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Maître d'Enseignement et de Recherche (MER) / Professeur Assistant / Assistant Professor

Intitute of Services Science
Faculté des Sciences Economiques et Sociales
Centre Universitaire d'Informatique

Formation / Diplômes

1996 **Thèse de doctorat en Sciences Economiques et Sociales mention Systèmes d'Information / PhD in Information Systems**
Université de Genève, Suisse

1993 **Master en Systèmes d'Information, mention Visualization et Communication Infographique**
Université de Genève, Suisse

1989 **DEA en Traitements Graphiques et Traitements d'Image**
Université Louis Pasteur, Strasbourg, France

1988 **MIAGE (Maîtrise en Méthodes Informatiques appliquées à la Gestion des Entreprises**
Université de Mulhouse, Mulhouse, France

Enseignement/Teaching

Co-responsable du bachelor en Systèmes d'Information et Science des Services / Co-Program Director Bachelor in Information Systems and Services Science

Introduction à la Science des Services
Bachelor en Systèmes d'Information et Science des Services

Introduction à la programmation
Bachelor en Systèmes d'Information et Science des Services

Services et technologies multimédia
Bachelor en Systèmes d'Information et Science des Services

Interfaces pour les services
Master en Management, orientation Science des Services

Projet Intra-master
Master en Management, orientation Science des Services

Informatique et Systèmes d'Information II
Master

Fondements des Systèmes d'Information
Master

Projets étudiants

Sujets de projets
N'hésitez pas à me contacter directement pour connaitre la liste des sujets que je propose ou convenir avec moi d'un sujet.

2010 **Le Web 2.0, phénomène de mode ou véritable outil marketing ?**
Emilie Wyss, Chabloz Laurence, Bachelor en gestion d'entreprise

2010 **Conception d'un système collaboratif d'annotation d'objets 3D**
Coeur Gauillaume, Master en Systèmes d'Information et Science des Services

Doctorants / PhD students

2010 **Camille Tardy**
Topic : A Semantic Digital Library of Urban Models and Resources for Creating Urban Planning Tools

2011 **Omar Benkacem**
Topic : Personal Learning Environment

Projets / Projects

2011 - **PLE, Personal Learning Environment**
The first goal of this project is to provide the students with a set of learning tools, both formal and informal. Among them, the PLE will be a key component, responsible for linking together institutional tools (eg, Moodle, Chamilo, Mediaserver, etc.) and non-institutional tools (eg, Youtube, twitter, Googledocs, etc.). The second goal is to teach how to use these technologies, that is, (1) to inform and train students and teachers about the values and educational usages of the tools proposed in the PLE and (2) to assess the tool usages so as to improve the understanding of those usages and of the users' ICT needs. The third goal of this project is to federate and recommend resources (tools and content). The project is leaded by the Information, Communication, and Educational Technology Unit at the University of Geneva.

2011 - **L'image pour entendre**
Il s'agit d'un kit pédagogique interactif bilingue accessible sur Internet (open source) qui veut sensibiliser les jeunes étudiants à la musique de J.S. Bach. Il mettra en rapport des extraits d'oeuvre de ce compositeur et des séquences cinématographiques, mais également des photos, des peintures et de l'architecture. Cela facilite l'accès à la compréhension d'éléments essentiels de la musique de J.-S. Bach. Porté par l'image, il va ouvrir la voie à une écoute de ce que transmet l'oeuvre musicale. Ce projet est dirigé par Teenergy Productions (Montreux).

2009 - 2011 **A Semantic Digital Library of Urban Models and Resources for Creating Urban Planning Tools**
The sustainable development concept requires that urban projects take into account and integrate multiple fields of knowl-edge such as construction, roads and transport, air and water quality, energy, etc. During the last decades, researchers and practitioners have devised numerous models to reason about situations and projects, or to perform simulations in all these domains. However, these models have been developed independently and hence they are hard to interconnect, thus it is difficult to build decision-support or visualization tools that rely on several models. The aim of this project is to create a semantic digital library system for storing and interconnecting urban models and resources.

2008 - **FIPDAPS - Formation Interactive en Pédagogie et Didactique des Activités Physiques et Sportives**
Projet en collaboration avec l'Institut des Sciences du Mouvement et de la Médecine du Sport. Ce dispositif e-learning vise à réunir dans un espace virtuel commun les différents acteurs concernés par cette formation à l'intervention en APS pour répondre aux besoins de co-formation et de coordination des différents intervenants (formateurs universitaires et forma-teurs de terrain) impliqués dans la formation pédagogique et didactique des étudiants durant les sta-ges pratiques sur le terrain.

