2010

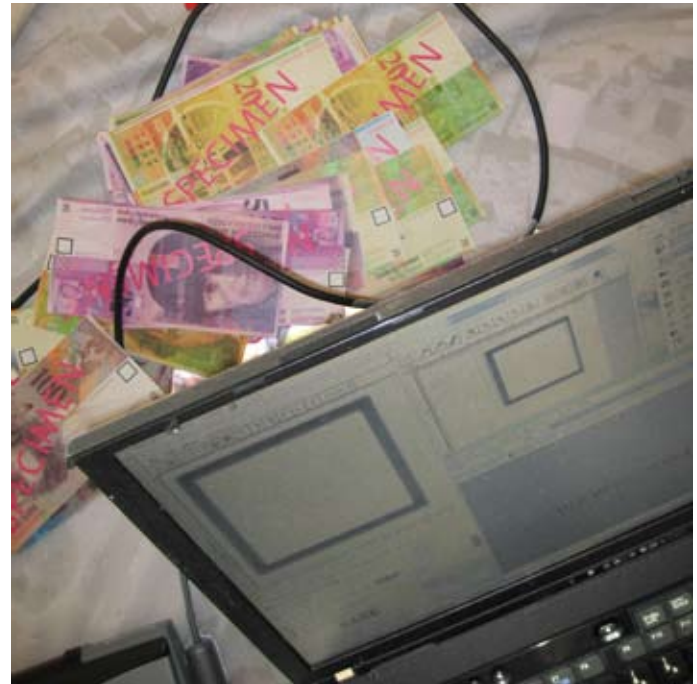


Figure 3: Banknote identification based on unclonable natural randomness of banknote paper

Collection Guide: Large scale multimedia information management

SNSF 200021-109377

Period: October 2006 – September 2008

Collection Guide: Large scale multimedia information management

SNSF 200020-121842

Period: October 2008 – Septembre 2008

Multimodal fusion for information processing and understanding

SNSF 200021-122036

Period: November 2008 – August 2010

Marie Heim-Vögtlin grant: Fast automatic normalization and computation of multiscale lead-field models for the EEG/MEG inverse problem

PMPD2-110193/1

Period: October 2005 – September 2008

Participation to the NCCR «Affective Sciences»

Thierry Pun is an Associate member of this NCCR.



CVML team

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)

Special issues

- Various public demonstrations in open days

Refereeing/reviewing

- journals, conferences, national funding organizations for various countries.

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 et 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. 15 students.
- **Hands-on Programming (practical complement to Data Structures)**, 1st year Bachelor. 56h Practical work, 15 students.
- **Computer Science Project**, Computer Science, 3rd year Bachelor, 28h course and 56h. lab work, approx. 15 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 5: MultiMatch: some results

The image is a composite. The top right portion shows a close-up of a modern building's facade with large, multi-paned windows. The bottom right portion shows a person with glasses and a dark top sitting on a patterned bag on a grassy lawn in front of the same building, looking at a document. The left side of the image is a solid white background.

Geneve Artificial Intelligence Laboratory

Prof. Christian Pellegrini

GAIL

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 for ANNs, meta-learning for algorithm and model selection, and text mining.

Current research activities focus on advanced machine learning and data mining techniques, including learning for composite representations, learning for structures, kernel methods, and latent variable models. Research results have been applied to two main areas. A team lead by Melanie Hilario investigates various problems in the life sciences (bioinformatics), such as the processing and classification of mass spectra, disease biomarker discovery, and biological text mining for proteomics database annotation. A team lead by James Henderson investigates 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).

TEAM

Director

Christian Pellegrini
Full professor



Members

Dr. Mélanie Hilario, MER
Dr. James Henderson, MER
Dr. Alexandros Kalousis, MA

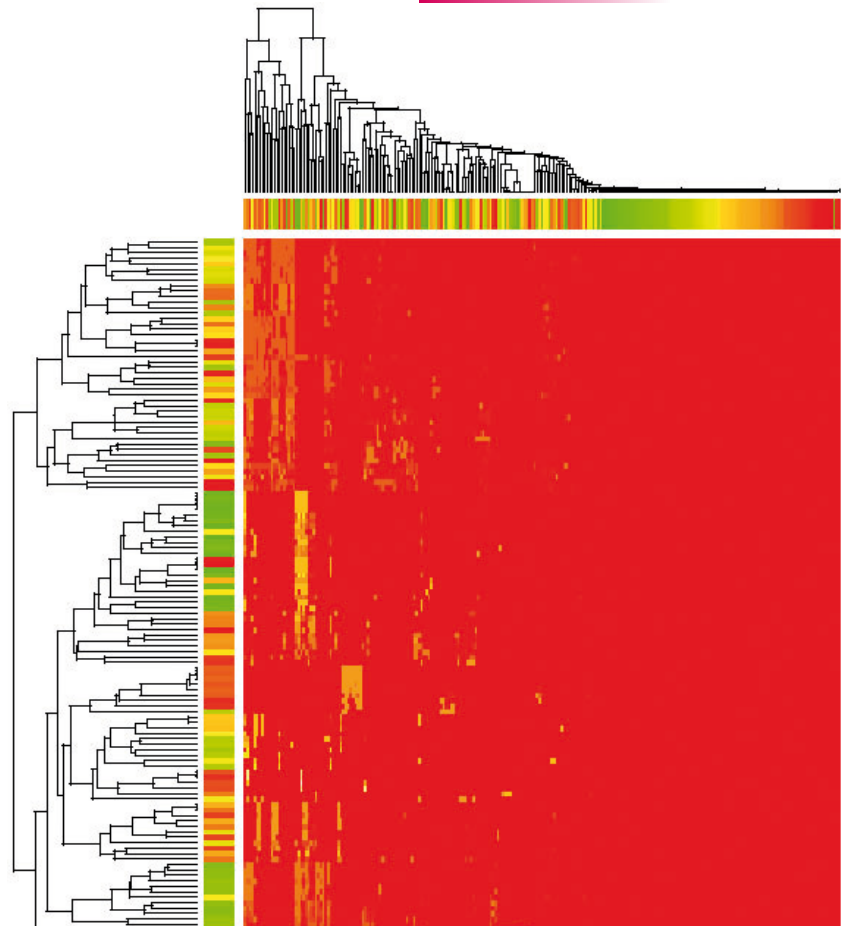
Assistants

Dr. Adam Woznica, Post doctoral fellow

PhD students

Frédéric Ehrler
Jee-Hyub Kim
Huyen Do
Dina Vishnyakova

Figure 1: Clusters of bacteria resistance profiles



PHD THESIS

- Ivan Titov, «Kernels and Graphical Models for Structure Prediction. Application to Natural Language Parsing», January 2008.
- Adam Woznica, «Distance and Kernel Based Learning Over Composite Representations», December 2008.

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] J.Henderson, O.Lemon, K.Georgila. Hybrid reinforcement/supervised learning of dialogue policies from fixed data sets. *Computational Linguistics*, 34(4):487-511, 2008.
- [2] M. Hilario, A. Kalousis (2008). Approaches to Dimensionality Reduction in Proteomic Biomarker Studies, *Briefings in Bioinformatics*. Volume 9. number 2, pages 102-118.
- [3] I. Titov, R. McDonald (2008). A Joint Model of Text and Aspect Ratings for Sentiment Summarization. 46th Meeting of Association for Computational Linguistics (ACL-08). Columbus, OH, USA.
- [4] I. Titov, R. McDonald (2008). Modeling Online Reviews with Multi-Grain Topic Models. 17th International World Wide Web Conference (WWW-2008). Beijing, China.

Full refereed papers in Conference Proceedings

- [5] J.Henderson, P.Merlo, G.Musillo, I.Titov. A Latent Variable Model of Synchronous Parsing for Syntactic and Semantic Dependencies. CoNLL 2008 Shared Task, Conf. on Computational Natural Language Learning (CoNLL-08), Manchester, UK, 2008.
- [6] J.Henderson and O.Lemon. Mixture model POMDPs for efficient handling of uncertainty in dialogue management. In Proc. 46th Annual Meeting of the Association for Computational Linguistics (ACL'08), Columbus, Ohio, 2008.
- [7] Alexandros Kalousis, Abraham Bernstein, Melanie Hilario, Meta-learning with kernels and similarity functions for planning of data mining workflows. Workshop on Planning to Learning (PlanLearn-08), held in conjunction with ICML 2008, Helsinki, Finland.
- [8] Irene Ntoutsi, Alexandros Kalousis, and Yannis Theodoridis. A general framework for estimating similarity of datasets and decision trees: exploring semantic similarity of decision trees. In Proceedings of the SIAM Conference on Data Mining, 2008.
- [9] Julien Prados, Alexandros Kalousis, and Melanie Hilario. Feature Selection with the logRatio Kernel. In Proceedings of the SIAM Conference on Data Mining, 2008.
- [10] Julien Prados, Alexandros Kalousis, and Melanie Hilario. logRatio, un Noyau pour la Sélection d'Attribut logRatio, a Kernel for Feature Selection. In Proceedings of the Reconnaissance des Formes et Intelligence Artificielle, Amiens, 2008.

MEMBER OF CONFERENCE PROGRAM COMMITTEES AND REVIEWING PANELS

James Henderson:

- Program Committees: ACL-HLT 2008, Columbus, Ohio, USA. International Conference on Computational Linguistics (COLING 2008), Manchester, UK. CoNLL 2008, Manchester, UK. MLMI 2008, Utrecht, the Netherlands. ICTAI 2008, Dayton, Ohio, USA.

Mélanie Hilario:

- Area Chair, 20th IEEE International Conference on Tools with Artificial Intelligence (ICTAI-2008), Dayton, Ohio.
- Program Committees: International Workshop on Combining Intelligent Methods and Applications (CIMA-08), in conjunction with the European Conference on Artificial Intelligence (ECAI-08), Patras, Greece. July 21-25, 2008. 19th Brazilian Symposium on Artificial Intelligence (SBIA-2008), Salvador, Bahia. October 26-30, 2008. Data Mining Applications Track, Brazilian Workshop on Data Mining Algorithms and Applications (WAAMD-2008), in conjunction with SBBD/SBES 2008. Campinas, Brazil. October 13-17, 2008. 7th Conference on Practical Aspects on Knowledge Management (PAKM-2008), Yokohama, Japan.
- Awards Jury, Swiss Computer Science Challenges Awards, Informatica 08, sponsored by the Hasler Foundation.

Alexandros Kalousis:

- Program Committees: 20th IEEE International Conference on Tools with Artificial Intelligence (ICTAI-2008), Dayton, Ohio. European Conference on Machine Learning/Knowledge Discovery in Databases (ECML/PKDD-08), Antwerp, Belgium.

REFEREEING

- James Henderson: EMNLP 2008, Honolulu, Hawaii, USA.
- Mélanie Hilario: Journal of Proteome Research (JPR).
- Alexandros Kalousis: ACM Transactions on Knowledge Discovery from Data, Pattern Analysis And Machine Intelligence. BMC Bioinformatics.

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

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

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/>

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/>

CLASSiC

Computational Learning in Adaptive Systems for Spoken Conversation

See information under the LATL laboratory

Participation to National projects

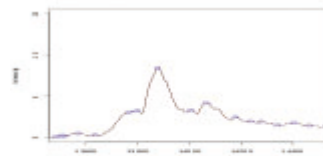
An Adaptive Framework for Learning over Composite Representations

FNRS Project

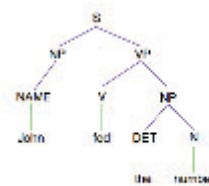
Period: October 2008 – September 2010

TEACHING

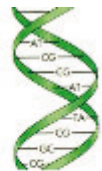
- **Introduction to algorithms**, Computer Science, Bachelor, 8 ECTS, 140 hours.
- **Introduction to Artificial Intelligence**, Computer Science, Bachelor, 8 ECTS, 112 hours.
- Christian Pellegrini and Adam Woznica also participate in the following courses: **Applied Cybernetics** (prof. T. Pun), **Heuristic Methods of Learning and Optimization** (prof. B. Chopard and M. Tomassini), **Object-Oriented Concepts and Languages** (prof. P. Dugerdil).
- **Data Mining**, Computer Science, Master, 8 ECTS, 52 hours.



