

Marco Fratarcangeli

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Research interests

Interactive graphics, computational animation, high-performance computing and virtual characters.

Academic Experience

2016–today	Associate Professor at Chalmers University of Technology, Sweden.
2014–2016	Senior Lecturer at Chalmers University of Technology, Sweden.
2011–2014	Assistant Professor at Sapienza University of Rome, Italy.
07 2017	Visiting Professor at Disney Research Zurich, Switzerland.
03-07 2014	Visiting Professor at Tèlècom ParisTech, France.

Education

2004–2009	Ph.D. in Computer Engineering, Sapienza University of Rome, Italy. Thesis: <i>Computational Models for Animating Virtual Faces</i> . Supervisors: Marco Schaerf and Robert Forchheimer.
2004–2006	Visiting Ph.D. Student at Linköping Institute of Technology, Sweden. Research in face animation for model-based coding.
2004	M.Sc. (Laurea) in Computer Engineering. Sapienza University of Rome, Italy.

Industrial Experience

2006–today	Co-owner of Visage Technologies AB, Sweden. http://www.visagetechnologies.com/ .
2009–2011	Senior Software Engineer at Taitus Software srl, Italy. Project technical lead, visualization tools for analysis and planning of Earth Observation missions for the European Space Agency.

Fellowships and Grants

2016–2018	Interactive 3D deformable bodies. Vetenskapsrådet (Swedish Research Council), Starting grant, acceptance ratio < 9%, sole applicant
2016	Interactive cloth animation research. IKEA Communications AB, Industrial research project, sole applicant
2016	ImageLife2. Chalmers Area of Advance ICT, Seed project
2016	ImageLife. Chalmers Area of Advance ICT, Seed project
2015	Anatomically-inspired Face Animation for Behavioral Realization. Telecom ParisTech, sole applicant
2012–2015	Surgical Threads Simulations Based on a Novel Information-Theory Approach, Qatar National Research Foundation
2004	Three years fellowship awarded from the Italian Ministry of Research (MIUR) to support my PhD studies.

Supervision

2016–today	Tomasz Kosiński. PhD student. Field: Human-Computer Interaction, deep neural networks. Role: co-supervisor. Main supervisor: Prof. Morten Fjeld.
2012–2015	Nadine Abu Rumman. PhD thesis, title: <i>Position-based Skin Deformations for Interactive Character Animation</i> . Field: Computer Engineering. Role: Main supervisor.

PhD Thesis Committee

2016	Jasper Molin. Chairman, Chalmers, Sweden.
2016	Viktor Kämpe. Evaluation Committee, Chalmers, Sweden.
2014	Jon Denning. Evaluation Committee, Dartmouth College, USA

Awards

2014	Best Paper Award at ACM Spring conference on Computer Graphics (SCCG).
2006	Best Paper Award at RoboCup International Symposium.
2004	Honorable mention for the best ICT Master Thesis in Italy. <i>Federcom-Aica</i> yearly recognize the best Italian master thesis in Information and Communication Technologies.

Teaching

2017	Lecturer (MSc), Game Engine Architecture, Chalmers, Gothenburg, Sweden.
2016	Lecturer (MSc), Game Engine Architecture, Chalmers, Gothenburg, Sweden.
2015	Lecturer (MSc), Game Engine Architecture, Chalmers, Gothenburg, Sweden.
2013	Lecturer (MSc), Computer Graphics, Sapienza, Rome, Italy.
2011	Lecturer (PhD), Interactive Objects in Gaming Application, Sapienza, Rome, Italy.
2012	Lecturer (MSc), Computer Graphics, Sapienza, Rome, Italy.
2011	Lecturer (PhD), General-purpose computing on graphics processing units (GPGPU), Sapienza, Rome, Italy.
2007	Teaching Assistant (MSc), Computer Graphics, Sapienza, Rome, Italy.
2004	Teaching Assistant (MSc), Computer Graphics, Sapienza, Rome, Italy.

Organization of Scientific Meetings

2017	Conference chair, ACM Virtual Reality Software and Technology (VRST)
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Commissions of Trust

2016	Scientific Evaluator, Italian Ministry of Education, Universities and Research (MIUR) for Projects of national interest (PRIN).
2016	Scientific Evaluator, Icelandic Research Fund (IRF), Grant of excellence.
2014	Scientific Evaluator, Ministry of Business, Innovation & Employment of New Zealand
2017, 2016	PC Member, Eurographics Smart Tools and Apps in Computer Graphics
2015	
2016	PC Member, ACM NordiCHI, Nordic Conference on Human-Computer Interaction
2017	PC Member, ACII, Affective Computing and Intelligent Interaction
2017, 2016	PC Member, DiGRA/FDG Digital Games Research, Foundations of Digital Games
2014	PC Member, SIGRAD, Eurographics Swedish Chapter