2008-2010 **« Exposition des travailleurs au rayonnement ultraviolet solaire : la réalité virtuelle au service de la santé ». Une approche novatrice de l'évaluation de l'exposition**
L'Institut Universitaire Romand de Santé au Travail à Lausanne a mené une campagne de mesure en Valais, durant l'été 2005, de l'exposition professionnelle au rayonnement solaire dans les entreprises du bâtiment. Cette étude a mis en évidence le lien entre l'activité et l'exposition par des postures souvent statiques et peu variées pour une activité professionnelle donnée. Afin de mieux caractériser le lien entre l'activité et l'exposition, un nouveau projet a vu le jour à l'IST en collaboration avec le Centre Universitaire d'Informatique de l'Université de Genève. L'idée originale de ce projet est d'allier les connaissances en imagerie virtuelle par l'utilisation d'un mannequin 3D placé dans une certaine position correspondant à une posture de travail, de l'exposer à un modèle de rayonnement solaire et ainsi d'obtenir une image de l'exposition des différentes zones du corps ainsi qu'une dose associée à cette exposition. Ce projet implique l'Institut Suisse Romand de Santé au Travail et le Département de Systèmes d'Information. Il est financé par la SUVA.

2007-2008 **Assessing UV Exposure : Measurements and prediction of individual exposure**
This research project aims at developing and validating a predictive tool of individual exposure to solar UV. Exposure levels of body parts will be predicted on basis of ambient irradiation levels and information about postural activity. The tool will use existing techniques in the field of 3D numeric simulation and will be validated against individual dosimetric measurements. The use of a numeric method should facilitate assessment of individual exposure and allows predictive scenarios (either prospective or retrospective). In the long run, a better quantification of exposures for specific occupational and leisure activities should assist in better targeting preventive actions. This multidisciplinary project involves also the Institute of Occupational Health Sciences (IST) and MétéoSuisse.

2009 - BIBLION, Système d'analyse informatisée des manuscrits atlantiques

BIBLION est le système élaboré pour la classification, la sélection, le stockage, la transmission, l'utilisation et l'interrogation des données concernant les Bibles et les manuscrits atlantiques ; ceux-ci constituent en effet un champ d'application idéal pour ce type d'analyse informatisée, en raison de l'homogénéité de leur aspect extérieur ainsi que de leur localisation et datation bien déterminées. Le système BIBLION a été conçu en tant qu'application des technologies informatiques aux disciplines du livre manuscrit : la codicologie, la paléographie et l'enluminure. Le traitement automatique des informations permet de pousser l'analyse de tous les aspects matériels du manuscrit jusqu'à l'élément minimal, issu de la décomposition structurale de chacun des éléments matériels, graphiques et ornementaux : le feuillet, la page, le caractère graphique, l'initiale décorée, l'élément ornemental etc.

http://cms.unige.ch/biblion/

2009-2011 Action COST - TU0801 - Semantic enrichment of 3d city models for sustainable urban development

The main objective of the action is to semantically enrich 3D models with urban knowledge and models, so as to extend their functionality and usability in a perspective of sustainability.

WG3. Information aggregation and presentation for decision processes The working group wil address the stakes fo information integration into decision processes to support urban development and sustainability. This implies a thorough understanding of those decision processes for a representative set of urban development and management processes, the identification of the user needs for related information and knowledge on the urban fabric, and the elicitation of possible analytical processes and exploratory processes to address them in a 3D environment. The main output will be a detailed user needs analysis and a usability assessment of the other group outputs.

http://www.semcity.eu/

Publications récentes/Latest publications 2005 - 2011

2011 An exploratory study for the implementation of a techno-pedagogical personal learning environment, L. Moccozet, O. Benkacem, B. Ndiaye Mbaye, V. Ahmeti, P. Roth, P.-Y. Burgi, Personal Learning Environment Conference (PLE 2011), 2011

Our purpose is to deploy an institutional PLE framework for students at the level of the University of Geneva. In this contribution we describe our global approach and strategy. We first investigate students' current practices with ICT for their learning activities. For this purpose, we carry out a quantitative survey completed with a qualitative study. The quantitative survey is implemented as an online questionnaire including 32 questions. The qualitative survey is based on personalized interviews with members of students' organizations and teachers from different faculties at the university.

In the survey questionnaire, we avoid using the term PLE which is largely unknown to the public target. However, we ask students on the uses of new web social and educational technologies as an integral part of the PLE. The questionnaire is formalized to better understand what promotes the use of web tools. It was submitted to all students including students of continuing education and free auditors, comprising about 14,000 people. The number responses amounted to 1,500. We also submitted it as a paper form to new students during the registration period session.

The study questions are designed to identify a number of aspects. A series of questions is directly related to the technological equipment that students may have and how they use them. Another series is designed to determine the general uses of ICT for practical purposes concerning the training of students. This practice incorporates both personal and institutional resources. The PLE must be integrated into students practice by taking it wholly into account. The last part of the study aims to identify current practices and tools of cloud resources. Determining the current uses of these elements is essential to determine the PLE design in the future.