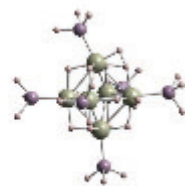
Sets



Trees



Sequences



Graphs

Figure 2: Mining complex data structures

Information System Interface

Prof. Gilles Falquet

ISI

cui.unige.ch/isi

DOMAIN ACTIVITIES

The main research themes of the ISI group are knowledge representation and knowledge access through various kinds of interfaces. In the knowledge representation area the group is more specifically working on the representation and management of multiple point of views in ontologies, the definition of generic models and operations to manage repositories of heterogeneous knowledge sources (ontologies, terminologies, thesauri, text corpuses, ...) and the incorporation of new reasoning services (abduction, spatial reasoning, ...) in knowledge bases. The work on knowledge access includes knowledge-based information retrieval, models and tools for managing semantic digital libraries, and the visualization of knowledge elements in 3D virtual environments.

The group works on several interdisciplinary projects, in close collaboration with researchers in urbanism, geographic information systems, mathematics and architecture. The aims of these projects are mainly to incorporate new knowledge representation, reasoning, and integration techniques in sustainable urban planning and architectural reasoning.

TEAM

Director

Gilles Falquet
Titular professor

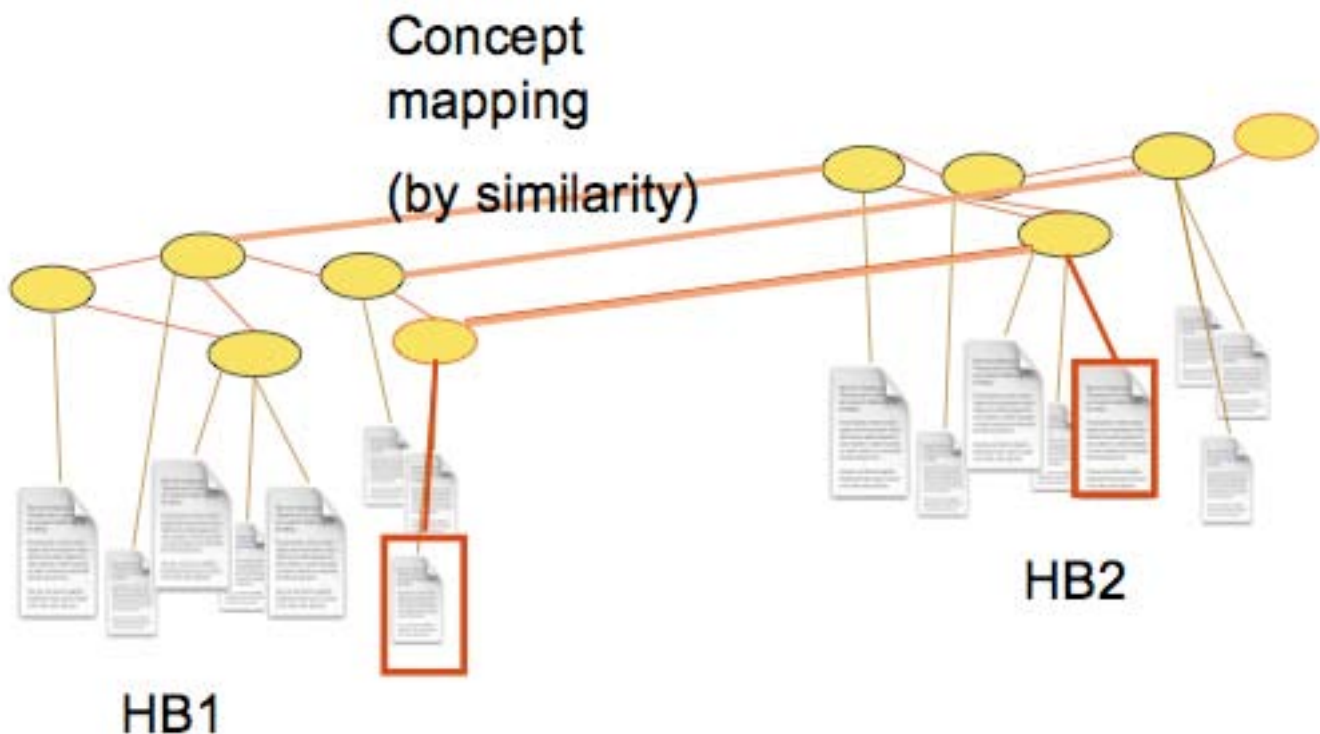


Members

Dr. Claudine Métral
Dr. Laurent Moccozet
Dr. Jacques Guyot

PhD students

Kaveh Bazargan
El Mustapha El Afti
Nizar Ghoula
Claire-Lise Mottaz Jiang
Saïd Radhouani
Mathieu Vonlanthen
Jean-Claude Ziswiler



PHD THESIS

- Saïd Radhouani, «Un modèle de Recherche d'Information orienté précision fondé sur les dimensions de domaine», July 2008

LIST OF PUBLICATIONS

Full refereed papers in Conference Proceedings

- [1] Falquet, G., Mottaz Jiang, C.-L., Guyot, J. Un modèle et une algèbre pour les systèmes de gestion d'ontologies. In proc. EGCo8, Sophia Antipolis, Jan 2008.
- [2] Guyot, J., Falquet, G., Radhouani, S., Benzineb K. 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, 2008.
- [3] Guyot, J., Falquet, G., Radhouani, S., Benzineb K. Working notes of the UNIGE Experiments on Robust Word Sense Disambiguation. In Proc. CLEF 2008 Workshop, Aarhus, 2008.
- [4] Métral C., Falquet G. and Karatzas K. Ontologies for the Integration of Air Quality Models and 3D City Models. In Conceptual Models for Practitioners, J. Teller, C. Tweed, G. Rabino (Eds.), Società Editrice Esculapio, Bologna, pp. 27-42, 2008.
- [5] Moccozet, L. Spatialized tags for building 3D shapes taxonomies, Proceedings SAMT Workshop on Semantic 3D Media, First International Workshop on Semantic 3D Media, S-3D, Koblenz, Germany, pp. 45-52, 2008
- [6] Moccozet, L., Cao, A., Milon, A., Droz, P. O., Vernez, D., Bulliard, J.-L. Sketching expressive visualization of a natural phenomenon: Ultra-Violet individual exposure estimation, GMAIo8: 3rd International Conference on Geometric Modeling and Imaging, London, UK, IEEE Press, pp. 47-52, 2008.
- [7] Radhouani, S. Un modèle de Recherche d'Information orienté précision fondé sur les dimensions de domaine. Ph.D. Thesis, University of Geneva, Geneva, Switzerland, Joseph Fourier University, Grenoble, France, July, 2008.
- [8] Radhouani, S., Falquet, G. Description Logics-Based Modelling for Precise Information Retrieval. In proc. 21st International Workshop on Description Logics (DL2008), Dresden, April 2008. In CEUR Workshop Proceedings series
- [9] Radhouani, S., Falquet, G., Chevallet, J.-P. Description Logic to Model a Domain Specific Information Retrieval System (short paper). In Proc. 19th International Conference on Database and Expert Systems Applications (DEXA '08), Turin, 2008.

Books and book chapters

- [10] Falquet, G., Nerima, L., Ziswiler, J.-C. Hyperbooks (book chapter). In Sebastian Ryszard Kruk, Bill McDaniel (Eds.) Semantic Digital Libraries. Bringing Digital Libraries to the Next Generation of Internet. Springer, Berlin, Germany, 2008.
- [11] Grin, F. and Falquet, G. Free software, proprietary software and linguistic justice. Chapter in A. Strowel, A. Gosserie and A. Marciano (Eds.) Intellectual Property Rights and Theories of Justice, Palgrave, London, 2008.

Research and technical reports

- [12] Métral, C. Using Ontologies for 3D City Models Semantic Enrichment. COST C21 STSM Report, June 2008.

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

Gilles Falquet:

- Member of the advisory board
- International Journal on Information - Interaction – Intelligence (I3)
- Membre du comité scientifique de la revue Techniques et sciences informatiques (TSI)
- Member of the Management Committee and Working group leader
- EU COST Action C21 - Townontology
- Expert Wiener Wissenschaft-, Forschungs- und Technologiefonds, Austria.

Claudine Métral:

- Proposer and Chairwoman of the EU COST Action TU0801 "Semantic Enrichment of 3D City Models for Sustainable Urban Development". Participating countries: Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, Netherlands, Norway, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom
- Member of the Management Committee of the EU COST Action C21 "Urban Ontologies for an improved communication in UCE projects - Townontology"

MEMBER OF CONFERENCE PROGRAM COMMITTEES

Gilles Falquet:

- Comité scientifique de la conférence Extraction et Gestion de la Connaissance EGC'08
- Comité scientifique des Journées francophones sur les ontologies. JFO. Lyon, Oct. 2008

Claudine Métral:

- MDISIS'08, Model Driven Interoperability for Sustainable Information Systems, Montpellier, France, June 2008

Laurent Moccozet:

- GRAPP 2008, 3rd International Conference on Computer Graphics Theory and Applications, 22 - 25 January, 2008. Funchal, Madeira - Portugal

INVITED TALKS

- Gilles Falquet: Ontologie Formale e Passaggio, «An Introduction to Formal Ontologies and Ontological Languages», Genova, Italy, 20th, May, 2008
- Gilles Falquet: 3rd Workshop on Multilingual Ontologies for Urban Civil Engineering Projects Combining Ontologies: an Algebraic Approach, Saragosa, Spain, 20th, October, 2008

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

Participation to National projects

Ontology-Based Precise Multilingual Information Retrieval

FNS
Period: 2008 - 2010

Construction automatique de mémoires de traduction pour la traduction assistée par ordinateur et la recherche d'informations multilingues

CTI/KTI

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

- **Programmation de base**, Information Systems, Bachelor course, 6 ECTS, 56 hours, 18 students
- **Outils formels pour les systèmes d'information**, Information Systems, Bachelor course, 6 ECTS, 56 hours, 14 students
- **Algorithmes et structures de données**, Information Systems, Bachelor, 6 ECTS, 56 hours, 12 students
- **Interfaces avancées pour les services**, Information Systems, Master course, 6 ECTS, 56 hours, 6 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, 8 students
- **Modélisation des bases de données spatiales**, Service course Information Systems, Master course, 3 ECTS, 28 hours, 36 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, 50 hours, 112 students



Laboratory for the Analysis and Technology of Language

Prof. Eric Wehrli



LATL

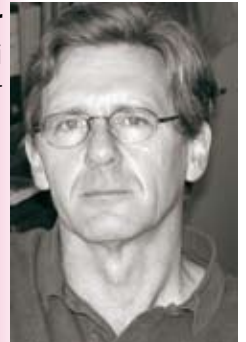
www.latl.unige.ch

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 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.