Service as Reviewer

	2017	SIGGRAPH	
	2017	Pacific Graphics	
2017, 2013	2012, 2011	2010	Eurographics
	2017, 2016	2015	Graphical Models (Elsevier)
	2017, 2015	2013	Computer Animation and Virtual Worlds (Wiley)
	2016, 2010		SIGGRAPH Asia
	2016		ACM Transaction on Graphics
	2016		Computer Graphics Forum (Wiley)
	2016		Computer & Graphics (Elsevier)
	2015, 2014		Journal of Graphical tools
	2015		IEEE Transactions on Circuits and Systems for Video Technology
	2015		International Journal of High Performance Computing.
	2014		ACM Transactions on Affective Computing
	2014		Computer Animation and Social Agents
	2012		CGI
	2011		ACM Transactions on Haptics
	2010, 2007		Virtual Reality Interaction and Physical Simulation
	2006		Eurographics (short papers)

Invited Talks

10/2017	<i>Fast, Interactive Deformable Bodies</i> ICCV Workshop on Image-based Modeling of Articulated and Deformable Objects, Venice, Italy. Invited by Fiora Pirri.
06/2017	<i>Sustainability in the digital world</i> International Society for Information Studies Summit (IS4SI), Gothenburg, Sweden. Invited by Gordana Dodig-Crnkovic.
02/2017	<i>Interactive Solving of Large and Sparse Linear Systems.</i> Bellairs Workshop on Computer Animation, Barbados. Invited by Paul Kry.

International Conference Talks

2016	SIGGRAPH Asia, Macau, China.
2015	Eurographics, Zurich, Switzerland.
2014	SIGRAD, Eurographics Swedish Chapter, Gothenburg, Sweden.
2012	ACM Symposium on Facial Analysis and Animation. Vienna, Austria.
2012	Computer Animation and Social Agents (CASA), Singapore.
2005	Eurographics, Short papers session. Dublin, Ireland.
2005	IEEE Image and Signal Processing and Analysis (ISPA). Zagreb, Croatia.
2005	Virtual Reality and Physical Simulations(VriPhys). Pisa, Italy.
2004	Computer Animation and Social Agents (CASA), Geneva, Switzerland.

Major Collaborations

I am a member of the Dept. in Applied IT, and connected to the Centre for Visualization - Visual Arena Research, at Chalmers where I collaborate mainly with Morten Fjeld (HCI) and Ulf Assarsson (computer graphics). I have been part and contributed in the project *Data Intensive Visualization and Analysis (DIVA)*, supported for four years by an EU FP7 ITN Marie-Curie grant. Other ongoing collaborations: Fabio Pellacini (Sapienza, computer graphics), Catherine Pelachaud and Jing Huang (Tèlècom ParisTech, affective computing), Jörgen Ahlberg and Robert Forchheimer (Linköping University, multimodal interaction), Igor Pandzic (Zagreb University, computer vision).

Publications

Journal Articles

11. HUANG J., WANG Q., FRATARCANGELI M., YAN K., PELACHAUD C.: Multi-variate gaussian-based inverse kinematics. *Computer Graphics Forum* (2017), n/a–n/a
10. WANG Z., FRATARCANGELI M., RUI MI A., SRINIVASA A.: Real time simulation of inextensible surgical thread with force output for haptic feedback applications. *International Journal of Solids and Structures* (2017), –
9. FRATARCANGELI M., TIBALDO V., PELLACINI F.: Vivace: A practical gauss-seidel method for stable soft body dynamics. *ACM Trans. Graph. (Siggraph ASIA)* 35, 6 (Nov. 2016), 214:1–214:9
8. HUANG J., FRATARCANGELI M., DING Y., PELACHAUD C.: Inverse kinematics using dynamic joint parameters. *The Visual Computer* (2016), 1–13
7. FRATARCANGELI M., PELLACINI F.: Scalable partitioning for parallel position based dynamics. *Computer Graphics Forum (Eurographics)* 34, 2 (2015), 405–413
6. MARCUŠ N., FRATARCANGELI M., PANDZIC I., AHLBERG J.: Fast rendering of image mosaics and ascii art. *Computer Graphics Forum* 34, 6 (September 2015), 251–261
5. RUMMAN N. A., FRATARCANGELI M.: Position-based skinning for soft articulated characters. *Computer Graphics Forum* 34, 6 (2015), 240–250
4. FRATARCANGELI M., PELLACINI F.: A GPU-based implementation of position based dynamics for interactive deformable bodies. *Journal of Graphics Tools* 17, 03 (2015), 59–66. Invited Paper
3. FRATARCANGELI M.: Position-based facial animation synthesis. *Computer Animation and Virtual Worlds* 23, 3-4 (2012), 457–466
2. ZARATTI M., FRATARCANGELI M., IOCCHI L.: A 3d simulator of multiple legged robots based on usarsim. *RoboCup 2006: Robot Soccer World Cup X 4434* (2007), 13–24
1. FRATARCANGELI M., SCHAEFER M., FORCHHEIMER R.: Facial motion cloning with radial basis functions in mpeg-4 fba. *Graphical Models* 69, 2 (2007), 106–118