Based on our analysis of the survey we draw a few reasonable assumptions:

-Students are managing three clusters of resources for their learning activities: local, university and cloud clusters.

-Cloud services can be integrated at two different levels in students' educational activities: 1) at an informal level: students use them by themselves and for themselves; 2) at a formal level: students have to use them upon request of their teachers who integrate them to support their teaching.

-Students show an opportunistic practice of cloud services for their learning activities: they are not reluctant to use them, but they are not proactively looking for new services. They use the ones they know from their personal practice.

-PhD students are identified as early adopters and vectors of dissemination of cloud services for their learning activities

The innovative character of this project urges us to launch an awareness campaign, informing and training students in parallel to the development of a technical solution that will meet the needs anticipated during the preliminary study. The aim of the campaign is to enable a better understanding of online resources and to prepare students to the introduction of the PLE.

Technological approach:

A first initiative for a gradual opening of the PLE and the use of cloud resources could be to develop and implement a dashboard, which would form a hub to all available resources. This dashboard should allow quick access to the resources situation. This flexible environment should then be opened to the integration of pre-defined (as templates) and new resources including by the student himself. As a bridge between available institutional resources distributed with LMSs and the Dashboard we propose to introduce an ePortfolio environment. The three components allow taking into account the three clusters of resources available to students and smoothly integrate them together.

Pedagogical approach:

It includes a continuous technology watch. Even if the purpose of PLE is to make the user independent, it is important that it is also a vector of proposals. The amount of resources available on the web does not facilitate their adoption. A monitoring activity is expected to select and provide ongoing tools and resources which are deemed useful and relevant. This screening can then be integrated and offered to PLE users without restricting them to experiment on their own. It also integrates three axes of training activities among the university community: -Soft skills seminar (S3) for PhD students: S3 is organized around three areas: watch, search and processing of resources. Finally, they serve as a basis for developing seminars tailored to Bachelor and Master audience. -Development of online dedicated training modules: each module is contextualized around a use scenario. It offers a catalog of educational examples supported by tools available in the Dashboard. -Phase of testing the Dashboard in pilot classes: it aims to introduce the use of the Dashboard through formal educational activities. We help teachers to introduce teaching activities based on the Dashboard in their courses. This is a part of extending the release of use of the PLE in the academic community.

2011 **Une étude exploratoire pour le déploiement techno-pédagogique d'un environnement d'apprentissage personnel, L. Moccozet, O. Benkacem, B. Ndiaye Mbaye, V. Ahmeti, P. Roth, P.-Y. Burgi, Environnements Informatiques pour l'Apprentissage Humain (EIAH 2001), 2011**

Au-delà de la dimension technologique que revêt le concept de l'EAP (Environnement d'Apprentissage Personnel) plus connu sous le terme de PLE (Personal Learning Environment), son intérêt tient beaucoup aux dimensions de formation formelle et informelle centrées sur l'apprenant qu'il introduit. La combinaison de ces deux dimensions implique le développement d'une approche particulière de mise en place et d'accompagnement technologique et pédagogique. Nous décrivons la démarche actuellement expérimentée à l'Université de Genève. Cette étape exploratoire vers la mise en place d'un PLE consiste à réaliser une étude des pratiques existantes des technologies de l'information et de la communication de façon à pouvoir partir de ces pratiques pour amener les apprenants vers des usages autonomes, adaptés par eux et pour eux avec l'appui technologique d'un environnement ouvert et flexible. Dans cet article nous décrivons l'ensemble de la phase d'étude ainsi que la méthodologie adoptée pour la réaliser. Cette étude nous permet d'émettre un certain nombre d'hypothèses raisonnables sur les usages actuels des technologies de l'information et de la communication par les étudiants pour leur formation universitaire. Enfin, sur la base de ces hypothèses, nous proposons un plan d'action global de développement techno-pédagogique du PLE pour l'Université.

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

An important issue when studying humanities is to supply students with a large and straightforward access to original materials from the related periods that they can freely examine, browse, search and analyse. This is even more crucial when studying medievalism manuscripts. However, offering students with a direct access to original manuscripts is impossible for a lot of reasons. Digitized copies of manuscripts are nowadays widely available in various formats and offer a preliminary solution to the problem. Our purpose is to devise a system to collect and annotate medieval manuscripts data that goes further than simply providing access to digitized copies of the manuscripts' sheets or even to the cataloguing of manuscripts with available formats such as the Text Encoding Initiative. BIBLION permits entering, researching and consulting any kind of data about Italian Giant Bibles and Manuscripts. Moreover, the system allows comparative analysis between manuscripts. They are described and annotated at various levels of details from the most global to the most local. BIBLION is setup as a social network in order to aggregate in a single and common place all the efforts from the experts worldwide. The Italian Giant Bibles constitute a distinctive manuscripts family in format, text and decoration, produced in the centre of Italy in 11th and 12th centuries. Researches have identified more than 140 complete or fragmentary specimens, which are preserved in libraries worldwide. BIBLION seeks two main purposes: first, it aims at collecting in a systematic and organised way descriptive data and images about palaeographical, ornamental and textual characteristics of this type of giant manuscripts; second, it is built to organize and manage these data on the entire manuscripts family, or on a specific group of them, and to allow information queries and comparative analysis of geographically distant copies. The system consists of a database and software for entering, consulting and researching data and images. Data is stored in a relational database, which uses the standard cataloguing parameters: identification, dating, origin, dimensions, structure, quire, sheet, layout, scribes, ornamentation, content, marginal notes, bibliography etc. Through the authentication process, the data entered in the database are certified by the cataloguers. Nevertheless, the general public is allowed to consult generic information, in order to avoid that the knowledge of medieval literature, preserved into libraries, remains secluded. The users can make a plain text or faceted search, which allows querying the database based on different criteria defined in