TEAM

Director
Eric Wehrli
Full professor



Members

Dr. Paola Merlo
Mr. Luka Nerima
Dr. Violeta Seretan
Dr. Lonneke van der Plas
Andrea Gesmundo
Jean-Philippe Goldman
Alexis Kauffmann
Gloldjihan Katchajev
Antonio Leoni de Leon
Athina Michou
Gabriele Musillo
Lorenza Russo
Tanja Samardzic
Yves Scherrer
Sandra Schwab



LATL team

PHD THESIS

- Leoni de León Jorge Antonio, «Modèle d'analyse lexicosyntaxique des locutions espagnoles», June 2008
- Maria-Violeta Seretan, «Collocation Extraction Based on Syntactic Parsing», August, 2008

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] Violeta Seretan and Eric Wehrli, Multilingual collocation extraction with a syntactic parser, Language Resources and Evaluation, DOI: 10.1007/s10579-008-9075-7, 2008 ("Online First")
- [2] Schwab, S., Miller, J.L., Grosjean, F. & Mondini, M.. Effect of speaking rate on the identification of word boundaries, *Phonetica*, 65, 173-186, 2008.

Full refereed papers in Conference Proceedings

- [3] Genest, P.-E., Lapalme, G., Nerima, L., Wehrli, E. Ness: a Symbolic Summarizer for the Update Task of TAC 2008, in Proceedings of the Text Analysis Conference (TAC 2008), Gaithersburg, MD, November 2008.
- [4] Jean-Philippe Goldman, Antoine Auchlin, Mathieu Avanzi, Anne-Catherine Simon. ProsoReport: an automatic tool for prosodic description. Application to a radio style, *Speech Prosody 2008*, Campinas, Brasil, May 2008.
- [5] Henderson J., Merlo P., Musillo G. A., Titov I., A Latent Variable Model of Synchronous Parsing for Syntactic and Semantic Dependencies, Proceedings of the 12th Conference on Computational Natural Language Learning (CoNLL'08), August 2008, Manchester, UK, pp. 178--182.
- [6] Leoni de León, J.A., Schwab, S. & Wehrli, E. . Análisis sintáctico profundo del español: un ejemplo del procesamiento de secuencias idiomáticas. XXIV Congreso de la SEPLN 2008, Madrid, Spain, pp. 37-44.
- [7] Jean-Luc Manguin, Lonneke van der Plas, and Jörg Tiedemann, Le Traitement Automatique : un Moteur pour l'Evolution des Dictionnaires de Synonymes. Proceedings of the Colloque International Lexicographie et Informatique : Bilan et Perspectives, pp 27-33, January 2008
- [8] Merlo P, Musillo G., Semantic Parsing for High-Precision Semantic Role Labelling, Proceedings of the 12th Conference on Computational Natural Language Learning (CoNLL'08), August 2008, Manchester, UK, pp. 1--8.
- [9] Musillo G., Merlo P., Unlexicalised Hidden Variable Models of Split Dependency Grammars, Proceedings of the 46th Annual Meeting of the Association for Computational Linguistics (ACL-HLT'08), June 2008, Columbus, Ohio, pp. 213—216.
- [10] Nerima, L., Wehrli E. Generating Bilingual Dictionaries by Transitivity, in Proceedings of the LREC'08 Conference, Marrakech, May 2008.
- [11] Nicolas Obin, Jean-Philippe Goldman, Mathieu Avanzi, Anne Lacheret, Comparaison de trois outils de détection automatique de proéminences en français parlé, Journées d'Etudes sur la Parole 2008, Avignon, France, June 2008.
- [12] Scherrer Yves: Transducteurs à fenêtre glissante pour l'induction lexicale. RECITAL 2008, Avignon, France, June 2008.

- [13] Scherrer Yves: Part-of-speech tagging with a symbolic full parser: Using the TIGER treebank to evaluate Fips. Workshop on Parsing German, ACL 2008, Columbus, Ohio, USA.
- [14] Schwab S., Racine, I. & Goldman, J.-P. Les Vaudois parlent-ils réellement plus lentement que les Parisiens? Un début de réponse. Phonologie du français contemporain: variation, interfaces, cognition. Journées PFC, Paris, December 2008.
- [15] Schwab, S. (2008). Relationship between Speech Rate Production and Perception. Workshop on Empirical Approaches to Speech Rhythm, Center for Human Communication, UCL, March 2008.
- [16] Anne-Catherine Simon, Mathieu Avanzi, Jean-Philippe Goldman, La détection des proéminences syllabiques. Un aller-retour entre l'annotation manuelle et le traitement automatique, 1er Congrès mondial de la Linguistique Française, Paris, France, July 2008
- [17] Anne-Catherine Simon, Antoine Auchlin, Mathieu Avanzi, Jean-Philippe Goldman, Les phonostyles: une description prosodique des styles de parole en français, Association of French Language Studies, September 2008
- [18] Lonneke van der Plas, Jörg Tiedemann, and Jean-Luc Manguin, Extraction de Synonymes à Partir d'un Corpus Multilingue Aligné, Proceedings of the 5èmes Journées de Linguistique de Corpus, September 2008
- [19] Lonneke van der Plas, Jörg Tiedemann, Using Lexico-Semantic Information for Query Expansion in Passage Retrieval for Question Answering, Proceedings of the Coling 2008 Workshop: Information Retrieval for Question Answering. August 2008.
- [20] Wehrli, E., Nerima, L. (2008). Traduction multilingue: le projet MulTra, in Proceedings of the JEP – TALN – RECITAL Conference, Avignon, June 2008.

Books and book chapters

- [21] Lonneke van der Plas, Automatic Lexico-Semantic Acquisition for Question Answering. Groningen Dissertations in Linguistics, ISBN 978-90-367-3564-3, October 2008

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- Paola Merlo, Member of the Executive Board for the European Chapter of the Association for Computational Linguistics, 2006-2008.

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- V. Seretan, LREC 2008 Workshop «Towards a Shared Task for Multiword Expressions (MWE 2008)», Marrakech, Morocco, June, 2008
- V. Seretan, ConSLR 2008 Workshop «Romanian Linguistic Resources and Tools for Natural Language Processing»

INVITED TALKS

- Gabriele Musillo, Unlexicalised Hidden Variable Models of Split Dependency Grammars, Artificial Intelligence and Information Systems Seminar, University of Illinois at Urbana-Champaign, Illinois, USA, May 2008.
- Lonneke van der Plas, Automatic Acquisition of Lexico-semantic Information for Question Answering, ILPS seminar, University of Amsterdam, 18 April 2008
- Eric Wehrli, Assistance syntaxique, assistance terminologique et traitement des collocations, Information Systems Institute research seminar, HEC, University of Lausanne, October 11, 2008.
- Paola Merlo, Issues in Joint Syntactic and Semantic Parsing, LORIA, Nancy, December 2008.
- Paola Merlo, Semantic Parsing for High-precision Semantic Role Labelling, University of Heidelberg, May 2008
- Paola Merlo, Joint Syntactic Parsing and Semantic Role Labelling, University of Gothenborg, May 2008.

FUNDED RESEARCH PROJECTS

Participation to European projects

CLASSiC

Computational Learning in Adaptive Systems for Spoken Conversation

Period: March 2008 - February 2011.

Web Site: <http://www.classic-project.org/>

Partners: University of Edinburgh (coordinator), Cambridge University, Ecole Supérieure d'Électricité (Metz), France Telecom.

Participation to National projects

MulTra

Multilingual Translation Model Based on Object Oriented

FNS

Period: October 2006 – September 2008

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

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

- Scherrer Yves ATALA young researcher award 2008.

Refereeing

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

Dissemination

- Lonneke van der Plas's dissertation was selected by KennisLink, a media organisation founded by the Dutch Ministry of Education, Culture and Science to be the subject of a web article. <http://www.kennislink.nl/web/show?id=213450>
- Violeta Seretan, Contribution to the book “Les liaisons fructueuses: des rencontres insolites de disciplines et d'institutions – l'aventure du Réseau universitaire international de Genève à l'aube du 21^e siècle.” (<http://www.ruig-gian.org/research/outputs/output.php?ID=417>; edited by The Geneva International Academic Network) with a presentation of a past research project.
- Collaboration to the project EAGL: Engine for question-answering Genomics Literature. FNS Partners: Medical Service of the Geneva University Hospitals, Swiss-Prot, Swiss Institute of Bioinformatics <http://www.natlang.hcuge.ch/Resources/online-tools.html>

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, 12 ECTS, 140 hours, 15 students
- **Informatique I – Programmation Web**, Unit of Computer Science for the Humanities, Bachelor, 12 ECTS, 140 hours, 20 students
- **Empirical Methods in Natural Language Processing : Statistical Machine Translation**, Unit of Computer Science for the Humanities, Master, 12 ECTS, 56 hours, 3 students

Geneva Team Database Laboratory

Prof. Michel Léonard

MATIS

matis.unige.ch

DOMAIN ACTIVITIES

The Information System domain through the technological perspectives but not limited to this only aspect is the major theme of the laboratory. Methods are very important in IS project management: their underlying stakes are underestimated in the research efforts and in the economy because of the lack of maturity of the development of informatics. Evolution is also a major IS aspect : from it, new kinds of IT architecture much more relevant are studied and implemented. Consequently the domain of risk analysis takes a complete dimension taking into account technical aspects, informational aspects and organizational aspects. In fact the IS domain becomes now the core of the Services Sciences which is an emerging and fundamental domain at the level of any University. For instance, traditional statistics offices will be able to capture new opportunities with a lot of deep transformations, and the footprint of the behaviour will be crucial.

TEAM

Director

Michel Léonard
Full professor



Members

Dr. Jolita Ralyte
Dr. Mehdi Snene
Dr. Abdelaziz Khadraoui

Assistants

Nicolas Arni-Bloch
Wanda Opprecht
Jorge Pardellas

PhD students

Hammouya Messaoud
Mabel Triguís



MATIS

MANagement and Technology of Information Systems

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

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] Snene M., Pardellas Jorge, (2008), New Approach for in depth E-Business security, Enterprise Information Systems Journal, VOL.3, pp 22-40:
- [2] Ralyté J., Lamielle, X., Arni-Bloch N., Léonard, M. (2008) Distributed Information Systems Development: A Framework for Understanding and Managing. International Journal of Computer Science & Applications, Special issue New Trends in Information System Modelling, Vol.5 (3b), pp: 1-24.
- [3] Ralyté J., Jeusfeld M. A., Backlund P., Kühn H., Arni-Bloch N.(2008) A Knowledge-based Approach to Manage Information Systems Interoperability. Information Systems, Special issue on Interoperability in Open Information Systems through Data and Service Integration. Vol.33 (7-8) Nov-Dec 2008, pp: 754-784 <http://dx.doi.org/10.1016/j.is.2008.01.008>.

