

CUI ACTIVITY REPORT 2011

1st January 2011 to 31 December 2011

Team

- **Director**
Nadia Magnenat-Thalmann, Professor



- **Assistants (PhD students)**

Lazhari Assassi
Maher Ben Moussa
Mustafa Kasap
Zerrin Kasap
Bart Kevelham
Niels Nijdam
Jérôme Schmid
Yvain Tisserand

- **Senior Researchers**

Pascal Volino (Post Doc)
Marlène Arévalo
Nedjma Cadi-Yazli

- **Administration**

Ghislaine Wharton

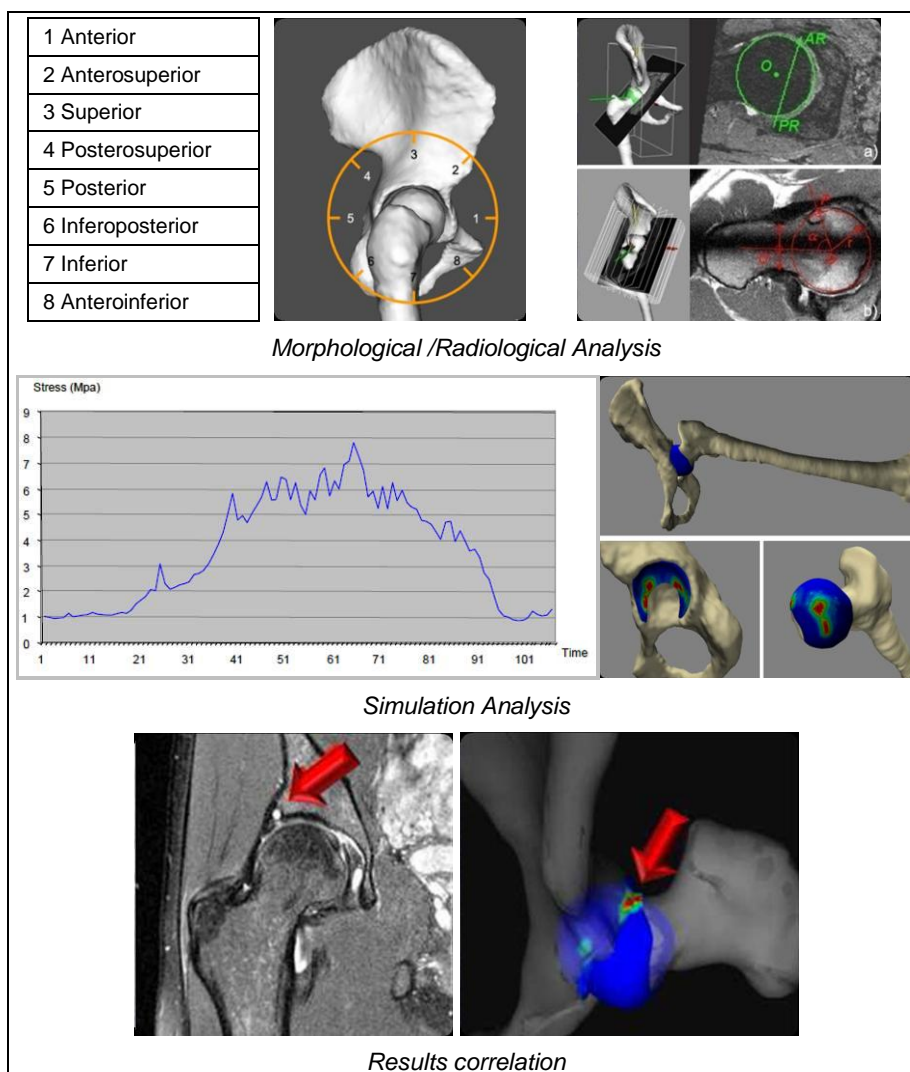
Domain activities

▪ Description of the activities of the laboratory research

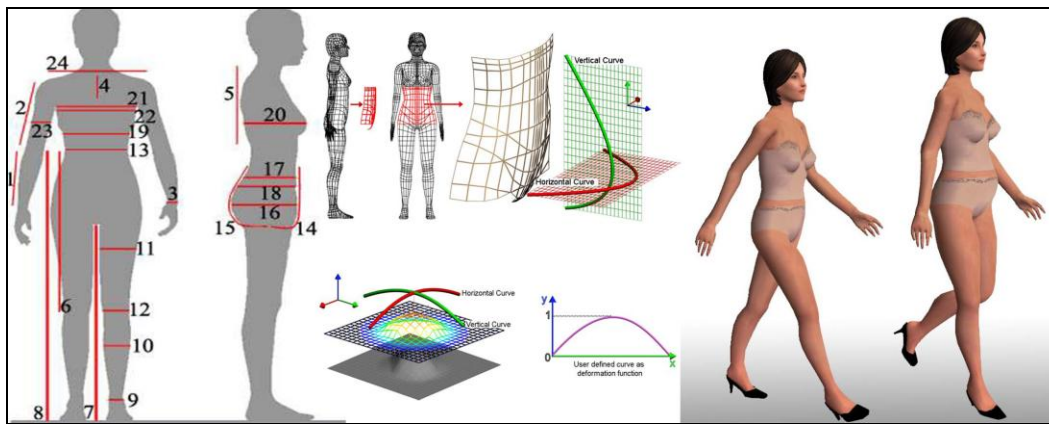
MIRALab was founded in 1989 by Professor Nadia Magnenat-Thalmann and brings together about 25 researchers from different fields, such as computer science, mathematics, medical field, design, architecture, fashion design, cognitive science, etc. This truly interdisciplinary group works in the field of computer graphics, computer animation and virtual worlds.

Since 1992, MIRALab has participated in more than 47 European Projects and contributes to the management of two International Conferences, CASA and CGI. Moreover, MIRALab produces 3D showcases for museums, galleries, such as fashion shows or cyberdances with virtual models and clothes. In 2011, MIRALab was working on the following projects: 3D LIFE, AERIAL CROWD, FNRS, FRANCOFONIE, MULTISCALEHUMAN, PLAYMANCER and SERVIVE. MIRALab has organized various International conferences and workshops.

The following are some images of our work:



3D medical application



Avatar personalization and animation



Virtual Try On in action

- **Website :** <http://www.miralab.ch>

PhD Thesis

- **Jérôme Schmid**
'Knowledge-based deformable models for medical image analysis'
January 10, 2011
- **Mustafa Kasap**
'Generating and Customizing Virtual Human Body Models'
January 11, 2011
- **Zerrin Kasap**
'Modeling Emotions and Memory for Virtual Characters and Social Robots'
March 8, 2011

List of publications - Refereed papers in international journals 2011