advance. Predefined queries have been defined to provide answers to the most common questions researchers typically face. For more advanced and power users it is also possible to create their own queries and make them available to the community. With BIBLION, we plan to build a specialized network of Universities and research centres focused on Giant Bibles and Manuscripts studies. By BIBLION Network, researchers can share and disseminate their study results at an international scale. They can thereby collect, view and compare data and images on manuscripts preserved worldwide, access to which is often difficult. It will therefore provide an invaluable repository for medieval manuscripts studies.

2011 **A PLE design proposal to unify students' information spaces, L. Moccozet, International Technology, Education and Development Conference (INTED 2011), 2011**

We propose a design for a Personal Learning Environment that takes into account the actual students' practices in order to smoothly bring them to develop their own student-centric environment with a perspective towards life-long learning. We argue that students are currently staying in the centre of the triangle of three spaces of digital information resources: the local, the university and the global spaces. The local space is made of the local resources that students produce and store: project reports, home works, course notes... these resources are mostly directly produced by students with desktop office suites. They store them on their personal computer, laptop and on memory sticks. The university space is composed of resources that the institution provides to students: LMSs, digital libraries, document repositories... The global space consists in all the external resources worldwide: the Web 2.0 ecosystem. A recent survey at the University of Geneva confirms what teachers can notice everyday in the field about the actual practice of students with regards to their management of information for knowledge processing and discovery: -Students have nowadays multiple accesses to the information technology at their own place (desktop and laptop computers, network access) and at the university place (computers, wireless network access). They even have more and more access to mobility technologies, from simple memory USB sticks to smartphones. -Students are currently massively using the two first info spaces (local and university). Few early adopters are introducing the practice of global resources such as web apps. The third space is complex to get into and filtering the available huge amount of resources is required to retrieve the full benefit. However, there is no doubt that it contains lots of useful resources. Students are in the optimal technological settings to access these resources but they are under using them. We can emphasize the situation with the conclusions of a survey stating that "there's a gap between the youngsters' experience of the Internet and Society's expectations. The youngsters' Internet experience mainly pursues communication and entertainment aims. This gap between the youngsters' skills and the requirements posed by the socioeconomic sphere is sometimes considerable." It confirms that enabling students to the whole digital ecosystem is required. It is impossible to introduce new practices without taking into account the existing ones. Our purpose is therefore to smoothly extend the current digital practices. We introduce a design that unifies the access, processing, management and sharing of the three info spaces. The resulting environment offers a hub to the different resources poles and a way to interconnect them in order to circulate and process the information among the poles (i.e. write a report with a word processor, then store it on a web app for collaborative editing, include external references and submit it to a LMS). Our current prototype is based on available technologies that are familiar to students. It is widely based on "portable" technologies as it best fits any student's technology setting. The main components are a suite of portable desktop applications, a suite of portable web apps including a personalizable webportal acting as a dashboard and a portable dedicated web navigator with extensions to enable the flow among the info spaces.

2011 **A Numeric Model to Simulate Solar Individual Ultraviolet Exposure, D. Vernez, A. Milon, L. Francioli, J-L. Buliard, L. Vuilleumier, L. Moccozet, Photochemistry and Photobiology, Blackwell Publishing Ltd, 2011**

Exposure to solar ultraviolet (UV) light is the main causative factor for skin cancer. UV exposure depends on environmental and individual factors. Individual exposure data remain scarce and development of alternative assessment methods is greatly needed. We developed a model simulating human exposure to solar UV. The model predicts the dose and distribution of UV exposure received on the basis of ground irradiation and morphological data. Standard 3D computer graphics techniques were adapted to develop a rendering engine that estimates the solar exposure of a virtual manikin depicted as a triangle mesh surface. The amount of solar energy received by each triangle was calculated, taking into account reflected, direct and diffuse radiation, and shading from other body parts. Dosimetric measurements (n=54) were conducted in field conditions using a foam manikin as surrogate for an exposed individual. Dosimetric results were compared to the model predictions. The model predicted exposure to solar UV adequately. The symmetric mean absolute percentage error was 13%. Half of the predictions were within 17% range of the measurements. This model provides a tool to assess outdoor occupational and recreational UV exposures, without necessitating time-consuming individual dosimetry, with numerous potential uses in skin cancer prevention and research.