Full refereed papers in Conference Proceedings

- [4] Snene M., Social Information Systems Engineering: from data to knowledge networks, Proceedings of the 3rd Mediterranean Conference of Information Systems, Hammamet, Tunis, 2008.
- [5] Snene M., Pardellas J. Digital Contents and Digital Hack, New challenges for Cyber Defense, Proceedings of CPD-DCo8, United Nations, Geneva, Switzerland, 2008.
- [6] Arni-Bloch N., Ralyté J., (2008) Service-Oriented Information Systems Engineering: A Situation-Driven Approach for Service Integration. Proceedings of 20th International Conference on Advanced Information Systems Engineering (CAiSE'08), 18-20 June 2008, Montpellier, France. Springer LNCS 5074, pp: 140-143.
- [7] Arni-Bloch N., Ralyté J. (2008) MISS: A Metamodel of Information System Service. Proceedings of the 17th International Conference on Information System Development (ISD), August 25-27 2008, Paphos, Cyprus, Springer. In press.
- [8] Ralyté J., Lamielle, X., Arni-Bloch N., Léonard, M. (2008) A Framework for Supporting Management in Distributed Information Systems Development. Proceedings of the 2nd IEEE International Conference on Research Challenges in Information Science. Marrakech, June 3-6, Morocco, ISBN: 978-1-4244-1677-6, pp. 401-412.
- [9] Henderson-Sellers, B., Gonzalez-Perez, C., Ralyté J. (2008) Comparison of Method Chunks and Method Fragments for Situational Method Engineering. Proceedings of the 19th Australian Software Engineering Conference, 26-28 March 2008, ISBN: 978-0-7695-3100-7, pp: 479 – 488.
- [10] Abdelaziz Khadraoui, Wanda Opprecht, Christine Aïdonidis, Michel Léonard, "Laws-based ontology for e-Government services construction. Case study: the specification of services in relationship with the venture creation in Switzerland", conférence PoEM'2008 (IFIP WG 8.1 Working Conference on The Practice of Enterprise Modeling: from Business Strategies to Enterprise Architectures), Stockholm, November 12-13, 2008.
- [11] Diane-Sibylle Asensio, Abdelaziz Khadraoui, Michel Léonard "Information System engineering for an electricity distribution company», soumis à 10th International Conference on Enterprise Information Systems ICEIS2008, Barcelona, Spain, June 12 - 16, 2008.
- [12] Christine Aïdonidis, Abdelaziz Khadraoui, Michel Warynski, «Enjeux de la cartographie des Systèmes d'Information pour le développement de l'administration en ligne : le cas de l'État de Genève», International Business Information Management Conference (9th IBIMA) on January 4, 5, and 6, 2008 in Marrakech, Morocco.
- [13] M. Léonard, A Framework for Service oriented Teaching Programs, 4TH China-Europe International Symposium on Software Industry Oriented Education (CEISIE2008), 10-11 January 2008, Guangzhou, China.

Books and book chapters

- [14] Deneckère, R. Ralyté, J. et Kraïem, N. (2008). Modélisation modulaire de méthode : le méta-modèle COMET. Dans « Ingénierie des méthodes au service des nouvelles tendances de développement des applications informatiques », N. Kraïem & Y. Jamoussi (Eds.), Centre de Publication Universitaire, Tunis, pp :117-149.
- [15] Ralyté, J., Deneckère, R. et Jamoussi, Y. (2008). Construction de méthodes par composition. Dans « Ingénierie des méthodes : des nouvelles tendances de développement des applications informatiques », N. Kraïem & Y. Jamoussi (Eds.), Centre de Publication Universitaire, Tunis, pp : 217-288.
- [16] Sayeb, A., Hassine, L. et Ralyté, J. (2008). Modèle de processus de ré-ingénierie de méthodes. Dans « Ingénierie des méthodes : des nouvelles tendances de développement des applications informatiques », N. Kraïem & Y. Jamoussi (Eds.), Centre de Publication Universitaire, Tunis, pp : 181-216.

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- Michel Léonard, General Chair of CAISE'08 - 20th International Conference on Advanced Information Systems Engineering, Montpellier, France, June 16-20, 2008.
- Jolita Ralyté Tutorials Chair of the 27th International Conference on Conceptual Modeling – ER'08, Barcelona, Spain, 20-23 October 2008.
- Jolita Ralyté Track Chair at the Mediterranean Conference on Information Systems – MCIS-08, 23-26 October 2008, Hammamet, Tunisia. Track «Flexible Information Systems Development».
- 10th Maghrebien Conference on Information Technologies, 28-30 Avril 2008, Oran, Algérie.
- International Business Information Management Association (IBIMA'2008), 9th IBIMA Conference on Information Management in Modern Organization, Marrakech, Morocco 4 - 6 Janvier 2008.

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- CAISE'08 - 20th International Conference on Advanced Information Systems Engineering, Montpellier, France, June 16-20, 2008.
- RCIS 2008 - International Conference on Research Challenges in Informaiton Science, Marrakech. Morocco, June 3-6, 2008.
- REFSQ'08 - 14th International Working Conf. on Requirements Engineering: Foundation for Software Quality, Montpellier, France, June 16-17, 2008.
- EMMSAD'08- 13th International Workshop on Exploring Modeling Methods in Systems Analysis and Design, Montpellier, France, June 16-17, 2008.
- ICEIS'08 - 10th International Conference on Enterprise Information Systems, Barcelona, Spain, 12-16, June 2008.
- ICISOFT 2008 – 3rd International Conference on Software and Data Technologies, Porto, Portugal, 5-8 July 2008.
- BPM'08 – 6th International Conference on Business Process Management, 1-4 September 2008 Milan, Italy.
- PoEM'08 - IFIP WG8.1 Working Conference on The Practice of Enterprise Modeling: from Business Strategies to Enterprise Architectures, November 12-13, 2008, Stockholm, Sweden.
- RIGIM'08 - 2nd International Workshop on Requirements, Intentions and Goals in Conceptual Modeling, Barcelona, Spain, 20 October 2008.
- MCIS'08 - Mediterranean Conference on Information Systems, 23-26 October 2008, Hammamet, Tunisia.
- 4th China–Europe International Symposium on Software Industry oriented Education.
- IWAISE - International Workshop on Advanced Information Systems for Enterprises.

FUNDED RESEARCH PROJECTS

Participation to European projects

EMISS

Executive Master in Information Services Sciences

Period: 2008 -

Partners: Centre Henri Tudor, University of Skövde, University of Amsterdam (Vrije), University of Porto, University of Paris-Sorbonne, University of Catalognia (2), University of Brno, University of Porto

Participation to National projects

Computer Aided Situational Method Engineering

FNS (Swiss National Science Foundation) No 200020-111748/1.

Period: April 2006 – April 2008

Knowledge pattern for distributed information systems design

FNS No 200020-112153.

Period: April 2006 - April 2008

Contrat avec le CTI (Centre des technologies de l'Etat de Genève)

Domaine du e-gouvernement

TECHNOLOGY TRANSFER

Through teaching modules in the MATIS program

OTHERS

Refereeing

- Report of PhD Dissertation presented by Miss G. Grau, Polytechnic University of Catalonia, Barcelona, Spain, July 2008. Title of the dissertation : An i*-based Reengineering Framework for Requirements Engineering Processes.
- Refereeing for International Journals: Journal of Systems and Software, Journal of Service Science and Management, Transactions on Software Engineering, Information Systems and e-Business Management.
- President of PhD dissertation presented by M. Michel DERIAZ, « “GeoVTag: Trusting Virtual Tags”, Faculty SES, University of Geneva, April 14, 2008.
- Report of HDR Dissertation presented by M. François CHAROY, « Coordination explicite d’activités coopératives », University of Nancy 1, June 23, 2008.
- Report of HDR Dissertation presented by Mrs Isabelle Mirbel, « Information system structuration, reuse and flexibility », University of Nice, June 25, 2008.
- Report of PhD Dissertation presented by: Mme Helga DUARTE-AMAYA, ayant pour titre : “Canevas pour la composition de services web avec propriétés transactionnelles”, en vue d’obtenir le titre de Docteur de l’Université Joseph Fourier de Grenoble, discipline : Informatique, soutenue le 13 novembre 2007.
- Report of PhD Dissertation presented by M. Ahmed ZELLOU, « Contribution à la réécriture LAV dans le contexte de WASSIT, un Framework d’intégration de ressources », en vue d’obtenir le titre de Docteur de l’Université Mohammed V – Agdal, Rabat, Maroc, discipline Sciences appliquées, 5 avril 2008.
- Report of PhD Dissertation presented by M. Anis Khedhaouria, ayant pour titre : «Le management de la créativité en entreprise : Effets de l’utilisation de l’intranet sur la créativité des managers », en vue d’obtenir le titre de Docteur de l’Université de Savoie, soutenue le 26 novembre 2007 dans les locaux de l’Institut de Management de l’Université de Savoie.

Invited lectures

- Jolita Ralyté: Methods and Method Engineering for Information Systems Development. (12 h, 3 credits ECTS, Master). Polytechnic University of Catalonia, Barcelona, Spain, April 2008.
- Jolita Ralyté: Assembly-based Method Engineering. (4h, Master). University of Utrecht, The Netherlands, March 2008.

Research seminars

- Jolita Ralyté: Situational Method Engineering for Interoperability. Research seminar at the Polytechnic University of Catalonia, Barcelona, Spain, April 2008.
- Jolita Ralyté: A Knowledge-Based Approach to Manage Information Systems Interoperability. Research seminar at the University of Utrecht, The Netherlands, March 2008.

Institutional projects

- Think tank on Services Sciences: 5 meetings
- INFORMATICA*08, salon du livre, continuous animation for the promotion of IS studies, Geneva, Palexpo April 30 – May 4.

TEACHING

- **Information System Project Management**, Information Systems, 6 ECTS, autumn semester, 80 hours, lectures and seminars, Master, 15 students.
- **Evolution and Interoperability of Information Systems**, Information Systems, 6 ECTS, autumn semester, 80 hours, lectures and seminars, Master, 15 students.
- **Knowledge management**, Information Systems, 6 ECTS, spring semester, 80 hours, lectures and seminars, Master, 15 students.
- **Advanced Information Base**, Information Systems, 6 ECTS, spring semester, 80 hours, lectures and seminars, Master, 15 students.
- **Data bases**, Information Systems, 6 ECTS, spring semester, 80 hours, lectures and seminars, Bachelor, 20 students.
- **Database design**, Information Systems, 6 ECTS, winter semester, 80 hours, lectures and seminars, Bachelor, 20 students.
- **Information system modelling**, Information Systems, 6 ECTS, spring semester, 80 hours, lectures and seminars, Bachelor, 30 students.
- **Informatics and Information system 1**, Information Systems, 3 ECTS, spring semester, 40 hours, lectures and seminars, Master, 10 students.
- **Certificates in Management and Technologies of Information Systems (MATIS) in Continuing Education**, 10 ECTS each.



MIRALab Laboratory

Prof. Nadia Magnenat-Thalmann



MIRALab

www.miralab.unige.ch

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 2008, MIRALab was working on the following projects:

3D ANATOMICAL HUMAN, AIM@SHAPE, CALVIN, CATCH, COME, EPOCH, FOCUS 3D, FNRS, FRANCOPHONIE, INDIGO, INTERMEDIA, INTUITION, LEAPFROG IP, OPENDANCE, SERVIVE and UNDERSTANDING 3D, as well as in International conferences, often organised in Switzerland by MIRALab.



Fig.1: Calvin



Fig 2: Networks

TEAM

Director

Nadia Magnenat-Thalmann
Full professor



Assistants (PhD students)

Lazhari Assassi
Yacine Benmansour
Ugo Bonanni
Caecilia Charbonnier
Alessandro Foni
Mustafa Kasap
Zerrin Kasap
Bart Kevelham
Christiane Luible
Etienne Lyard
Mélanie Montagnol
Vincent Muggeo
Jérôme Schmid
Tristan Whitmarch
Niels Nijdam
Maher Benmoussa

Senior researchers

Parag Chaudhuri (Post Doc)
Mingyu Lim (Post Doc)
Georgios Papagiannakis (Post Doc)
Dimitris Protopsaltou (Post Doc)
Pascal Volino (Post Doc)
Han Seunghyun. (Post Doc)
Marlène Arévalo-Poizat
Nedjma Cadi-Yazli

Administration

Guillaume Eynard
Ghislaine Wharton

PHD THESIS

- Christiane Luible, «Study of the accuracy of fabric properties in virtual simulation», September 2008
- Etienne Lyard, «Motion adaptation based on character shape», September 2008

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] G. Papagiannakis, G. Singh, N. Magnenat-Thalmann . A survey of mobile and wireless technologies for augmented reality systems. *Journal of Computer Animation and Virtual Worlds*, John Wiley and Sons Ltd, March 2008, (to appear), March 2008.
- [2] N. Magnenat-Thalmann, A. Peternier, X. Righetti, M. Lim, G. Papagiannakis, T. Fragopoulos, K. Lambropoulou, P. Barsocchi, D. Thalmann. A virtual 3D mobile guide in the INTERMEDIA project. *The Visual Computer*, Springer, Vol. 24, No. 7-9, pp. 827-836, July 2008.
- [3] U. Bonanni, M. Montagnol, N. Magnenat-Thalmann. Multilayered visuo-haptic hair simulation. *The Visual Computer*, Springer Berlin / Heidelberg, Vol. 24, No. 10, pp. 901-910, October 2008.
- [4] P. Chaudhuri, G. Papagiannakis, N. Magnenat-Thalmann. Self adaptive animation based on user perspective. *The Visual Computer*, Springer, 24, 7-9, pp. 525-533, July 2008.
- [5] E. Lyard, N. Magnenat-Thalmann. Motion Adaptation Based on Character Shape. *Computer Animation and Virtual Worlds*, John Wiley and Sons Ltd, Vol. 19, No. 3-4, pp. 189-198, September 2008.

