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Caecilia Charbonnier

Professional Experiences

Since April 2011 artanim Foundation - Switzerland

Co-Founder, President and Research Director

Co-founder, president and research director at artanim, a foundation dedicated to the development and promotion of motion capture.

Fundraising and development of research projects (CTI, CH SNSF Div. II) in computer animation and biomedicine.

Development of educational programs in motion capture and 3D animation. Cultural activities such as the creation of audiovisual projects and events (3D animations, video games, live performances, interactive applications, etc.).

Since August 2010 ArtiFX Sàrl - Switzerland

Co-Founder and Co-Director

Co-founder and co-director at ArtiFX Sàrl, a company specialized in extreme filming, visual effects and postproduction.

Participation in the production of movies and documentaries as scriptwriter, photographer and cameraman both terrestrial and underwater (PADI Rescue diver).

Since April 2010 Agalma Foundation - Switzerland

Secretary General

Secretary General at Agalma Foundation, a space for reflection and research in neuroscience, psychoanalysis and art.

Management and supervision of the administration, foundation's activities, finances and human resources.

Head of communications and external relations, organizer of international conferences and events.

June 2006 - May 2011 Antinea Foundation - Switzerland

Member of the Communication Team

Volunteer for the Antinea Foundation that seeks to improve the scientific knowledge of the oceans in order to protect the marine environment.

3D designer and video maker for the communication projects that aim to sensitize the public to the protection of the environment.

Webmaster of "The Changing Oceans Expedition" website:
www.changingoceans.org

July 2009 - January 2011 ArtificiElles Sàrl - Switzerland

Co-Founder and Co-Director

Co-founder and co-director of ArtificiElles Sàrl, a company specialized in 3D and web development.

Design and creation of websites in Flash, PHP, Ajax, etc., 3D modeling and animation, virtual environments, movies and commercials, etc.

November 2004 - February 2010 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: optical motion capture and motion analysis, 3D body scanning, biomechanics, ontology, 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 (EU FP6, FP7, CH SNSF Div. II).

Presenter at and co-organizer of international conferences, fairs and events.

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.

July 2001 - July 2009 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 SNSF reports, and the administrative coordination between the various project's partners.

January 2002 - December 2004 Jet d'Encre - 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, journalist and edition of the journal template.

June 2001 - October 2004 Tennis Teacher

Tennis Teacher

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

July 2002 - August 2002 Tribune de Genève - Switzerland

Trainee

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

Education

January 2007 - February 2010 MIRALab - University of Geneva

PhD in Science, interdisciplinary mention (*summa cum laude*)

"Extreme Hip Movements Based on Optical Motion Capture", Faculty of Sciences, Department of Computer Science

Thesis director: Prof. Nadia Magnenat-Thalmann, University of Geneva

Jury members: Prof. José Rolim (University of Geneva), Prof. Franz-Erich Wolter (Leibniz Hannover University), Dr. Mark de Zee (Aalborg University) and Dr. Eric Stindel (University Hospital of Brest)

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, Graphical User Interfaces, International Public Law, Political Economy, Political Sciences, Economics History, Political Geography, Sociology

Awards

In collaboration with the University Hospital of Geneva: ISAKOS Achilles Orthopaedic Sports Medicine Research Award for the paper entitled "Clinical and MRI Findings in Professional Dancers' Hip: A New Femoro-acetabular Impingement?", 2011.

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.

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

Exhibitions, Shows

In collaboration with the Geneva University of Art and Design, Demain la Lune and Les Ateliers modernes: "Wrist Watch project", 2012's Baselworld exhibition, Basel, March 8-15 2012.

In collaboration with the artanim-team: "Star Wars Dance Show", Grand Prix d'Horlogerie de Genève, Grand Théâtre de Genève, Geneva, November 19th 2011.

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, June 13th 2009.