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

Peer-reviewed conference paper

In this paper, we propose to adapt a standard wiki information system as a user interface to develop a collaborative integrated information 3D space to 1) collaboratively annotate 3D models with large text annotations; 2) browse the annotations and visualize them synchronously with the 3D model. This results in an integrated information space where different sources and representation of knowledge are aggregated and integrated for further dissemination. We describe and discuss about the design of such a system, and propose a prototype implementation.

2010 **A coopetitive social training platform mixing peer-based co-production, co-construction and co-tutoring, L. Moccozet, W. Opprecht, M. Léonard, in Proc. Interactive Computer Aided Learning (ICL) 2010**

Peer-reviewed conference paper

We propose an evolutive collaborative training platform for large size classes (with hundreds students) in blended learning where students collectively contribute to the co-construction and co-tutoring of the required knowledge to co-produce their semester project. This collaborative platform is implemented as a social network. In this version of the platform, we describe how we introduce and organize interactions in the platform and in the training scenario in order to improve 1) co-production among students and 2) engagement with a factor of coopetition (collaboration/ competition) between students.

2010 **PIPE: a Personal Information Processing Ecosystem for enabling students with information and communication technologies, L. Moccozet, in Proc. Interactive Computer Aided Learning (ICL) 2010**

Peer-reviewed conference paper

We propose an e-portfolio framework called PIPE (Personal Information Processing Ecosystem) for enabling students to information and communication technologies. The objective is to provide them with a user-centric environment that they can manage by themselves to access and process information resources for their studies and personal activities. This environment behaves like a hub where students can have a unique access entry to different types of information: learning material provided by teachers, local and online resources available on the web. They can also process all this information to produce their own one. It is based on a hybrid approach that combines local and cloud computing resources such as simple mashups of web services.

2010 **Biblion. Système d'analyse informatisée des manuscrits atlantiques, Nadia Togni, Laurent Moccozet, Laurent Opprecht, Proc. colloque international "Les Bibles atlantiques. Le manuscrit biblique à l'époque de la réforme ecclésiastique du XIe siècle"**

2009 **A Collaborative Training Platform for Peer-Based Co-Construction of Knowledge and Co-Tutoring, L. Moccozet, W. Opprecht, M. Léonard, International Journal of Emerging Technologies in Learning (iJET) Vol. 4, No. 3**

Journal paper (selected papers from ICL'2009)

We propose a collaborative training platform where students collectively contribute to the co-construction of the required knowledge to produce their individual semester project. Peers feedback is implemented in order to complete trainers' supervision with peer-training. This collaborative platform is implemented as a social network, where collaborative interactions are organized 1) to engage and stimulate students to share their resources and contributions; 2) to monitor and comment peers' contributions.

2009 **A collaborative training platform for peer-based co-construction of knowledge and co-tutoring, L. Moccozet, W. Opprecht & M. Léonard, in Proc. Interactive Computer Aided Learning (ICL) 2009**

Peer-reviewed conference paper

We propose a collaborative training platform where students collectively contribute to the co-construction of the required knowledge to produce their individual semester project. Peers feedback is implemented in order to complete trainers' supervision with peer-training. This collaborative platform is implemented as a social network, where collaborative interactions are organized 1) to engage and stimulate students to share their resources and contributions; 2) to monitor and comment peers' contributions.

2009 **Personal information ecosystem: a framework for immersive blended training in information and communication technologies literacy, L. Moccozet, IEEE DEST 2009, IEEE International Conference on Digital Ecosystems and Technologies**

Peer-reviewed conference paper

We describe a framework to build a user-centric training environment for information and communication technologies education. The result is a Personal Information Ecosystem – PIE – that mashups available online services. The PIE is used to teach the technology, to deliver the course material and to train students to the practice in order to make them pro-active users of Web 2.0 communication services. This user-centric information ecosystem training approach has been ex-perimented and applied in a bachelor course.

2009 **An e-portfolio platform for pre-service teaching physical education in dual system, L. Moccozet, B. Lenzen, in Proc. Interactive Computer Aided Learning (ICL) 2009**

Peer-reviewed conference paper

We describe an e-portfolio framework to support physical education training in dual education, where students share their time between theory and practice in different places and with different tutors. The objective of the platform is to provide a common placeholder around the students' activities so that all participants can share and exchange.