Full refereed papers in Conference Proceedings

- [6] C. Luible, N. Magnenat-Thalmann. The simulation of cloth using accurate physical parameters. *CGIM 2008*, Innsbruck, Austria, 2008.
- [7] N. Magnenat-Thalmann, C. Charbonnier, J. Schmid. Multimedia Application to the Simulation of Human Musculoskeletal System: A Visual Lower Limb Model from Multimodal Captured Data. *Proceedings of the IEEE International Workshop on Multimedia Signal Processing*, Cairns, Australia, pp. 520-525, October 2008.
- [8] J. Schmid, N. Magnenat-Thalmann. MRI Bone Segmentation using Deformable Models and Shape Priors. *MICCAI '08*, Part I. LNCS, Springer Berlin / Heidelberg, 5241, pp. 119-126, September 2008.
- [9] N. Magnenat-Thalmann, Z. Kasap and M. Benmoussa. Communicating with a virtual human or a skin-based robot head. *8th IEEE International Conference on Automatic Face and Gesture Recognition*, Amsterdam, Netherlands, 2008.
- [10] C. Charbonnier, E. Lyard, N. Magnenat-Thalmann. Analysis of Extreme Hip Motion in Professional Ballet Dancers. *Proceedings of the 10th International Symposium on 3D Analysis of Human Movement*, Amsterdam, Netherlands, October 2008.
- [11] M. Lim, N. Nijdam, N. Magnenat-Thalmann. A general collaborative platform for mobile multi-user applications. *13th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA2008)*, IEEE, CD Proceedings (ISBN: 1-4244-1506-3), pp. 1346-1353, September 2008.

- [12] D. Vogiatzis, C. Spyropoulos, S. Konstantopoulos, V. Karkalitsis, Z. Kasap, C. Matheson and O. Deroo. An Affective Robot Guide to Museums . *Fourth International Workshop on Human-Computer Conversation*, October 2008.

Books and book chapters

- [13] Z. Kasap and N. Magnenat-Thalmann. Intelligent Virtual Humans with Autonomy and Personality : State-of-the-Art. *New Advances in Virtual Humans* (Eds.) Nadia Magnenat-Thalmann, Lakhmi C. Jain, N. Ichalkaranje, *Studies in Computational Intelligence*, Springer, pp. 43-84, 2008.
- [14] N. Magnenat-Thalmann, U. Bonanni. Haptic sensing of virtual textiles. *Human Haptic Perception - Basics and Applications*, Springer Berlin / Heidelberg, ISBN: 978-3-7643-7611-6, 2008.
- [15] N. Magnenat-Thalmann, E. Lyard, M. Kasap, P. Volino. *Adaptive Body, Motion and Cloth*. *Motion in Games*, Springer-Verlag, pp. 63-71, 2008.

Research and technical reports

Several technical reports for the following projects: 3D ANATOMICAL HUMAN, AIM@SHAPE, CALVIN, CATCH, CO-ME, EPOCH, FOCUS 3D, FNRS, FRANCOFONIE, INDIGO, INTERMEDIA, INTUITION, LEAPFROG IP, OPENDANCE, SERVIVE and UNDERSTANDING 3D.

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- 2008: President of the Jury of Wiener Wissenschafts-, Forschungs- und Technologiefonds (WWTF), Vienna, October 2008
- 2008: Member of the recruiting committee for School of Computer Science, Swiss Federal Institute of Technology, Lausanne.
- 2007- 2008: Member of the National Consultation Group for European Union, under the Seventh Program Framework, NMP, State Secretariat for Education and Research (SER)
- 2007-2009: Independent expert for evaluation and research proposals, European Commission, Information Society and Media, Directorate General, Brussels, Belgium.
- 2007-2009: Invited in the Group of User Centric Media, European Commission, Information Society and Media.
- 2007-2008 Expert in the working group networked media of the future, European Commission, Brussels, Belgium.
- 2004-2009: Expert to Assess Grants Proposal for Research Grants Council, Hong Kong, China
- 2002- Present: Member of the Strategic Advisory Board Committee, City University, Hong Kong, China.
- 2003-2009 Expert for National grants, University of Singapore.
- 2000- Present: Member of the “3ème cycle romand d’informatique”, Conférence universitaire de la Suisse occidentale (CUSO), Switzerland.

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- Dec. 2008: Program Chair of the Workshop on modelisation of the human body, held in Zermatt, December 1-4, 2008
- October 2008: Workshop and Program Chair of the INTERMEDIA Workshop, held in Geneva, October 14, 2008
- Sept. 2008: Program Co-chair, Computer Animation and Social Agents, CASA'2008, Korea.
- June 2008: Conference Co-chair, Computer Graphics International 2008, CGI 2008, Istanbul, Turkey.

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- Computer Animation and Social Agents (CASA) 2008, Seoul, Korea, September 2008.
- ADVCOMP 2008, The Second International Conference on Advanced Engineering Computing and Applications in Sciences, Valencia, Spain, October 2008.
- 3IA2007, Athens, Greece, May 2008.
- AAMAS08, International Conference on Autonomous Agents and Multi-Agent Systems, Estoril, Portugal, May 2008.
- GRAPP 2008, Third International Conference on Computer Graphics Theory and Applications, Madeira Island, Portugal, January 2008.

INVITED TALKS

- Invited Speech at European Commission ICT event in Lyon, "Future Media and 3D Internet Task Force – Research direction", Lyon November, 26, 2008
- Keynote speech on Multimedia Application of the Simulation of
- Human Musculoskeletal System at the International Workshop on Multimedia Processing, Cairns Australia, October 8, 2008
- Keynote speaker on Communicating with a virtual human or a skin-based robot head at the Conference on Automatic Face and Gesture recognition'2008, Amsterdam, September 18, 2008
- Keynote speaker at the Conference DIMEA'2008, "Interacting with Virtual and Augmented Worlds", September 10, 2008
- Invited talk at the University of Corfu, "Physics-based simulation of clothes and Virtual Try On", Tuesday August 26, 2008
- Invited talk in the framework of the EU project Leapfrog on Virtual Worlds, Hugo Boss, Metzingen, Germany, July 3rd, 2008
- Invited speaker at the University of Zuerich under the cycle of conferences «Klon statt Person? Individualität im 21. Jahrhundert», April 17, 2008
- Invited speaker at the European Community, Workshop on Future Media Internet, January 22, 2008.

FUNDED RESEARCH PROJECTS

Participation to European projects

SERVIVE

«SERVice oriented Intelligent Value adding nEtnetwork 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, Unicum – Germany)

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 Fédérale de Lausanne, Virtual Reality Laboratory (VRLab) – Switzerland, INRIA – France, Max-Planck-Institut für Informatik – Germany, MIRALab, University of Geneva – Switzerland, Stiftelsen for industriell og teknisk forskning ved Norges Tekniske Høgskole – Norway, Utrecht University – Netherlands)

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)

FRANCOPHONIE

«Accès au patrimoine vestimentaire contemporain et traditionnel francophone»

Period: December 2006 - December 2008

Type: Fonds Francophone des Inforoutes

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-Westfälische Technische Hochschule Aachen - Germany, Università degli Studi di Genova - Italy, Fraunhofer Gesellschaft zur Förderung 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)

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)

OPENDANCE

«Open-editing cooperative platform for web Dance»

Period : October 2005 - September 2008

Website : www.aegean.gr/culturaltec/CILab

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 (Euralex – 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 - Università 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., Università 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 für Automatisierung, Software und Systeme GmbH, KUKA-InnoTec GmbH, Groupe Flory SA., Fratelli Piacenza Spa, Browzwear International Ltd., CITEVE - Centro Tecnológico das Industrias Textil e do Vestuário de Portugal, Ten Cate Advanced Textiles bv, COLOR WEB GmbH by Peppermint, ROBOT, European Commission

INTUITION

«Network of Excellence on Virtual Reality and Virtual Environments Applications for Future Workspaces»

Period: September 2004 - August 2008

Website: www.intuition-eunetwork.net/

Partners: 57 partners (Advanced Realtime Tracking GmbH - Germany, Akademia Ekonomiczna w Poznaniu - Poland, ALENIA Aeronautica - Italy, ALENIA Spazio S.p.A. - Italy, Association pour la Recherche et le Développement des Méthodes et Processus Industriels - France, Barco NV - Belgium, C.R.F. Società Consortile per Azioni - Italy, Centre for Research and Technology Hellas / Hellenic Institute of Transport - Greece, Centre Lavallois de Ressources Technologiques - France, Centre National de la Recherche Scientifique - France, Commissariat à l'Énergie Atomique - France, CS Systèmes d'Information - France, DASSAULT Aviation - France, EADS Space Transportation GmbH, Ecole Nationale d'Ingénieurs de Brest - France, Ecole Polytechnique Fédérale de Lausanne - Switzerland, Electricité de France - France, Foundation of the Hellenic World - Greece, France Telecom R & D - France, Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung - Germany, HAPTION S.A. - France, Helsinki University of Technology - Finland, ICIDO Gesellschaft für innovative Informationssysteme mbH - Germany, Institut National de Recherche en Informatique et Automatique - France, Institut National de Recherche et de Sécurité - France, Institute of Communication and Computer Systems - Greece, Institute of Computer Science, Foundation for Research and Technology – Hellas - Greece, Italdesign – Giugiaro Spa - Italy, LABEIN - Spain, Max Planck Institute for Biological Cybernetics - Germany, MERCURY COMPUTER SYSTEMS SARL, ONDIM - France, OVIDIUS University of Constanta - Romania, Robotics Institute – University of Valencia - Spain, S C N R Tech, S.R.L Brasov - Romania, Scuola Superiore di Studi Universitari e di Perfezionamento S.ANNA - Italy, Société Nationale des Chemins de Fer Français - France, Space Applications Services NV - Belgium, Swiss Federal Institute of Technology, Zurich - Switzerland, Technische Universität München - Germany, TECNATOM,S.A. - Spain, TILS - Italy, TNO - The Netherlands, Universidad de Málaga - Spain, Universidad Politécnica de Madrid - Spain, University of Basel - Switzerland, University of Cyprus - Cyprus, University of Nottingham - U.K., University of Patras - Greece, University of Salford - U.K., University of Sussex - U.K., University of Twente - The Netherlands, University of Warwick - U.K., University of West Bohemia - Czech republic, University Transilvania of Brasov - Romania, Volvo Technology Corporation - Sweden, VTT Technical Research Centre of Finland - Finland)

EPOCH

«European research network on excellence in Processing Open Cultural Heritage»

Period : March 2004 - March 2008

Website : www.epoch-net.org

Partners: 100 (non exhaustive list: University of Brighton – Great Britain, Ename Centre for Public Archaeology and Heritage – Belgium, Katholieke Universiteit Leuven – Belgium, MIRALab, University of Geneva – Switzerland, PIN srl, Servizi didattici e scientifici per l'Università di Firenze – Italy, Technische Universitaet Graz – Austria, Technische Universitaet Wien – Austria)

AIM@SHAPE

«Advanced and Innovative Models And Tools for the development of Semantic-based systems for Handling, Acquiring, and Processing knowledge Embedded in multidimensional digital objects.»

