

CUI ACTIVITY REPORT 2012

1st January 2012 to 31 December 2012

Team

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



- **Assistants (PhD students)**
Lazhari Assassi
Matthias Becker
Maher Ben Moussa
Andra Chincisan
Quentin Flamant
Bart Kevelham
Niels Nijdam
Yvain Tisserand
- **Senior Researchers**
Marlène Arévalo
Nedjma Cadi-Yazli
- **Visiting Academic Guests**
Prof. WonSook LEE, University of Ottawa
Prof. Chris Joslin, Carleton University, Ottawa
- **Administration**
Lara Broi

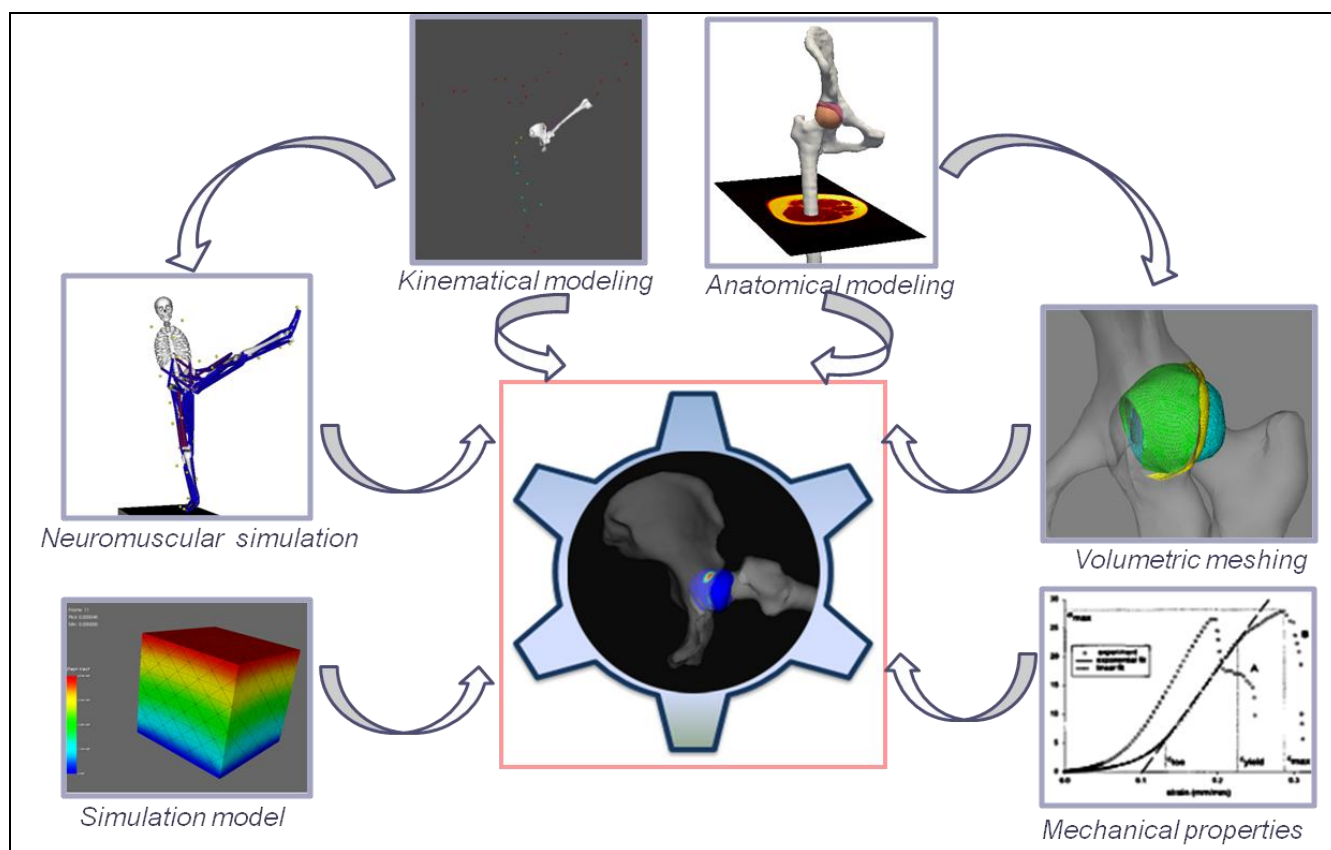
Domain activities

▪ 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 2012, MIRALab was working on the following projects: 3D LIFE, AERIAL CROWD, FNRS Real, FRANCOPHONIE and MULTISCALEHUMAN a Marie Curie Research Training Network. MIRALab has organized various International conferences and workshops.