2009 **Un environnement numérique d'apprentissage et un e-portfolio pour contribuer au développement professionnel en formation initiale, B. Lenzen, B. Poussin, H. Dénervaud & L. Moccozet, Journées d'études du Pôle Nord-Est 2009, Dijon, France**

La communication propose de rendre compte d'un dispositif de formation en double alternance (université/école et présentiel/distance) implémenté en formation initiale d'enseignants d'EPS. Ce dispositif innovant est construit autour d'un environnement numérique d'apprentissage – intitulé « Formation interactive en pédagogie et didactique des activités physiques et sportives » (FIPDAPS) – supposé favoriser le développement professionnel des futurs enseignants d'EPS au travers d'une meilleure articulation théorie-pratique et d'interactions plus nombreuses entre les différents acteurs de la formation (étudiants, formateurs de terrain, formateurs universitaires). Il s'étend sur l'ensemble de la formation initiale d'enseignant d'EPS à l'Université de Genève, qui se compose d'un bachelor (180 ECTS) et d'un master (90-120 ECTS) en sciences du mouvement et du sport.

2009 **Un environnement numérique d'apprentissage et un e-portfolio pour contribuer au développement professionnel en formation initiale, B. Lenzen & L. Moccozet, 1er congrès international francophone de pédagogie en sciences de la santé et du sport 2009**

2008 **Spatialized tags for building 3D shapes taxonomies, Laurent Moccozet, SAMT Workshop on Semantic 3D Media**

Peer-reviewed workshop paper

In this paper we propose to define spatialized tags based on 3d hierarchical graphs in order to develop specialized taxonomies and folksonomies for 3D shapes. We aim at providing a framework that keeps the simplicity of use of tags and folksonomy for basic users and at the same capture the specific and intrinsic structure of 3D shapes. A prototype navigation system is proposed t

2008 **Sketching expressive visualization of a natural phenomenon: Ultra-Violet individual exposure estimation, Laurent Moccozet, Alexandre Cao, Antoine Milon, Pierre-Olivier Droz, David Vernez, Jean-Luc Bulliard, GMAI08: 3rd International Conference on Geometric Modeling and Imaging, IEEE Press, 2008**

Peer-reviewed conference paper

The research presented in this paper aims at developing and validating a predictive tool of individual exposure to solar Ultra-Violet (UV). UV exposure depends on ambient irradiation level and individual factors related to activity (position to the sun, clothing, duration of exposure, and other forms of sun protection). We predict exposure levels of body parts on basis of ambient irradiation levels and information about postural activity. The prediction system uses existing techniques in the field of 3D rendering to visually sketch an accurate estimation of the exposure distribution over body parts represented as a 3D triangular mesh. The results are compared against individual dosimetric measurements. Our approach is based on the similarities between our assumptions about the individual UV exposure model and the rendering of 3D computer generated scenes.

2008 **Scenegraph-based platform for 3d computer graphics training, V. Muggéo, L. Moccozet and N. Magnenat-Thalmann, International Journal of Information Communication and Technology, Issue #15(Vol 4 Nr 3), Jul-Sep 2008**

Peer-reviewed journal paper.

We propose a framework for developing online interactive experiments for training students to master the basic concepts of 3D Computer Graphics. As 3D Computer Graphics has applications in a large range of fields (visual arts, media, geography...), we need to devote particular attention to students that are non expert in Computer Science and particularly in programming. We also have to take into consideration the resources and efforts required for the development of online training modules. We describe our approach for designing and implementing accurateand efficient training modules and describe how we have implemented one particular use case scenario.

2007 **Scenegraph-based platform for 3d computer graphics training, V. Muggéo, L. Moccozet and N. Magnenat-Thalmann, IADIS International Conference e-Learning 2007.**

Peer-reviewed conference paper.

We propose a framework for developing online interactive experiments for training students to master the basic concepts of 3D Computer Graphics. As 3D Computer Graphics has applications in a large range of fields (visual arts, media, geography...), we need to devote particular attention to students that are non expert in Computer Science and particularly in programming. We also have to take into consideration the resources and efforts required for the development of online training modules. We describe our approach for designing and implementing accurate and efficient training modules and describe how we have implemented one particular use case scenario.

2007 **Automatic Character Skeletonization and Deformation, T. Di Giacomo, L. Moccozet, N. Mag-nenat-Thalmann, R. Boulic, D. Thalmann, State of the Art Report (STAR), Annual Conference of the European Association for Computer Graphics (Eurographics 2007), 2007.**

Peer-reviewed State of the Art

Characters are of paramount importance in computer graphics since they enrich 3D worlds with immersion and life, and extend the range of possible applications. They are also very complex objects to manage due to their articulated structure, to their motion-dependent deformations, and to the familiarity we have with them. With the wide variety of issues to be considered when modeling, rendering, and animating characters, lots of work has focused on character representation and animation. In this STAR we present core and recent techniques to automatically generate a skeleton from a character representation, in order to animate it with bone-based animation techniques. We then present core and recent methods for computing the deformation of the skin according to body movements.