- [1] M.Kasap, N.Magnenat-Thalmann, **Skeleton-aware size variations in digital mannequins.** *The Visual Computer, Springer Berlin*, Vol. 27, No.4, pp. 263-274, April 2011.
- [2] J. Schmid, J. Kim, N. Magnenat-Thalmann, **Robust statistical shape models for MRI bone segmentation in presence of small field of view.** *Medical Image Analysis, Elsevier*, vol. 15, pp. 155-168, 2011.
- [3] J. Schmid, J.A. Iglesias Guitián, E. Gobbetti, and N. Magnenat-Thalmann, **A GPU framework for parallel segmentation of volumetric images using discrete deformable models.** *The Visual Computer, Springer*, 27, 2, pp. 85-95, February 2011.
- [4] F. Chung, J. Schmid, N. Magnenat-Thalmann, and H. Delingette, **Comparison of statistical models performance in case of segmentation using a small amount of training datasets.** *The Visual Computer, Springer*, 27, 2, pp. 141-151, February 2011.
- [5] M. Lim, B. Kevelham, N. Nijdam and N. Magnenat-Thalmann, **Rapid Development of Distributed Applications Using High-level Communication Support,** *Journal of Network and Computer Applications, Elsevier*, 34, Issue1, pp. 172-182, January 2011.

List of publications - Full refereed papers in Conference Proceedings in 2011

- [1] N. Magnenat-Thalmann, B. Kevelham, P. Volino, M. Kasap, E. Lyard, **3D Web-Based Virtual Try On of Physically Simulated Clothes.** *Computer-Aided Design & Applications*, Vol. 8, No. 2, pp. 163-174, 2011.
- [2] L. Assassi, P. Volino, and N. Magnenat-Thalmann, **Biomechanical analysis of the hip joint in extreme postures. Meditech Meeting on "Advances and new developments in Osteoarthritis/Degenerative diseases,** *Anglia Ruskin, University, Chelmsford, UK*, June 2011.
- [3] M.Kasap, S. Chague, N.Magnenat-Thalmann, **Virtual face implant for visual character variations.** *WIAMIS 2011: 12th International Workshop on Image Analysis for Multimedia Interactive Services, Delft, Netherlands*, April 2011.
- [4] N. Magnenat-Thalmann, P. Volino, B. Kevelham, M. Kasap, Q. Tran, M. Arevalo, G. Priya, N. Cadi, **An Interactive Virtual Try On.** *Proceedings of IEEE Virtual Reality Conference (VR), 2011*, pp. 263-264, March 2011.