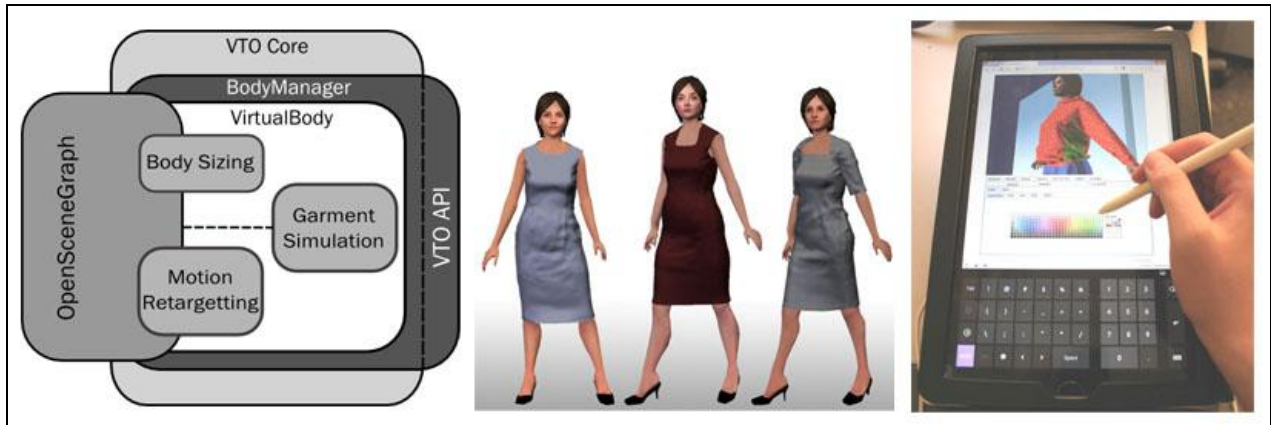
The following are some images of our work:



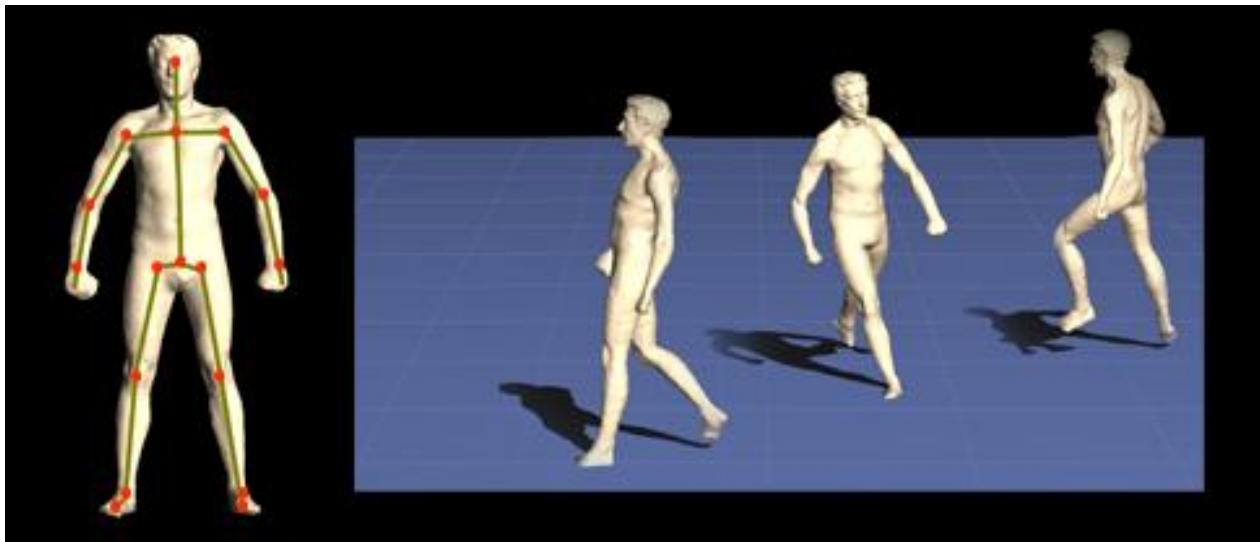
3D medical application



Collaborative telemedicine system



Framework for Adaptive Distributed Simulation and 3D Rendering Services



Automatic Skeleton Positioning from 3D scan data



The Virtual Mirror: real-time garment simulation technology with motion tracking and automatic generation of avatars

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

List of publications - Refereed papers in international journals 2012

- [1] Victoria B. Duthon, Caecilia Charbonnier, Frank C. Kolo, Nadia Magnenat-Thalmann, Christophe D. Becker, Cindy Bouvet, Elia Coppens, Pierre Hoffmeyer, Jacques Menetrey, **Extreme Hip Motion in Professional Ballet Dancers: Dynamic and Morphologic Evaluation Based on MRI**, journal of Arthroscopy, to appear.
- [2] Frank C.Kolo C, Caecilia Charbonnier, Christian W.A. Pfirmann, Sylvain R. Duc, Anne Lubbeke, Victoria B. Duthon, Nadia Magnenat-Thalmann, Pierre Hoffmeyer, Jacques Menetrey and Christoph D. Becker, **Extreme Hip Motion in Professional Ballet Dancers: Dynamic and Morphologic Evaluation Based on MRI**, journal of Skeletal Radiology, to appear.
- [3] F. Fernández-Aranda, S. Jiménez-Murcia, J. J. Santamaría, K. Gunnard, A. Soto, E. Kalapanidas, R. Bults, C. Davarakis, T. Ganchev, R. Granero, D. Konstantas, T. Kostoulas, T. Lam, M. Lucas, C. Masuet-aumatell, M. Ben Moussa, J. Nielsen, E. Penelo, **Video games as a complementary therapy tool in mental disorders: PlayMancer, a European multicentre study**. Journal of Mental Health, Informa, pp. 1-11, 2012
- [4] L. Claes, S. Jiménez-Murcia, J. Santamaría, M. Ben Moussa, I. Sánchez, L. Forcano, N. Magnenat-Thalmann, D. Konstantas, M. Lucas, J. Nielsen, R. G. A. Bults, T. Lam, E.

Kalapanidas, F. Fernández-Aranda, **Facial anger and joy expression in eating disorders and healthy controls: A pilot study with a computerized technique**. European Eating Disorders Review, Special Issue on Emotions and Eating disorders, Wiley, 2012

- [5] L. Claes, S Jimenez-Murcia, J. J Santamaria, M. Ben Moussa, I. Sanchez, L. Forcano, N. Magnenat-Thalmann, D. Konstantas, M. Lucas, J. Nielsen, R. G. A. Bults, T. Lam, **The Facial and Subjective Emotional Reaction in Response to a Video Game Designed to Train Emotional Regulation (Playmancer)**. European Eating Disorders Review, John Wiley & Sons, Ltd, 20, 6, pp. 484-489, October 2012
- [6] E.Arbabi, J.Schmid, R.Boulic, D.Thalmann, N.Magnenat-Thalmann, **Sensitivity of hip tissues contact evaluation to the methods used for estimating the hip joint center of rotation**, Journal of Medical & Biological Engineering & Computing, 2012