2007 **Knowledge-based extraction of control skeletons for animation, F. Dellas, L. Moccozet, G. Patané, M. Mortara, M. Spagnuolo, Shape Modeling International 2007, IEEE Computer Society Press, 2007.**

Peer-reviewed conference paper.

In this paper we propose a method for the automatic extraction and annotation of the animation control skeleton of virtual humans, which relies on a priori knowledge on human anatomy and is independent of body posture. The method is based on the segmentation of the virtual human shape into semantically meaningful features, like arms or legs, and on the automatic location and labelling of joints of the control skeleton. We demonstrate that it is possible to get rid of noisy and complex data in order to extract from any human body closed mesh its skeleton for animation. This is particularly relevant in computer animation: when animating virtual characters the animator must first identify which part of the 3D surface can be assigned to which corresponding part of the animation skeleton, to obtain a visually coherent animated shape. Unfortunately, this is not the case when acquiring scanned data in general. We demonstrate our approach with several examples.

2007 **An ontology of virtual humans: incorporating semantics into human shapes, M. Gutiérrez, A. García-Rojas, D. Thalmann, L. Moccozet, N. Magnenat-Thalmann, M. Mortara, M. Spagnuolo, The Visual Computer, vol.23 (3) pp.207-218, 2007.**

Peer-reviewed paper journal.

Most of the efforts concerning graphical representations of humans (Virtual Humans) have been focused on synthesizing geometry for static or animated shapes. The next step is to consider a human body not only as a 3D shape, but as an active semantic entity with features, functionalities, interaction skills, etc. We are currently working on an ontology-based approach to make Virtual Humans more active and understandable both for humans and machines. The ontology for Virtual Humans we are defining will provide the "semantic layer" required to reconstruct, stock, retrieve, reuse and share content and knowledge related to Virtual Humans.

2007 **Control Structure and Multi-Resolution Techniques for Virtual Human Representation, T. Di Giacomo, H. Kim, L. Moccozet and N. Magnenat-Thalmann, in book Shape Analysis and Structuring, edited by L. De Floriani & M. Spagunolo, published by Springer Verlag, 2007.**

Book chapter.

A virtual human is a typical instance of articulated physical objects: it does not have only one shape but many, corresponding to all the possible postures that the underlying articulated skeleton can reach. For realistic rendering results, a high-quality texture is usually associated to the shape and skeleton structure. Controlling and animating a virtual human model requires simultaneously many graphics and computational resources. The first part of this chapter discusses the control articulated skeleton structure and different approaches to build skeletons and bind it to the geometry. The second part addresses the production of LoDs for virtual humans, both for the 3D shape (geometry) and the articulated skeleton (motion and animation).

2006 **In Search for Your Own Virtual Individual, L. Moccozet, A. Garcia-Rojas, F. Vexo, D. Thal-mann, N. Magnenat-Thalmann, In: Semantic Multimedia, Springer Verlag pp.26-40, 2006.**

Peer-reviewed conference paper.

The use of inhabited Virtual Environments is continuously growing. People can embody a human-like avatar to participate inside these Virtual Environments or they can have personalized character acting as mediator; sometimes they can even customize it to some extent. Those Virtual Characters belong to the software owner, but they could be potentially shared, exchanged and individualized between participants, such as already proposed by Sony with Station Exchange. Technology with standards could significantly improve the exchange, the reuse and the creation of such Virtual Characters. However an optimal reuse is only possible if the main components of the characters: geometry, morphology, animation and behavior, are annotated with semantics. This may allow to users searching for specific models and customize them. Moreover search technology based on the Web Ontology Language (OWL) can be implemented to provide this type of service. In this paper we present the considerations to build an ontology that fulfills the mentioned purposes.

2006 **Anatomical Modelling of the Musculoskeletal System from MRI, B. Gilles, L. Moccozet, N. Magnenat-Thalmann, Medical Image Computing and Computer-Assisted Intervention – MICCAI 2006, Springer Verlag pp.289-296, 2006.**

Peer-reviewed conference paper.

This paper presents a novel approach for multi-organ (musculoskeletal system) automatic registration and segmentation from clinical MRI datasets, based on discrete deformable models (simplex meshes). We reduce the computational complexity using multi-resolution forces, multi-resolution hierarchical collision handling and large simulation time steps (implicit integration scheme), allowing real-time user control and cost-effcient segmentation. Radial forces and topological constraints (attachments) are applied to regularize the segmentation process. Based on a medial axis constrained approximation, we effciently characterize shapes and deformations. We validate our methods for the hip joint and the thigh (20 muscles, 4 bones) on 4 datasets: average error=1.5mm, computation time=15min.