Period: January 2004 - February 2008

Website: www.aim-at-shape.net/

Partners: 12 partners (C.N.R. – Istituto di Matematica Applicata e Tecnologie Informatiche – Dept. Of Genova - Italy, Ecole Polytechnique Fédérale de Lausanne - Switzerland, Fraunhofer Institut für Graphische Datenverarbeitung - Germany, Informatics and Telematics Institut – Center for Research and Technology Hellas - Greece, INRIA - France, Institut National Polytechnique de Grenoble - France, Max-Planck-Institut für Informatik - Germany, MIRALab, University of Geneva - Switzerland, Stiftelsen for industriell og teknisk forskning ved Norges Tekniske Høgskole - Norway, Technion – Israel Institute of Technology - Israel, Utrecht University - Netherlands, Weizmann Institute of Science - Israel)

OPENDANCE

«Open-editing cooperative platform for web Dance»

Period : October 2005 - September 2008

Website : www.aegean.gr/culturaltec/CILab



Fig 3: Virtual try on

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)

CATCH

«CommunicAtion Technologies for Cultural Heritage (e-learning)»

Period : January 2006 - July 2008

Type : Swiss Virtual Campus

Website : www.swissvirtualcampus.ch

Partners: 3 partners (MIRALab, University of Geneva - Switzerland, Seminar für Klassische Philologie, University of Basel - Switzerland, TEC-Lab, Università della Svizzera Italiana, Lugano - Switzerland)

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 Fédérale de Lausanne, Computer Vision Laboratory (CVLab) – Switzerland, Ecole Polytechnique Fédérale de Lausanne, Virtual Reality Laboratory (VRLab) – Switzerland, ETHZ Computer Vision Laboratory – Switzerland, MIRALab, University of Geneva – Switzerland)

Calvin

«A day in the Life of Jean Calvin»

Period : June 2008 - October 2009

Partners: International Museum of the Reformation, Geneva, Switzerland

FNRS 2007

«Swiss National Research Foundation Project: Haptic Simulation of Hair»

Period : October 2006 - September 2008

Partner: MIRALab, University of Geneva

Understanding 3D

«Understanding 3D (e-learning)»

Period : January 2006 – July 2008

Type : Swiss Research

Website : www.swissvirtualcampus.ch

Partners: 3 partners (MIRALab, University of Geneva - Switzerland (coordinator), Computer Graphics Laboratory, ETH Zentrum, Zurich - Switzerland, Departement Informatik, Universität Basel - Switzerland)

OTHERS

Honours and scientific awards

- Designated as Visiting Professor at Bournemouth University at the Media School as a recognition of international standing.

Courses and tutorials

- SIGGRAPH-ASIA 2008, tutorial co-organized and given in «Real-Time Individualized Virtual Humans», Singapore, December 11, 2008
- CGI'2008, tutorial organized and given on RealTime Virtual Humans, Istanbul, Turkey, 9-11 June 2008

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, Regional Editor of the Journal "Intelligent Decision Technologies", IOS Press.
- Since 2007, Associate Editor-in-chief of the "International Journal of Virtual Reality", IPI Press, USA.

- Since January 1, 2000, Editor-in-chief of the Journal "The Visual Computer" published by Springer Verlag, Germany.
- Since January 2001, Member of the Advisor Board, International Journal of Image and Graphics, World Scientific.

Participation in TV and radio programs

- The creator of virtual worlds, 20 June 2008, @NTU (Singapore)
- Fuchteln nach Formeln, 10 May 2008, Bild der Wissenschaft (Germany)
- MIRALab pilote l'humain virtuel animé, 01 May 2008, Campus (Switzerland)
- Die Realität erweitern, 10 January 2008, Swiss Engineering (Switzerland)

TEACHING

- **Animation et multimédia**, Information Systems, Bachelor, 6 ECTS, Winter semester
- **Outils Informatiques**, Information Systems, Bachelor, 6 ECTS, Winter or summer semester
- **Programmation de Base**, Information Systems, Bachelor, 6 ECTS, Winter semester
- **Synthèse d'Image & Réalité Virtuelle**, Information Systems, Bachelor, 6 ECTS, Summer semester
- **Understanding & Simulating Body and Facial Emotions**, Information Systems, Master, 6 ECTS, Summer semester
- **Virtual & Augmented Worlds**, Information Systems, Master, 6 ECTS, Winter semester



Fig. 4: Medical



Fig. 5: Facial expression robot



Software Modelling and Verification

Prof. Didier Buchs

SMV

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)

TEAM

Director

Didier Buchs
Associate professor



Senior researcher

Dr. Levi Lúcio (Post Doc)

Assistants (PhD students)

Luis Pedro

Ang Chen

Matteo Risoldi

Steve Hostettler

Alexis Marechal

Andrey Berlizev



Ang Chen, Luis Pedro, Steve Hostettler, Levi Lúcio, Didier Buchs, Matteo Risoldi, Alexis Marechal, Andrey Berlizev

PHD THESIS

- Levi Lucio, SATEL «A Test Intention Language for Object-Oriented Specifications of Reactive Systems», May 2008.

LIST OF PUBLICATIONS

Full refereed papers in Conference Proceedings

- [1] M. Risoldi and L. Masetti and D. Buchs and B. Barroca and V. Amaral, A model-based methodology for control systems GUI design prototyping, Proceedings of the PCA-PAC 2008 conference, <http://www.pcapacworkshop.org>, 2008.
- [2] Luis Pedro, Vasco Amaral, and Didier Buchs. Foundations for a domain specific modeling language prototyping environment: A compositional approach. In Proc. 8th OOPSLA ACM-SIGPLAN Workshop on Domain-Specific Modeling (DSM). University of Jyväskylä, October 2008.
- [3] B. Barroca, V. Amaral, M. Risoldi, M. Caprini, A. Moreira and J. Araújo, Towards the Application of Model Based Design Methodology for Reliable Control Systems on HEP Experiments, 11th IEEE Nuclear Science Symposium, 2008.
- [4] Sadaf Mustafiz, Jörg Kienzle, Andrey Berlizev. Addressing degraded service outcomes and exceptional modes of operation in behavioural models, SERENE '08: Proceedings of the 2008 RISE/EFTS Joint International Workshop on Software Engineering for Resilient Systems, ACM, November 2008
- [5] Andrey Berlizev, Nicolas Guelfi: Correct analysis for embedded system modeling: an outcome of east-west scientific cooperation, SEESE '08: Proceedings of the 2008 international workshop on Software Engineering in east and south europe, ACM, May 2008
- [6] A. Berlizev, N. Guelfi, Fault-tolerance Requirements Analysis using Deviations in the CORRECT development process, Book on Methods Models and Tools for Fault Tolerance, Springer, 2008

Books and book chapters

- [7] Didier Buchs, Luís Pedro, Levi Lúcio. “Formal Test Generation from UML Models”, In “Dependable Systems: Software, Computing, Networks – Research Results of the DICS Program”. LNCS 4026, pp.145-171.

Research and technical reports

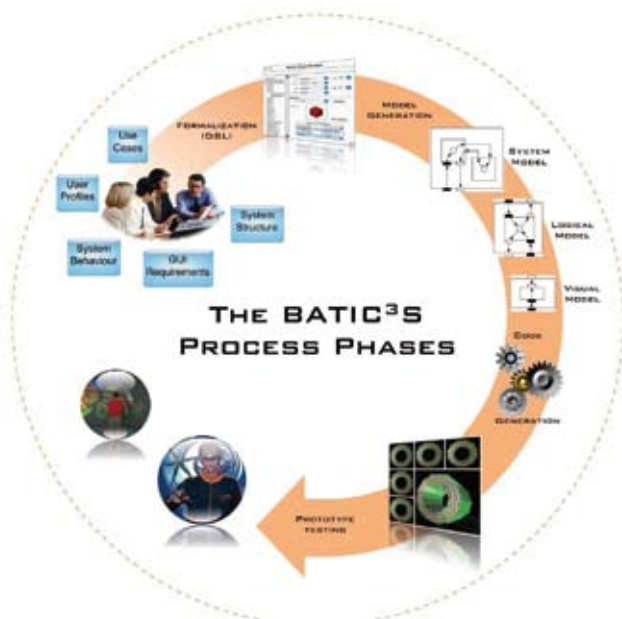
- [8] F. Cretton, A. LeCalvé, Generic ontology based User Model: GenOUM, Technical report 203, Centre Universitaire d’Informatique, Université de Genève, Ed. D.Buchs, November 2008.
- [9] G. Falquet, L. Mocozet, K. Bazargan : Semantic Enrichment of Scene Graphs for Task Based Adaptation in 3D User Interfaces: A Proposal, Technical report 202, Centre Universitaire d’Informatique, Université de Genève, Ed. D.Buchs, November 2008.
- [10] Steve Hostettler, Java decisions diagrams library. Technical report 201, Centre Universitaire d’Informatique, Université de Genève, Ed. D.Buchs, June 2008.
- [11] Didier Buchs, Steve Hostettler, Σ -Decisions Diagrams. Technical report 204, Centre Universitaire d’Informatique, Université de Genève, Ed. D.Buchs, December 2008. Will be published at TERMGRAPH09, ETAPS09
- [12] Levi Lúcio, Steve Hostettler, Multi-Set Decisions Diagrams. Technical report 205, Centre Universitaire d’Informatique, Université de Genève, Ed. D.Buchs, December 2008.
- [13] Didier Buchs and Steve Hostettler. Toward efficient state space generation of algebraic Petri nets. Technical report 206, Centre Universitaire d’Informatique, Université de Genève, Ed. D.Buchs, December 2008.

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- Rapporteur PhD jury Slavisa Markovic, Model Refactoring using Transformations, EPFL, february 2008.
- Rapporteur PhD jury Christophe Pajault, Model Checking parallèle et réparti de réseaux de Petri colorés de haut-niveau. Application à la vérification automatique de Model Checking parallèle et réparti de réseaux de Petri colorés de haut-niveau: Application à la vérification automatique de programmes Ada concurrents, Paris 6, June 2008.
- Rapporteur PhD jury Fabrice Mourlin, Thèse d’habilitation, Paris XIII, November 2008.
- Levi Lúcio, Rapporteur Master Jury, Paving the way from Requirements to Architecture - From AORA to an improved AspectualACME”, João Marques, UNL (Universidade Nova de Lisboa), 2008.