List of publications - Books and Books chapters

- [1] C. Luible, N.Magnenat-Thalmann, **Die 3D simulation von kleidern,** *In C. Zollikofer, M. Baschera (Hrsg.), Klon statt Person*, vdf, pp73-84, ISBN 978-3-7281-3208-6, 2011.

List of publications - Research and technical reports

Several technical reports for the following projects: 3D LIFE, AERIAL CROWD, FNRS, FRANCOPHONIE, MULTISCALEHUMAN, PLAYMANCER and SERVIVE.

International and national advisory committees (Prof. Nadia Magnenat-Thalmann)

2011	Member of the evaluation committee of the ANR (French National Research Agency), Paris, France
2011	Member of the evaluation committee of the ENSAIT Textile Institute, Roubaix, France
2002-Present	Member of the Strategic Advisory Board Committee, City University, Hong Kong, China
2000- Present	Member of the “3ème cycle romand d'informatique”, Conférence universitaire de la Suisse occidentale (CUSO), Switzerland.
1994- Present	President of the Computer Graphics Association (CGS)

Invited talks, Keynotes and Tutorials (Prof. Nadia Magnenat-Thalmann)

- [1] Invited speaker - **Next generation of Virtual Humans and Social Robots** - *University of North Carolina, Chapel Hill, USA, November 18, 2011.*
- [2] Keynote speaker - **Virtual Humans and Social Robots: Our Upcoming Partners** - *13th Annual Frontiers in Research Lectures, University of Ottawa, Canada, November 15, 2011.*
- [3] Keynote speaker - **The making of 3D garments and Virtual Try On** - *CIDE'2011 Conference, Hangzhou, China, November 6-8, 2011.*
- [4] Keynote speaker - **Modelling and simulating our own avatars to be part of virtual groups and crowds** - *CTIT conference, College of Engineering, Dubai, United Emirates, October 26, 27, 2011. http://www.ctit.ae/keynote_speakers.php*
- [5] Keynote speaker - **Towards truly User-centric convergence of Multimedia** - *Future Internet Assembly (FIA) 2011, Budapest, Hungary, May 18, 2011.*
- [6] Keynote speaker - **Haptic Interaction of Hair and Textiles** - *International Symposium on Virtual Reality Innovation, ISVRI 2011, SUNTEC Singapore International Convention and Exhibition Center, Singapore, March 19, 2011.*
- [7] Tutorial speaker - **Virtual Humans in Virtual Reality** - *SUNTEC Singapore International Convention and Exhibition Center, Singapore, March 15, 2011.*

Funded research projects – Participation to European projects

- **3D Life**

Bringing the Media Internet to Life

Period: January 2010 – June 2013

Type: European Research

Website: <http://www.3dlife-noe.eu/>

MIRALab Budget 2011: CHF 164'860.-

Partners (7 partners):

- Queen Mary and Westfield College, University of London – United Kingdom
- Dublin City University – Ireland
- Institut Telecom – France
- Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V. – Germany
- MIRALab, University of Geneva - Switzerland
- Centre for Research and Technology Hellas – Greece
- Korea University – Republic of Korea

- **FRANCOPHONIE**

Accès au patrimoine vestimentaire contemporain et traditionnel francophone

Period: December 2008 - December 2011

Type: Fonds Francophone des Inforoutes

MIRALab Budget 2011: CHF 12'975.-

Partners (2 partners):

- Université de Beyrouth - Liban
- Musée de Mahdia - Tunisie

- **MULTISCALEHUMAN**

Multi-scale Biological Modalities for Physiological Human Articulation

Period: October 2011 - September 2015

Type: European Research

Website: <http://multiscalehuman.miralab.ch/>

MIRALab Budget 2011: CHF 45'660.-

Partners (2 partners):