List of publications - Full refereed papers in Conference Proceedings in 2012

- [1] M. Ben Moussa, N. Magnenat-Thalmann, D. Konstantas, J. J. Santamaría, F. Fernández-Aranda and S. Jiménez-Murcia, **Facial Affect Recognition For Cognitive-Behavioural Therapy**. Proceedings of the Sixth International Symposium on e-Health Services and Technologies, SciTePress, July 2012
- [2] L. Assassi, N. Magnenat-Thalmann, **Biomechanical Analysis of the Human Hip Joint During Extreme Movements**. Computer Assisted Radiology and Surgery (CARS2012), Pisa, Italy, June 2012
- [3] L. Assassi and N. Magnenat-Thalmann, **A Biomechanical Approach for Dynamic Hip Joint Analysis**, Proceedings of CASA2012, Singapore, May 9-11, 2012
- [4] L. Assassi, M. Becker and N. Magnenat-Thalmann, **Dynamic Skin Deformation based on Biomechanical Modeling**, Proceedings of CASA2012, Singapore, May 9-11, 2012
- [5] K. Zawieska, M. B. Moussa, B. R. Duffy and N. Magnenat-Thalmann, **The role of imagination in Human-Robot Interaction**, Proceedings of CASA2012, Singapore, May 9-11, 2012
- [6] L. Assassi, N. Magnenat-Thalmann, **Biomechanical Modeling of the Human Articulation for Osteoarthritis Analysis**. Computer Methods in Biomechanics and Biomedical Engineering (CMBBE2012), Berlin, Germany, pp. 573-578, April 2012
- [7] N. Nijdam, B. Kevelham, S. Han, N. Magnenat-Thalmann, **An application framework for adaptive distributed simulation and 3D rendering services**. Proceedings of the 11th ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI '12), ACM, pp. 103-110, 2012
- [8] B. Kevelham, N. Magnenat-Thalmann, **Virtual try on: an application in need of GPU optimization**. Proceedings of the ATIP/A*CRC Workshop on Accelerator Technologies for High-Performance Computing, A*STAR Computational Resource Center, pp. 10:1-10:9, 2012

List of publications - Research and technical reports

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

K. Zawieska, B. Kevelham, M. Ben Moussa, N. Magnenat-Thalmann, The Illusion of Intelligence. AAI 2012 **Video Competition**, 2012

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

2012	Participation in the Canada Excellence Research Chairs Review Panel , Ottawa, Canada
2012	Member of External Advisory Committee , Graduate School of Computer Technology, GSCT KAIST, Korea
2007-2012	Expert and reviewer of the Seventh Framework Programme FP7 , European Commission
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), <i>Switzerland</i> .
1994- Present	President of the Computer Graphics Association (CGS)

Conference organization as chair or co-chair

Nov.-Dec. 2012	Computer Animation Festival Chair , 5th ACM SIGGRAPH Conference and Exhibition on Computer Graphics and Interactive Techniques in Asia, Singapore http://www.siggraph.org/asia2012/submitters-computer-animation-festival
Sept. 2012	Award Chair , 18th International Conference on Virtual Systems and Multimedia, VSMM 2012, Italy
Dec. 2012	Program Co-chair , 11th ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry, ACM VRCAI 2012, Singapore
July 2012	Jury Review Chair , 5th ACM SIGGRAPH Conference and Exhibition on Computer Graphics and Interactive Techniques in Asia, Singapore
May 2012	Program and Conference Chair , 25th Annual Conference on Computer Animation and Social Agents, CASA 2012, Singapore