Member of Conference

Program Committees, Reviewer

- MICCAI 2011, reviewer
- 3D Physiological Human Workshop 2009, member of conference program
- 3D Physiological Human Workshop 2008, member of conference program
- Research Networking Workshop'08 (CO-ME), member of conference program

Funded R&D Projects

MyHip: Patient-Specific Pre-operative Planning and Intra-operative Surgical Guidance for Total Hip Arthroplasty

Partners: HEdS, [artanim](#), HUG, Medacta International SA

Funding: projet CTI, 13573.1 PFFLE-LS

Start: 2012 End: 2013

FOCUS K3D – Foster the Comprehension, Adoption and Use of Knowledge Intensive Technologies for Coding and Sharing 3D Media Content

Partners: IMATI, [MIRALab](#), VRLab-EPFL, INRIA, Utrecht University, CERETETH, Fraunhofer

Funding: EU project, ICT-2007-214993

Start: 2008 End: 2010

CO-ME - Computer Aided and Image Guided Medical Interventions

Partners: [MIRALab](#), VRLab-EPFL, HUG, Inselspital, ARTORG Center

Funding: SNSF NCCR project

Start: 2001 End: 2009

3DAH – 3D Anatomical Functional Models for the Human Musculoskeletal System
Partners: [MIRALab](#), Aalborg University, CRS4, VRLab-EPFL, INRIA, IOR, UCL, Vrije Universiteit Brussel

Funding: EU project, MRTN-CT-2006-035763

Start: 2006 End: 2010

Grants

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

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

Invited Talks

1. Workshop CENC - Les rapports entre l'art numérique et l'art corporel: "Capture de mouvement en temps réel", Fonderie Kugler, March 10th 2012
2. VIEW Conference 2011: "Using Motion Capture to Improve Analysis and Diagnosis of Joint Disorders", Torino, October 18th 2011
3. Annual Congress of the Swiss Orthopedic and Traumatology Society: "Extreme Hip Motion in Professional Ballet Dancers", Lausanne, June 24th 2011
4. Lift 11: "From Ballet Dancing to 3D Hip Simulation", Geneva, February 4th 2011
5. EFORT Meeting: "Professional Dancer's Hip: A Motion Capture Study", HUG, October 22nd 2010
6. ESSKA Meeting: "Professional Dancer's Hip: A Motion Capture Study", HUG, June 1st 2010
7. Workshop on Semantic User Descriptions and their Influence on 3D Graphics and VR: "A Semantic-Driven Platform for Medical Applications", EPFL, November 13th 2008

Teaching, Student Supervision

- Workshop FOCAL: "Motion Capture: de la capture à l'intégration des données", artanim, December 21st 2011 and Mai 7-8 2012
- Advanced course for physiotherapists: " La modélisation des articulations en 3D ", HUG, November 10th 2009
- Tutorial: "3D Body Scanning and Motion Analysis", 3D Physiological Human Workshop, Zermatt, December 3rd 2008
- 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
- Supervision of 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
- Supervision of Master Students:
 - Maryam Arasteh, *Evaluation and Comparison of latest 2D/3D Web Technologies*, 2008, Master Thesis, MIRALab, University of Geneva

Publications

Original Articles

1. C. Charbonnier, F. Kolo-Christophe, V.B. Duthon, N. Magnenat-Thalmann, C.D. Becker, P. Hoffmeyer, J. Menetrey, *Assessment of Congruence and Impingement of the Hip Joint in Professional Ballet Dancers: A Motion Capture Study*, *Am J Sports Med*, Sage, 39(3):557-566, 2011
2. C. Charbonnier, N. Magnenat-Thalmann, C.D. Becker, P. Hoffmeyer, J. Menetrey, *An Integrated Platform for Hip Joint Osteoarthritis Analysis: Design, Implementation and Results*, *Int J CARS*, Springer-Verlag, 5(4):351-358, 2010
3. C. Charbonnier, F. Kolo-Christophe, S.R. Duc, C.W.A. Pfirrmann, J. Menetrey, V.B. Duthon, N. Magnenat-Thalmann, C.D. Becker, P. Hoffmeyer, *Extreme Motion as a Potential Initiator of Hip Osteoarthritis*, *Swiss Med Wkly*, Suppl. 173, 139(23-24):18S, 2009
4. V.B. Duthon, J. Menetrey, F. Kolo-Christophe, C. Charbonnier, S.R. Duc, C.W.A. Pfirrmann, N. Magnenat-Thalmann, C.D. Becker, P. Hoffmeyer, *Professional Dancers' Hip: Correlation of Clinical and MRI Findings*, *Swiss Med Wkly*, Suppl. 173, 139(23-24):18S, 2009
5. 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
6. 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