Book Chapters

2. FRATARCANGELI M.: Comparing glsl, opencl and cuda: cloth simulation on the gpu. In *Game Engine Gems 2*, Lengyel E., (Ed.), 1 ed. A K Peters/CRC Press, February 2011, ch. 22, pp. 365–379
1. FRATARCANGELI M.: A versatile and interactive anatomical human face model. In *Game Programming Gems 8*, Lake A., (Ed.), 1 ed. Cengage Learning PTR, March 2010, ch. 2.1, pp. 121–132

International Refereed Conferences

17. CALABRESE C., FRATARCANGELI M., PELLACINI F.: sLayer: a System for Multi-Layered Material Sculpting. In *Eurographics Symposium on Rendering - Experimental Ideas & Implementations* (2017), Zwicker M., Sander P., (Eds.), The Eurographics Association
16. NELSON V., MC EVOY P., FRATARCANGELI M.: Practical offline rendering of woven cloth. In *STAG: Smart Tools and Apps in Computer Graphics* (2016)
15. RUMMAN N. A., FRATARCANGELI M.: State of the art in skinning techniques for articulated deformable characters. In *Proceedings of the 11th Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications* (2016), pp. 198–210
14. DANCU A., FRATARCANGELI M., FOURGEAUD M., FRANJCIC Z., CHINDEA D., FJELD M.: Low-cost Experimental Setups for Mid-air 3D Reconstruction. In *Smart Tools and Apps for Graphics - Eurographics Italian Chapter Conference* (2015), Giachetti A., Biasotti S., Tarini M., (Eds.), The Eurographics Association
13. RUMMAN N. A., FRATARCANGELI M.: Position based skinning of skeleton-driven deformable characters. In *ACM Spring Conference on Computer Graphics* (2014), SCCG '14, ACM, pp. 83–90. Best paper award
12. FRATARCANGELI M., PELLACINI F.: Towards a massively parallel solver for position based dynamics. In *SIGRAD, Swedish Chapter of Eurographics* (Göteborg, Sweden, June 2014), Computing V., (Ed.)
11. TIRITICCO D., FRATARCANGELI M., FERRARA R., MARRA S.: Near real-time multi-gpu ω k algorithm for sar processing. In *IEEE Geoscience and Remote Sensing* (October 2014), pp. 277–280
10. MURRU G., FRATARCANGELI M., EMLER T.: Practical augmented visualization on handheld devices for cultural heritage. In *Computer Graphics, Visualization and Computer Vision* (2013), Agency V. S.-U., (Ed.)
9. FRATARCANGELI M.: Interactive, musculoskeletal model for animating virtual faces. In *ACM Symposium on Facial Analysis and Animation* (September 2012), FAA '12, ACM, pp. 16:1–16:1
8. FRATARCANGELI M., ANDOLFI M., STANKOVIC K., PANDZIC I.: Animatable face models from uncalibrated input pictures. In *IEEE Conference on Telecommunications. ConTEL* (June 2009), pp. 177–184
7. FANELLI G., FRATARCANGELI M.: A non-invasive approach for driving virtual talking heads from real facial movements. In *IEEE 3DTV Conference* (May 2007), pp. 1–4
6. KUBIAK B., PIETRONI N., GANOVELLI F., FRATARCANGELI M.: A robust method for real-time thread simulation. In *ACM Symposium on Virtual Reality Software and Technology* (2007), VRST '07, ACM, pp. 85–88
5. ZARATTI M., FRATARCANGELI M., IOCCHI L.: A 3d simulator of multiple legged robots based on usarsim. In *Springer Robocup 2006 Symposium* (2006), Springer. Best paper award
4. FRATARCANGELI M.: Physically based synthesis of animatable face models. In *Virtual Reality and Physical Simulation (Eurographics VRIPHYS)* (Pisa, Italy, November 2005), ISTI-CNR, Eurographics Association, pp. 32–39
3. FRATARCANGELI M., SCHAERF M.: Facial motion cloning using global shape deformation. In *Eurographics Short Papers* (Dublin, Ireland, August 2005), The Eurographics Association and The Image Synthesis Group, pp. 89–92

2. FRATARCANGELI M., SCHAERF M.: Fast facial motion cloning in mpeg-4. In *IEEE Image and Signal Processing and Analysis (ISPA)* (Zagreb, Croatia, September 2005), IEEE - Signal Processing Society, pp. 310–315
1. FRATARCANGELI M., SCHAERF M.: Realistic modeling of animatable faces in mpeg-4. In *Computer Animation and Social Agents* (Geneva, Switzerland, July 2004), MIRALAB, Computer Graphics Society (CGS), pp. 285–297