2006 **Semantic Human 3D Shapes Annotation for Animation, F. Dellas, L. Moccozet, N. Magnenat-Thalmann, G. Patane, M. Mortara, M. Spagnuolo, B. Falcidieno, International conference on Semantics And digital Media Technology (SAMT 2006), 2006.**

Peer-reviewed short conference paper.

The problem of identifying particular points or areas on 3D meshes is closely related to several outcomes in computer graphics: when animating virtual characters the animator must first identify which part of the 3D envelop can be assigned to which corresponding part of the animated skeleton, to obtain a visually coherent animated shape. Every shape has to be segmented to be usable after while. For instance, the CAESAR body database has been built using 3D scans plus a set of landmarks to identify body measurements. Unfortunately this is not the case when acquiring scanned data in general, and particularly for human scanned bodies. We demonstrate that it is possible to get rid of noisy and complex data so as to extract from any human body closed mesh its skeleton of animation. Assuming the joints are located where the shape has the more variations and based on a multi-scale analysis, we are able to deduce main joints positions. We also build a control skeleton and label automatically all detected joints relying on a priori knowledge on human anatomy, independently from body postures. We demonstrate our approach with several examples.

2006 **Emotional face expression profiles supported by virtual human ontology, A. Garcia-Rojas, F. Vexo, D. Thalmann, A. Raouzaiou, K. Karpouzis, S. Kollias, L. Moccozet, N. Magnenat-Thalmann, Computer Animation and Virtual Worlds, vol.17 (3-4) pp.259-269, 2006.**

Peer-reviewed journal paper.

Expressive facial animation synthesis of human like characters has had many approaches with good results. MPEG-4 standard has functioned as the basis of many of those approaches. In this paper we would like to lay out the knowledge of some of those approaches inside an ontology in order to support the modeling of emotional facial animation in virtual humans (VH). Inside this ontology we will present MPEG-4 facial animation concepts and its relationship with emotion through expression profiles that utilize psychological models of emotions. The ontology allows storing, indexing and retrieving prerecorded synthetic facial animations that can express a given emotion. Also this ontology can be used a refined knowledge base in regards to the emotional facial animation creation.

2005 **An Ontology of Virtual Humans: incorporating semantics into human shapes, A. Garcıa-Rojas, D. Thalmann, F. Vexo, L. Moccozet, N. Magnenat-Thalmann, M. Mortara, M. Spagnuolo, M. Gutierrez, in Proc. IEE Workshop on the Integration of Knowledge, Semantic and Digital Media Technologies, pp. 7-14, Nov. 2005.**

Présentations, séminaires...

2010 **iDemocracy! Do you? Open Voting and Tribe oriented Public Debate, Workshop, LIFT 2010, Genève**

Without changing anything in the voting process itself, and witnessing the increasing use of social networks to also share mundane information on a daily basis, led us to imagine along the idea of a Political Wall in a similar way people interact on social networks through their wall. Facilitating and enabling a Social Network based Public Debate where people can express and share their opinions, react, post, protest, argue, etc. through each others Political Wall appeared as a promising idea. At a time when democracy is suffering a lack of participation and interest, we will question the idea that maybe social networks and tribe centered interactions could transform Public Debate in a way never imagined before.

2010 **Un environnement portfolio pour la formation à l'éducation physique en alternance, L. Moccozet, B. Lenzen, Workshop E-portfolio, SWITCH, Berne**

Nous proposons un environnement portfolio dédié pour améliorer la formation à l'éducation physique en alternance où les étudiants partagent leur temps entre théorie et pratique dans différents lieux et avec différents tuteurs. L'objectif de l'environnement est de proposer un espace commun de référence autour des activités des étudiants de façon à ce que tous les participants puissent partager et échanger.

Autres activités

actuel **Chargé d'enseignement à l'Université de Neuchâtel**

Chargé d'Enseignement à l'Institut des Sciences du Langage et de la Communication de la Faculté des Lettres et des Sciences Humaines de l'Université de Neuchâtel pour le cours de bachelor "Introduction aux technologies de l'information et de la communication".

2009 - **Comité éditorial TSI**

Membre du comité éditorial de la revue Technique et Science Informatiques publié par les éditions Hermès-Lavoisier

2011 **International Scientific Advisory Board**

ICERI 2011, http://www.iated.org/iceri2011/

4th International Conference of Education, Research and Innovation

actuel **Co-animateur du forum "Internet et Société" sur TSR Découverte**

actuel **Responsable éditorial du blog CIEL (Communauté d'Intérêts pour l'Enseignement en Ligne)**

http://ciel.unige.ch/ : La Communauté d'Intérêts pour l'Enseignement en Ligne (CIEL) est née au sein de l'Université de Genève de la rencontre de professionnels souhaitant échanger savoirs et pratiques en matière de e-learning. Espace privilégié à la croisée de la pédagogie universitaire et des nouvelles technologies, ce blog a pour vocation de promouvoir une veille partagée ainsi que de favoriser l'innovation en matière d'apprentissage.