International, Refereed Conferences (Proceedings)

1. V.B. Duthon, F. Kolo-Christophe, C. Charbonnier, S.R. Duc, C.W.A. Pfirrmann, N. Magnenat-Thalmann, C.D. Becker, P. Hoffmeyer, J. Menetrey, *Correlation of Clinical and MRI Findings in Professional Dancers' Hip: A New Femoro-acetabular Impingement?*, 8th Biennial ISAKOS Congress, Rio De Janeiro, Brazil, May 2011
2. C. Charbonnier, F. Kolo-Christophe, V.B. Duthon, N. Magnenat-Thalmann, C.D. Becker, P. Hoffmeyer, J. Menetrey, *Professional Dancer's Hip: A Motion Capture Study*, *Trans Orthop Res Soc*, New Orleans, Louisiana, March 2010
3. V.B. Duthon, F. Kolo-Christophe, C. Charbonnier, N. Magnenat-Thalmann, S.R. Duc, C.W.A. Pfirrmann, C.D. Becker, P. Hoffmeyer, J. Menetrey, *Correlation of Clinical and MRI Findings in Professional Dancers' Hip: A New Femoro-acetabular Impingement?*, *Trans Orthop Res Soc*, New Orleans, Louisiana, March 2010

4. C. Charbonnier, J. Schmid, F. Kolo-Christophe, N. Magnenat-Thalmann, C.D. 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
5. 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
6. 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
7. 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

Theses

1. C. Charbonnier, *Extreme Hip Movements Based on Optical Motion Capture*, PhD Thesis, University of Geneva, 2010
2. C. Charbonnier, C. Lo, *Virtual Mirror: A real-time motion capture application for virtual-try-on*, MSc. Thesis, EPFL, 2006

Media

Press Articles

1. La technologie 3D au service de la médecine, January 2012, Migros Magazine
2. Sportifs d'élite: se relever après une blessure, September 2011, Migros Magazine
3. Genève accueille un centre d'imagerie 3D unique en Suisse, September 2011, Tribune de Genève
4. "Il n'y a pas de limites à la capture du mouvement", February 2011, Tribune de Genève
5. "Adolescente, je rêvais de petites balles jaunes", July 2009, Tribune de Genève
6. Deux licences, un master et bientôt un doctorat..., March 2009, Tribune de Genève
7. Sport et carrière: l'art du rebond, June 2008, La Vie Protestante
8. MIRALab pilote l'humain virtuel animé, May 2008, Campus
9. Dossier recherche médicale, December 2007, L'Internat de Paris
10. Diagnostiquer les pathologies articulaires en 3D, October 2007, Le Monde
11. Vous cherchez?, June 2007, Tribune de Genève
12. Mon corps en 3D?, May 2007, Revue de Presse de l'UNIGE

TV programs

1. Interview at VIEW Conference 2011, October 2011, Web TV OndeQuadre
2. La 3D révolutionne la médecine, July 2010, Nouvo/TSR
3. 3D Anatomical Human, November 2006, TJ/TSR

Workshops, Events

Organization

- The Freudian Unconscious: Between Neuroscience and Psychoanalysis, EPFL, 28-29 October 2011: Workshop Chair
- 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

IT Knowledge

Operating Systems: Windows, Mac OS

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

Multimedia 3D: Autodesk 3DsMax, Autodesk MotionBuilder, Curious Lab Poser

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

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

Databases: MySQL, SQL, Oracle, Microsoft Access

Motion Capture: Vicon Blade, Vicon IQ, Vicon Nexus

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

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