- MIRALab, University of Geneva - Switzerland
- Les Hôpitaux Universitaires de Genève – Switzerland
- Universidade do Minho – Portugal
- Medizinische Hochschule Hannover – Germany
- Consiglio Nazionale Delle Ricerche - Italy
- Softeco Sismat Srl – Italy
- Gottfried Wilhelm Leibniz Universitaet Hannover – Germany

- **PLAYMANCER**

Serious Gaming 3D Environment

Period: November 2007 - May 2011

Type: European Research

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

MIRALab Budget 2011: CHF 20'800.-

Partners (8 partners):

- Systema Technologies S.A. – Greece
- Netunion s.a.r.l. – Switzerland
- University of Patras, The Wire Communications Laboratory – Greece
- Technische Universitaet Wien – Austria
- Fundacio privada institut d'investigacio biomedica de bellvitge – Spain
- MIRALab, University of Geneva – Switzerland
- Serious Games Interactive (SGI) – Denmark
- Roessingh Research Development BV (RRD) - Netherlands

▪ **SERVIVE**

SERVive oriented Intelligent Value adding nEtnetwork for Clothing-SMEs embarking in Mass-Customization

Period: September 2008 - August 2011

Type: European Research

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

MIRALab Budget 2011: CHF 83'225.-

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
- Unicatium – Germany

Funded research projects

Participation to National projects

- **Aerial Crowd**

Swiss National Research Foundation Project: Aerial Crowd: Populating Mixed Reality Cities

Period: February 2011 – January 2013

Type: Swiss Research

MIRALab Budget 2011: CHF 52'290.-

Partners (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

- **FNRS- REAL**

Swiss National Research Foundation Project: Realistic Computer Human Animation using Medical Modelling

Period: October 2010 – September 2012

Type: Swiss Research

MIRALab Budget 2011: CHF 148'410.-

Partners (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

Others

- **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 2010), EG Workshop on 3D Object Retrieval, IEEE Virtual Reality Conference 2010, Computer Graphics International, CASA conference, SIGGRAPH/EUROGRAPHICS Symposium on Computer Animation, etc

- **Editorial responsibilities**

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|-------------------|---|
| Since 2007 | Associate Editor-in-chief of the “ International Journal of Virtual Reality ”, IPI Press, USA. |
| Since 2007 | Regional Editor of the Journal “ Intelligent Decision Technologies ”, IOS Press, Netherlands. |
| Since 2000 | Editor-in-chief of the Journal “ The Visual Computer ” published by Springer Verlag, Germany. |
| Since 1995 | Editor, Computational Geometry Journal , North Holland. |
| Since August 1994 | Member of Editorial Board, Journal of Universal Computer Science, Electronic Journal . |
| Since 1993 | Member of Editorial Board, Journal of Computer Graphics , Russia. |
| Since 1990 | Co-founder and Co-editor-in-chief, “ Journal of Visualization and Computer Animation ”, John Wiley and Sons. |
| Since 1987 | Associate Editor-in-chief, “ The Visual Computer ”, Springer Verlag, Heidelberg. |

- **International and National Advisory Committees (Prof. Nadia Magnenat-Thalmann)**

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|---------------|--|
| 2010- 2011 | Member of the “3ème cycle romand d'informatique” , Conférence universitaire de la Suisse occidentale (CUSO), Switzerland. |
| 1994- Present | President of the Computer Graphics Association (CGS) |

- **Events**

MIRALab in collaboration with IMI has demonstrated their **Interactive Virtual Try On** at the *IEEE VR 2011 conference in Singapore*, March 19-23, 2011.

- **Workshops**

The European Competence Centre, namely Excellence in Media Computing and Communication (EMC2) in conjunction with Fraunhofer Heinrich Hertz Institute has presented an international industry workshop on: **The Future of 3D Media**, at the *Innovation Center Heinrich Hertz Institute (HHI), Berlin, Germany*, on November 14, 2011.

- **Participation in TV and radio programs**

Interview of Nadia Magnenat-Thalmann, *Radio Cité Genève*, in the program **La bouteille à moitié pleine**, on January 17, 2011.

16- Teaching

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

- **Internship students**

- Yvain Tisserand – Université de Bordeaux I, France.
- Sébastien Vouillot – Université de Provence Aix Marseille I, France.
- Karolina Zawieska – SMARTLab University College Dublin, Germany.