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- Testing Business Processes, Battelle - Geneva, December 2008



MEMBER OF CONFERENCE PROGRAM COMMITTEES

- Programming Committee of the Workshop on Petri Net Tools and Applications, Marseille, march 2008 (PN-TAP'08)
- Program committee of International Conference on Application and theory of Petri Nets and other models of Concurrency, Xian, China, june 2008
- Program Committee/Steering Committee, Conf. on Rapid System Prototyping, Monterey, USA, June 2008.
- Program Committee of PNDIS'08 International Workshop on Petri Nets and Distributed Systems, Xian june 2008.
- Program Committee of Serene'08, Newcastle 08.
- Member of the editorial board TopNoc LNCS series Springer, 2006-2007-2008-2009
- Editorial committee 'réseaux de Petri et algorithmes de TSI' 2008

INVITED TALKS

- Didier Buchs, Systémation des tests: de l'utopie à la réalité, Software & Systems Quality Conferences 2008, 20th May 2008, Hôtel des Bergues, Genève, Suisse
- Didier Buchs, Foundations for a DSML Prototyping Environment: A compositional approach Verity Workshop, Newcastle, England, November 2008
- Levi Lúcio, SATEL – A Test Intention Language for Object Oriented Specifications of Reactive Systems, UNL (Universidade Nova de Lisboa), Portugal, October 2008

FUNDED RESEARCH PROJECTS

Participation to European projects

Interreg TestIndus

Period: May 2008 - December 2009

Partners: Univ. Besançon , UniGE, LEIRIOS, CTI, CLIO

CORA

(sub task of VERITY project)

Partners: University of Luxembourg

Participation to National projects

ISIS – RA

Integrated System Implementation and Specification for Reliable distributed Applications, FNRS.

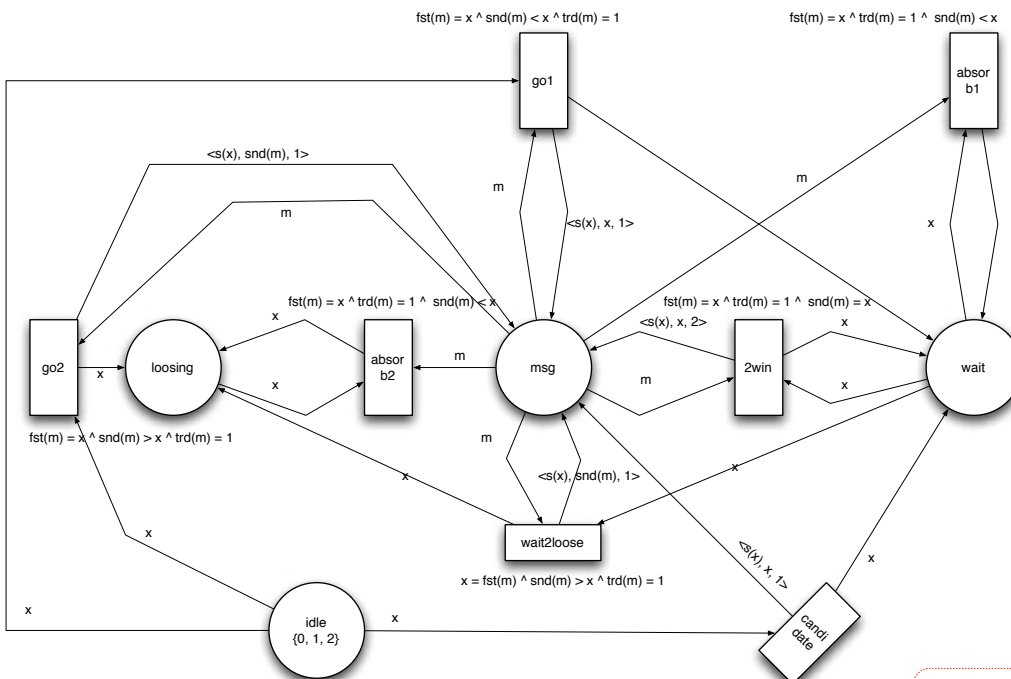
Period: November 2006 – October 2008

Comedia

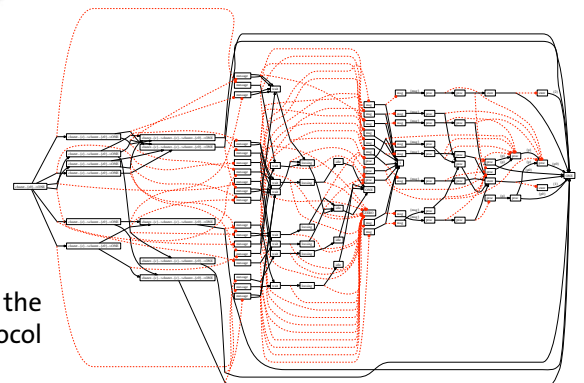
Period: July 2007 – December 2009

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, 15 students
- **Semantics of Programming Languages**, Computer Science, Bachelor, 4 ECTS, 56 hours, 15 students
- **Modeling and Verification**, Computer Science, Bachelor, 4 ECTS, 56 hours, 12 students
- **Advanced Formal Tools (Optional)**, Computer Science, Master, 4 ECTS, 56 hours, 5 students
- **Concurrency and Distribution, (Optional)**, Computer Science, Master, 4 ECTS, 56 hours, 5 students



The model of the leader election protocol



The state space of the leader election protocol

The background of the slide is a photograph of a university building with a large green lawn in the foreground. The building has a modern, multi-story design with a grey facade and several windows. The lawn is lush green and occupies the lower half of the image. A large tree with green leaves is visible in the upper right corner, partially obscuring the sky. A dark bag is lying on the grass in the lower left foreground.

Scientific and Parallel Computing

Prof. Bastien Chopard

SPC

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 these questions. Parallel programs and algorithms are developed to implement the simulation on large PC clusters to discover, explain or reproduce new phenomena.

Another domain of activity is bioinformatics, in collaboration with Swiss Institute of Bioinformatics. New classification methods and algorithm techniques are developed to analyse the coding in protein sequences and to build large phylogenetic trees.

TEAM

Director

Bastien Chopard
Associate professor



Members

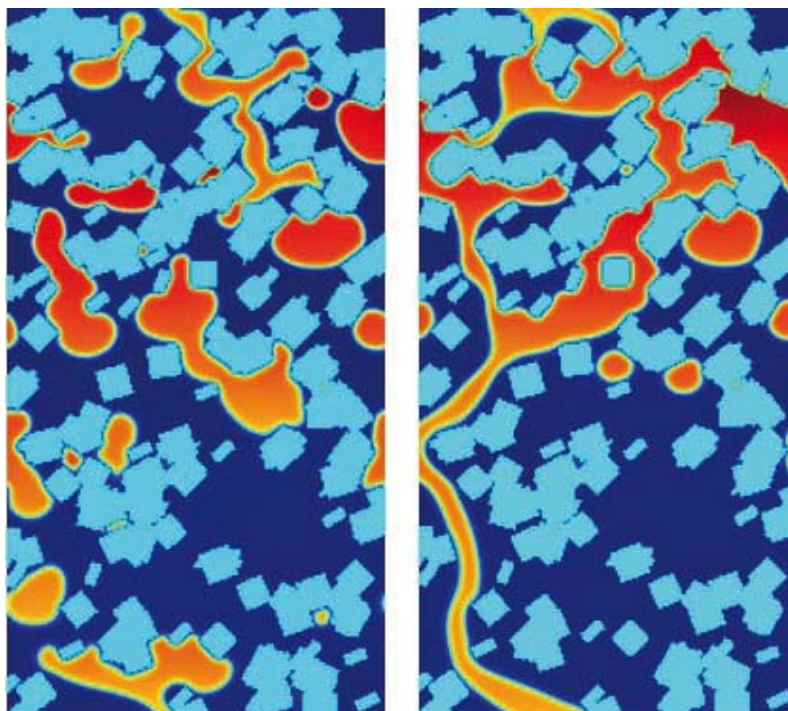
Jean-Luc Falcone
Rafik Ouared

Assistants

Olivier Marcou
Andrea Parmigiani
Bernd Stahl
Daniel Lagrava
Christophe Charpilloz

PhD students

Kae Tsunematsu
Xin Zhou



Application en géophysique: simulation d'un gaz chaud traversant un milieu poreux dans le cadre d'une modélisation du réchauffement des chambres magmatiques. Simulation de A Parmigiani en collaboration avec C. Huber (Berkley) et O. Bachmann (University of Washington).

PHD THESIS

- Jean-Luc Falcone, «Understanding Signal Sequence with machine learning», February 2008

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] A. Hoekstra, E. Lorenz, J.-L. Falcone and B. Chopard, Towards a Complex automata formalism for multiscale modeling, *Int. J. Multiscale Multiscale Computational Engineering*, Vol 5(6), p 491-502, 2008.
- [2] David Evans, PV Lawford, J Gunn, D Walker, DR Hose, RH Smallwood, B Chopard, M Krafczyk, J Bernsdorf, A Hoekstra. The Application of Multi-Scale Modelling to the Process of Development and Prevention of Stenosis in a Stented Coronary Artery.} *Phil. Trans. Roy. Soc.*, in press 2008.
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- [4] D. Alemani, J. Buffle, Z Zhang, J. Galceran and Bastien Chopard, Metal Flux and dynamic speciation at biointerface Part IV, *Environ. Sci. Technol.* 2008, 42, 2028-2033.
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- [9] C. Huber, A Parmigiani, B. Chopard, M. Manga and O. Bachmann, Lattice Boltzmann model for melting with natural convection, *Int. J. of Heat and Fluid Flow*, pp. 1469--1480, 2008. DOI information: 10.1016/j.ijheatfluidflow.2008.05.002
- [10] A. Parmigiani, B. Chopard, J. Latt, C. Huber, O. Bachmann, Investigating high Prandtl number fluid flows with a Passive Scalar Approach Thermal Lattice Boltzmann Model, *European Physical Journal*, 2008

Full refereed papers in Conference Proceedings

- [11] Alfonso Caiazzo, Jean Luc Falcone, Bastien Chopard and Alfons G. Hoekstra, Scale-Splitting Error in Complex Automata Models for Reaction-Diffusion Systems. M. Bubak et al. (Eds.): ICCS 2008, Part II, LNCS 5102, pp. 291--300, 2008. Springer-Verlag Berlin Heidelberg 2008
- [12] Jan Hegewald, Manfred Krafczyk, Jonas Tölke, Alfons Hoekstra and Bastien Chopard, An agent-based coupling platform for complex automata, ICCS 2008, Krakow. Lecture Notes in Computer Science Volume 5102 doi:10.1007/978-3-540-69387-1 pp. 227-233, Springer-Verlag Berlin Heidelberg 2008.
- [13] B. Chopard, J.-L. Falcone, R. Razakanirina, A. Hoekstra and A. Caiazzo, On the collision-propagation and gather-update formulation of a cellular automata rule. H. Umeo et al. (Eds) ACRI 2008, LNCS 5191, p. 144-151, Springer-Verlag Berlin Heidelberg 2008
- [14] Kae Tsunematsu, Jean-Luc Falcone, Costanza Bonadonna and Bastien Chopard, Applying a Cellular Automata Method for the Study of Transport and Deposition of Volcanic Particles. H. Umeo et al. (Eds) ACRI 2008, LNCS 5191, p. 393-400, Springer-Verlag Berlin Heidelberg 2008
- [15] Hoekstra, A.G., Falcone, J.-L., Caiazzo, A., Chopard, B.: Multi-scale modeling with cellular automata: The complex automata approach. H. Umeo et al. (Eds): ACRI 2008, LNCS 5191, pp. 192-199, Springer-Verlag Berlin Heidelberg 2008
- [16] Alfonso Caiazzo, Jean-Luc Falcone, Bastien Chopard, Alfons Hoekstra. Error Investigations in Complex Automata Models for Reaction-Diffusion Systems. H. Umeo et al. (Eds): ACRI 2008, LNCS 5191, pp. 260-267, 2008.
- [17] Eddy Caron, Bastien Chopard, Philippe Combes and Frederic Desprez, Relaxing synchronization in a parallel systemC kernel, ISPA 2008, Sydney, 2008.

