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Caecilia Charbonnier

Education Since January 2007 MIRALab - University of Geneva
PhD candidate in Science, interdisciplinary mention
« Extreme Hip Movements Based on Optical Motion Capture », Faculty of Sciences, Department of Computer Science
Thesis Director: Prof. Nadia Magnenat-Thalmann, University of Geneva

October 2005 - December 2006 Polytechnic School of Lausanne
Master of Advanced Studies (MAS) in Computer Graphics
Faculty of Sciences, Department of Computer Science

- M.Sc. Thesis: « Virtual Mirror: A real-time motion capture application for virtual-try-on », Thesis Director: Prof. Nadia Magnenat-Thalmann
- Indicative M.Sc. units attended: Computer Graphics, Image Processing and Computer Vision, VR Programming with Java and C++, Visualization, Animation and Virtual Reality, Internet and Multimedia, Scientific and Medical Communication

October 2001 - February 2005 University of Geneva
Licence in Information and Communication Systems (master equivalent) with a minor in International Relations (HEI)
Faculty of Economics and Social Sciences (SES)

- Licence Thesis: « Registration of 3D models from MRI using geometric constraints for the anatomical modeling of soft tissues », Thesis Director: Prof. Nadia Magnenat-Thalmann
- Indicative units attended: Databases, Networking, Internet and Multimedia, Object Oriented Programming with Java, Systems Programming, Computer Graphics, Animation and Virtual Reality, Interfaces, International Public Law, Political Economy, Political Sciences, Economics History, Political Geography, Sociology

Professional Experiences

Since July 2009

ArtificiElles Sàrl - Switzerland

Founder and Co-Director

Founder of the company ArtificiElles specialized in 3D and web development. Design and creation of web sites in Flash, 3D animation and virtual environments.

Since June 2006

Foundation Antinea - Switzerland

Executive Committee's Member

Volunteer for the Antinea Foundation that seeks to discover and protect the marine environment. Contribution in the management and preparation of scientific expeditions, web designer and 3D animator for the communication projects that aim to sensitize the public to the protection of the environment.

Since November 2004

MIRALab - University of Geneva

Research Assistant

Working at an internationally well-known interdisciplinary graphics and virtual reality research center, interacting with numerous researchers world-wide. Medical research and simulation, including the following topics: ontology, optical motion capture and motion analysis, 3D body scanner, image processing, segmentation, surface deformation and registration. Publishing research results in international refereed journals and conferences.

Contribution in the following projects:

- CO-ME: Development of a semantic-driven clinical examination platform, integrating various acquisition modalities (MRI, 3D scanner, motion capture, etc.). Motion study of the hip joint in extreme postures.
- 3D ANATOMICAL HUMAN: Creation of a medical ontology of the musculoskeletal system, manual segmentation and 3D reconstruction of the lower limb from MRI.
- FOCUS K3D: Evaluation of knowledge systems and dissemination actions for the adoption and the use of those technologies, in order to foster the coding and sharing of 3D media content.

Actively authoring, contributing and co-managing several Swiss and EU research projects.

Bachelor and master students co-supervision. Assistant for the courses «Outils Informatiques» and «Animation et Multimedia», B.Sc. courses, years 2004 - 2008, University of Geneva.

Webmaster and system administrator of the lab.

Since July 2001

Television Suisse Romande - Switzerland

Consultant

Consultant and live interviews for sport-related programs, such as Roland-Garros and Wimbledon.

April 2005 - October 2006

MIRALab - University of Geneva

Project Manager

Responsible for the administrative management and coordination of EU and Swiss projects in the lab. Tasks including the accountancy and the management of human resources, the redaction of EU and FNRS reports, and the administrative coordination between the various partners of the projects.

July 2002 - August 2002

Tribune de Genève - Switzerland

Trainee

Trainee for the daily newspaper at the Tribune de Genève, Sports Department.

January 2002 - December 2004

Jet d'Encres - University of Geneva

Editor in Chief

Editor in chief of the bi-annual newsletter of the Political Sciences and International Relations Department. Coordination of the team, trainee and edition of the journal template.

June 2001 - October 2004

Tennis Teacher

Tennis Teacher

Tennis teacher for Youth & Sport, group and individual courses.

Publications

C. Charbonnier, F. Kolo-Christophe, V.B. Duthon, N. Magnenat-Thalmann, C. Becker, P. Hoffmeyer, J. Menetrey, *Professional Dancer's Hip: A Motion Capture Study*, Proceedings of the Orthopaedic Research Society 56th Annual Meeting, New Orleans, Louisiana, March 2010.

V.B. Duthon, F. Kolo-Christophe, C. Charbonnier, N. Magnenat-Thalmann, S.R. Duc, C.W.A. Pfirrmann, C. Becker, P. Hoffmeyer, J. Menetrey, *Correlation of Clinical and MRI Findings in Professional Dancers' Hip: A New Femoro-acetabular Impingement?*, Proceedings of the Orthopaedic Research Society 56th Annual Meeting, New Orleans, Louisiana, March 2010.