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

- [1] 11th ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry VRCAI 2012, **tutorial** given in “**Social Robots and Virtual Humans in 3D TelePresence**”, Nanyang Executive Centre, Singapore, December 2-4, 2012
<http://conference.ntu.edu.sg/vrcai2012/Pages/Tutorials.aspx>
- [2] Invited talk at International Conference on Wireless Algorithms, Systems, and Applications WASA2012, “**Modelling Multiscale Human: A Marie Curie European Project**”, Singapore, November 27, 2012
- [3] Keynote speech at iKNOW: Advancement in Innovation and Technology, “**Virtual Humans & Social Robots**”, Manila, Philippines, November 24, 2012 (<http://stepupinternationalinc.com/2012/11/18/iknow-advancement-in-innovation-and-technology/>)
- [4] Invited talk at Computational Visual Media Conference, Tsinghua University, “**Visualization of 3D Garments : Problems and Solutions**”, Beijing, China, November 8-10, 2012
http://cg.cs.tsinghua.edu.cn/cvm2012/?page_id=503
- [5] Computational Visual Media Conference, **tutorial** given in “**Modelling Awareness for Social Robots and Virtual Humans**”, Tsinghua University, Beijing, China, November 8-10, 2012
- [6] Invited talk at Workshop on 3D Virtual Patients, Nanyang Technological University, “**The 3D Patient: A Study of the Lower Leg**”, Singapore, November 5, 2012
http://imi.ntu.edu.sg/IMISeminars/Documents/Workshop/3D_Virtual_Patients.pdf
- [7] Keynote speech at International Conference on Cultural Heritage, EUROMED2012, “**Cultural Heritage in Fashion: Preserving Ancient Dresses through 3D Simulation**”, Lemesos, Cyprus, 29 October – 3 November 2012 (<http://www.euromed2012.eu/index.php/programme/>)
- [8] Invited talk at Graduate School of Computer Technology, KAIST, “**The 3D Virtual Patient**”, Korea, November 1, 2012
- [9] Invited talk at Festival Della Scienza Bellezza, “**Digital Atlases of The Human Body**”, Genova, Italy, October 26, 2012
<http://translate.google.com.sg/translate?hl=en&sl=it&tl=en&u=http%3A%2F%2Fwww.festivalscienza.it%2Fsite%2Fhome.html>
- [10] Invited talk at Marie Curie Actions shaping the European Research and Innovation Landscape, “**Should I Stay or Should I Go?**”, <http://ec.europa.eu/research/conferences/2012/marie-curie-brussels/index.cfm?pg=speaker&name=magnenat-thalmann>
- [11] Keynote speech at Graphics Interface 2012, “**The Physiological Virtual Human**”, Toronto, Ontario, Canada, May 28-30, 2012 <http://web.cs.dal.ca/~sbrooks/gi2012/program.html>
- [12] Invited speaker at CoE Seminar Series on New Media, Nanyang Technological University, “**Defining Personality, Mood and Emotions for Social Robots**”, Singapore, May 22, 2012.
- [13] Keynote speaker at ATIP/A*CRC Workshop on Accelerator Technologies for High Performance Computing: Does Asia Lead the Way?, “**Virtual Try On: An Application that Needs GPU Acceleration**”, Singapore, May 7-10, 2012.
http://www.acrc.astar.edu.sg/astaratipreg_2012/speakers.html

- [14] Invited speaker at Workshop on Interactive Digital Media “**The Physiological Human: A Challenge for the 21st Century**”, Singapore, March 12-13, 2012. <http://www3.ntu.edu.sg/imi/3d-idm/speakers.html>
- [15] Keynote speaker at the International Conference on Human Body Motion Analysis with Motion Capture, “**Videocapturing for medical applications**”, Japan, January 21, 2012. (http://www.img.is.ritsumei.ac.jp/web_data/meetings/mocap/20120121/MoCapHP.pdf)

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 2012: CHF 118'573.-

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

▪ **MULTISCALEHUMAN**

Multi-scale Biological Modalities for Physiological Human Articulation

Period: October 2011 - September 2015

Type: European Research

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

MIRALab Budget 2012: CHF 182'640.-

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

Funded research projects

Participation to National projects

▪ **Aerial Crowd**

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

Period: February 2011 – April 2013

Type: Swiss Research

MIRALab Budget 2012: CHF 35'270.-

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 2012: CHF 97'080.-

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. |

- **Honours and scientific awards for 2012**

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| 2012 | Professor Nadia Magnenat-Thalmann received the prestigious Humboldt Research Award in Germany in recognition of her outstanding achievements and fundamental discoveries, June 2012, Alexander von Humboldt Foundation, Germany |
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This award is granted in recognition of a researcher's entire achievements to date to academics whose fundamental discoveries, new theories, or insights have had a significant impact on their own discipline and who are expected to continue producing cutting-edge achievements in the future.

Many Nobel Prize Winners have also received this award:
<http://www.humboldt-foundation.de/pls/web/docs/F13971/nobelpreistraeger.pdf>

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| 2012 | The Canadian Human Computer Communications Society Achievement award .
http://www.cs.ubc.ca/~ksbooth/gi/archive/achvmnt2012-en.html |
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