Books and book chapters

- [18] B. Chopard, Springer Encyc. of Complex systems, 2008

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- Bastien Chopard, PhD committee for Vincent Keller EPFL, Oct 7, 2008
- Bastien Chopard, PhD committee for Andreas Quant, SIB, Dec 17, 2008

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- DSFD 2008, August 2008, Brazil. Co-organization

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- DSFD 2008 (August, Brazil)
- ACRI 2008 (September, Japan)

INVITED TALKS

- Rome, March 3-8, 2008 : Advance course on lattice Boltzmann techniques
- Amsterdam, June 2008: ICCMES 2008

FUNDED RESEARCH PROJECTS

Participation to European projects

@neurIST project (IP)

Integrated biomedical informatics for the management of cerebral aneurysms

Period: January 2006 - December 2009

28 partners

Web Site: <http://www.aneurist.org>

COAST project (STREP)

Complex Automata: a new framework for the simulation of complex, multiscale systems

Period: Sept 2006 - Aug 2009

5 partners

Web Site: <http://www.complex-automata.org>

Member of the **COST P19 project**

Participation to National projects

Cellular Automata dynamics on irregular topologies

Application to simple economical model

Period: June 2008 - May 2010

Numerical simulations of volcanic phenomena by Lattice-Boltzmann methods

Period: June 2007 - May 2010

Control of irrigation canals : a Lattice Boltzmann Approach

Period: November 2007 - April 2009

OTHERS

Journal Editorial board

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

Divers

- Groupe Leader à l'Inst. Suisse de Bioinformatique (SIB)
- Président CIFS, membre COINF
- Representant UNIGE de SwiNG (Swiss National Grid Association)
- Responsable cours option Dept. Informatique

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 parallèles**, Computer Science, Master, 4 ECTS, 56 hours, 20 students
- **Methodes numériques et simulations en physique**, Computer Science, 4 ECTS, 56 hours, 10 students

The background of the slide is a photograph of a university building with a large green lawn in the foreground. The building is a multi-story concrete structure with several windows. The lawn is lush green and occupies the lower half of the image. The sky is bright and clear.

Theoretical Computer Science

Prof. José Rolim

TCS

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)

Post-docs

Dr. Taras Holotyak
Dr. Florian Huc

Assistants

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



Example of a clustered sensor network

PHD THESIS

- Eduardo Solana, «Collaborative Domains in Internet Environments», July 2007

LIST OF PUBLICATIONS

Refereed papers in international journals

- [1] Pierre Leone, Sotiris E. Nikolettseas, José D. P. Rolim: Randomized Energy Balance Algorithms in Sensor Networks. *Encyclopedia of Algorithms* 2008
- [2] Sotiris E. Nikolettseas, José D. P. Rolim: Preface. *Theor. Comput. Sci.* 402(1):1 (2008)
- [3] Carme Álvarez, Josep Díaz, Jordi Petit, José D. P. Rolim, Maria J. Serna: High level communication functionalities for wireless sensor networks. *Theor. Comput. Sci.* 406(3): 240-247 (2008)

Full refereed papers in Conference Proceedings

- [4] Luminita Moraru, Pierre Leone, Sotiris E. Nikolettseas, José D. P. Rolim: Geographic Routing with Early Obstacles Detection and Avoidance in Dense Wireless Sensor Networks. *ADHOC-NOW 2008*: 148-161
- [5] Michael N. Kalochristianakis, Vasileios Gkamas, Georgios Mylonas, Sotiris E. Nikolettseas, José D. P. Rolim, Emmanouel A. Varvarigos: The Design of an Open and Integrated Sensor Network Management Platform. *APNOMS 2008*: 495-498
- [6] Andrei Marculescu, Sotiris E. Nikolettseas, Olivier Powell, José D. P. Rolim: Efficient Tracking of Moving Targets by Passively Handling Traces in Sensor Networks. *GLOBECOM 2008*: 271-276
- [7] Pierre Leone, Elad M. Schiller: Interacting urn processes: for clustering of large-scale networks of tiny artifacts, *SAC 2008*: 2046-2051

Books and book chapters

- [8] Pierre Leone, Sotiris E. Nikolettseas, José D. P. Rolim: Randomized Energy Balance Algorithms in Sensor Networks. *Encyclopedia of Algorithms* 2008
- [9] Ashish Goel, Klaus Jansen, José D. P. Rolim, Ronitt Rubinfeld: Approximation, Randomization and Combinatorial Optimization. *Algorithms and Techniques*, 11th International Workshop, APPROX 2008, and 12th International Workshop, RANDOM 2008, Boston, MA, USA, August 25-27, 2008. *Proceedings Springer* 2008

Research and technical reports

- [10] Andrei Marculescu, Sotiris E. Nikolettseas, Olivier Powell, José D. P. Rolim: Lightweight Target Tracking Using Passive Traces in Sensor Networks *CoRR abs/0803.2219*: (2008)

INTERNATIONAL AND NATIONAL ADVISORY COMMITTEES

- DCOSS 08 IEEE International Conference on Distributed Computing in Sensor Systems, June 11 - 14, 2008 Santorini Island, Greece – chair steering committee: Jose Rolim
- APPROX 2008 – 11th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems – MIT, August 2008 - chair steering committee: Jose Rolim

- RANDOM 2008 - 12th International Workshop on Randomization and Computation –MIT – August 2008 - chair steering committee: Jose Rolim
- WEA 2008 – 7th International Workshop on Experimental Algorithms –May 30-June 1, 2008
- Provincetown, Cape Cod, Massachusetts, USA - chair steering committee: Jose Rolim
- ALGOSENSORS 2008 - International Workshop on Algorithmic Aspects of Wireless Sensor Networks -July 6 - 13, 2008 Reykjavik - Iceland.- member steering committee: Jose Rolim
- IPDPS 08 - 22nd IEEE International Parallel & Distributed Processing Symposium. 14-18 April 2008, Miami, Florida, USA member steering committee: Jose Rolim
- IFIP - The Swiss IFIP Committee (SIC) - TC1 Foundations of Computer Science – delegate: Jose Rolim
- SARIT - Swiss Association for Research in Information Technology – member of the board as the University of Geneva representative – Jose Rolim

CONFERENCE ORGANIZATION AS CHAIR OR CO-CHAIR

- DCOSS 08 IEEE International Conference on Distributed Computing in Sensor Systems, June 11 - 14, 2008 Santorini Island, Greece – chair steering committee: Jose Rolim
- APPROX 2008 – 11th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems – MIT, August 2008 - chair steering committee: Jose Rolim
- RANDOM 2008 - 12th International Workshop on Randomization and Computation –MIT – August 2008 - chair steering committee: Jose Rolim
- WEA 2008 – 7th International Workshop on Experimental Algorithms –May 30-June 1, 2008
- Provincetown, Cape Cod, Massachusetts, USA - chair steering committee: Jose Rolim

MEMBER OF CONFERENCE PROGRAM COMMITTEES

- WEA 2008 – 7th International Workshop on Experimental Algorithms –May 30-June 1, 2008, Provincetown, Cape Cod, Massachusetts, USA - chair steering committee: Jose Rolim
- ANR Domaines émergents – INRIA – member of program committee – April 2008 – Jose Rolim
- MSWIM 08- The 12-th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems October 26-30, 2009 Tenerife, Canary Islands, Spain – Jose Rolim
- SECUREWARE 2008 The second International Conference on Emerging Security Information, Systems and Technologies, August 25-31, 2008 Cap Esterel, France – Luminita Moraru
- SENSORCOMM 2008 The second Conference on Sensor Technologies and Applications, August 25-31, 2008 Cap Esterel, France – Luminita Moraru

INVITED TALKS

- Early Obstacle Detection in Wireless Sensor Networks Routing in Aeolus Workshop, 8-10 September 2008 – Luminita Moraru

FUNDED RESEARCH PROJECTS

Participation to European projects

AEOLUS

Algorithmic Principles for Building Efficient Overlay Computers

UE6 – 015964

Period: September 2005 – August 2009

FRONTS

Foundations of Adaptive Networked Societies of Tiny Artefacts

UE7 – 215270

Period: February 2008 – January 2011

WISEBED

Wireless Sensor Network Testbeds

UE7 – 224460

Period: June 2008 – May 2011

SER – COST293 – Evolving Graphs for Communication Network Design

no Co6.001

Period: October 2006 – September 2008

Participation to National projects

Power Aware Computing

FNRS 200020-116084

Period: May 2007 – April 2009

OTHERS

Refereeing

- for several journals in 2008 like JPDC (Journal of Parallel and Distributed Computing), TCS (Theoretical Computer Science), Information and Computation, Sensor Journal, Discrete Applied Mathematics, Encyclopedia of Algorithms, Journal of Systems and Software, Algorithms, Transactions on Computers, IEEE Transactions on Parallel and Distributed Systems, Information Sciences, among many others
- Algorithms (ISSN 1999-4893; CODEN: ALGOCH), Editorial Board of the journal of computer science, theory, methods and interdisciplinary applications, data and information systems, software engineering, artificial intelligence, automation and control systems. – 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 à 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: Provides a loan service to the whole CUI community (students, faculty, researchers). It also handles the library collections.

- **Dorothee Hauser** is head librarian;
- **Amélia Bossard** is librarian.



Nicolas Mayencourt, Marie-France Culebras, Daniel Agulleiro, Céline Marleix-Bardeau, Germaine Gusthiot, Anne-Isabelle Giuntini, Dorothee Hauser, Amélia Bossard, Elie Zagury. Photography by Mélanie Montagnol



Financial Report



2008

CUI

Staff	CHF 968'565
• Academic	CHF 263'848
• Administrative and Technical	CHF 548'649
• Employer's social contributions	CHF 156'068
Operating costs - Investment	CHF 148'955
Operating costs - Others	CHF 211'000
Library	CHF 47'207
CUI SUBTOTAL	CHF 1'375'727

COMPUTER SCIENCE DEPARTMENT, FACULTY OF SCIENCES

Staff	CHF 2'924'565
• Academic	CHF 2'300'424
• Administrative and Technical	CHF 151'953
• Employer's social contributions	CHF 472'188
Operating costs - Investment	CHF 79'166
Operating costs - Others	CHF 26'000
DEPARTMENT SUBTOTAL	CHF 3'029'731

INFORMATION SYSTEMS DEPARTMENT, FACULTY OF ECONOMIC AND SOCIAL SCIENCES

Staff	CHF 1'849'032
• Academic	CHF 1'507'281
• Administrative and Technical	CHF 43'182
• Employer's social contributions	CHF 298'569
Operating costs - Investment	CHF 12'500
Operating costs - Others	CHF 7'000
DEPARTMENT SUBTOTAL	CHF 1'868'532

UNIT OF COMPUTER SCIENCE FOR THE HUMANITIES, FACULTY OF HUMANITIES

Staff - Academic, incl. Charges (estimation)	CHF 751'156
Operating costs	CHF 25'000
DEPARTMENT SUBTOTAL	CHF 776'156

TOTAL BUDGET	CHF 7'050'146
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COMPUTER SCIENCE DEPARTMENT, FACULTY OF SCIENCES

1 professor position + 1 assistant position	CHF 284'917
UE-funded Projects	CHF 1'258'488
Swiss-funded Projects	CHF 941'968
DEPARTMENT SUBTOTAL	CHF 2'485'373

INFORMATION SYSTEMS DEPARTMENT, FACULTY OF ECONOMIC AND SOCIAL SCIENCES

UE-funded Projects	CHF 1'708'219
Swiss-funded Projects	CHF 854'454
DEPARTMENT SUBTOTAL	CHF 2'562'673

UNIT OF COMPUTER SCIENCE FOR THE HUMANITIES, FACULTY OF HUMANITIES

UE-funded Projects	CHF 77'177
Swiss-funded Projects	CHF 330'823
DEPARTMENT SUBTOTAL	CHF 408'000

TOTAL CREDIT**CHF 5'456'046**



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