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

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

C. Charbonnier, J. Schmid, F. Kolo-Christophe, N. Magnenat-Thalmann, C. Becker, P. Hoffmeyer, *Virtual Hip Joint: from Computer Graphics to Computer-Assisted*

Diagnosis, Eurographics 2009 - First Medical Prize, Eurographics Association, Munich, Germany, pp. 1-4, April 2009.

C. Charbonnier, L. Assassi, P. Volino, N. Magnenat-Thalmann, *Motion Study of the Hip Joint in Extreme Postures*, *Vis Comput*, Springer-Verlag, 25(9):873-882, 2009.

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

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.

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.

C. Charbonnier, B. Gilles, N. Magnenat-Thalmann, *A Semantic-Driven Clinical Examination Platform*, In *Surgetica'2007, Computer-Aided Medical Interventions: Tools and Applications*, Chambéry, France, pp. 183-189, September 2007.

Awards

Walshard Price 2009 from the University of Geneva. This price is given to a student conducting with success a sport career and academic studies.

In collaboration with the MIRALab-team and the University Hospital of Geneva: Eurographics Medical 1st Prize for the paper entitled "Virtual Hip Joint: from Computer Graphics to Computer-Assisted Diagnosis", 2009.

Grants

Hans Wilsdorf Foundation, Grant for participating at the 10th International Symposium on 3D Analysis of Human Movement, Amsterdam, October 2008.

Hans Wilsdorf Foundation, Research Grant, years 2007-2009.

Exhibition

In collaboration with the MIRALab-team, the University Hospital of Geneva and the Grand Théâtre de Genève: "La danse dans tous ses états", Centre Médical Universitaire, Geneva, 2009.

Other Activities

Invited Talks, Tutorials

- 3D Physiological Human Workshop: "3D Body Scanning and Motion Analysis" (tutorial), Zermatt, 2008
- Workshop on Semantic User Descriptions and their Influence on 3D Graphics and VR: "A Semantic-Driven Platform for Medical Applications" (talk), EPFL, 2008

Funded Research Projects and Bidding Experience

- CO-ME (SNSF project): Deputy organization representative & contributor
- 3D ANATOMICAL HUMAN (MRTN-CT-2006-035763) : Contributor
- FOCUS K3D (ICT-2007-214993): Deputy organization representative & contributor

Workshop and Event Organization

- Swiss and International Alpine and Nordic University Skiing Championships (U-Games 2010), Veysonnaz, 6-14 March 2010 : IT Manager
- 3D Physiological Human Workshop, Zermatt, 28 November - 4 December 2009: Local Committee Co-chair
- Swiss and International Alpine and Nordic University Skiing Championships (U-Games 2009), Veysonnaz, 11-15 March 2009 : IT Manager
- 3D Physiological Human Workshop, Zermatt, 1-4 December 2008: Local Committee Co-chair
- Research Networking Workshop'08 (CO-ME), Zermatt, 5-7 August 2008: Workshop Chair

Teaching and Student Co-Supervision

- Assistant « Outils Informatiques », B.Sc. course 4104002, University of Geneva, years 2004 - 2008
- Assistant « Animation et Multimedia », B.Sc. course 4204003, University of Geneva, years 2004 - 2008
- Bachelor Students
 - Alexandre Corsini, *Création d'un manuel d'utilisateur en Flash pour un programme d'animation de cheveux en temps réel*, 2007, Bachelor Project, MIRALab, University of Geneva
- Master Students
 - Maryam Arasteh, *Evaluation and Comparison of latest 2D/3D Web Technologies*, 2008, Master Thesis, MIRALab, University of Geneva

IT Knowledge

Operating Systems: Windows 2000 / XP/ Vista

Programming: Java, C, C++, VTK, OpenGL, OSG, libXML, XQuery, XPath

Multimedia 3D: Autodesk 3DsMax, Digimation Bones Pro, Curious Lab Poser

Multimedia 2D: Adobe PhotoShop, Adobe InDesign, Adobe Premiere, Adobe After Effects, Eyeon Digital Fusion

Web Design: Adobe Flash, JSP, PHP, JavaScript, CSS, Joomla

Databases: MySQL, SQL, Oracle, Microsoft Access

Motion Capture: Vicon IQ, Vicon Workstation

3D Body Scanner: Vitus Pro ScanWorX

Languages French (mother tongue), English (written and oral fluently), German (excellent knowledge, written and oral), Spanish (excellent knowledge, written and oral)
Language Diploma: Cambridge Advanced Certificate (Grade A)

Formerly From 1996 to 1999: Professional tennis player (4th in Switzerland, WTA 276)
1999: Member of the Fed Cup Team Switzerland

References *Prof. Nadia Magnenat-Thalmann*
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University Hospital of Geneva
24, rue Micheli-du-Crest
1211 Geneva 14, Switzerland