



Manuela Chessa

Fixed-term assistant professor

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Education and training

2009

PhD in Bioengineering

Context-sensitive Receptive Fields for the Analysis of the Visual Motion
Models and Processing Architectures
Università di Genova - Genova - IT

2005

MsC In Bioengineering

110/110 e lode
Università di Genova - Genova - IT

Academic experience

2017 - ONGOING

Fixed Term Assistant Professor

Università di Genova - Genova - IT

2009 - 2017

Post-doctoral fellow (Assegnista di Ricerca)

Università di Genova - Genova - IT

2006 - 2009

PhD student

Università di Genova - Genova - IT

Language skills

Italian

Mother tongue

English

Proficient

French

Basic

Teaching activity

a.a. 2017-2018 Lecturer, Course “Introduction to Computer Programming”,
Degree in Computer Science, University of Genoa, Italy.

a.a. 2017-2018 Lecturer, Course “Computer Graphics & Augmented Reality”,
Master Degree in Computer Science, University of Genoa, Italy.

2015 – 2017 Lecturer, Course “Virtual and mixed reality environments and
their assessment” Master Degree in Bioengineering, University of Genoa,
Italy.

2014 – 2017 Lecturer, Course “C++ Programming techniques” PhD program in Bioengineering and Robotics

2013 –2016 Lecturer, Course “Projective geometry and 3D transformation in real and virtual environments” Master Degree in Bioengineering, University of Genoa, Italy.

2014 – 2015 Lecturer, Course “Stereoscopic virtual environments and their assessm' Master Degree in Bioengineering, University of Genoa, Italy.

2011 – 2013 Lecturer, Course “Programming technique for augmented reality environments and for the distributed computation” Master Degree in Bioengineering.

2005 – 2015 Laboratory tutor and seminars for the following Courses: “Computer Vision”, “Computer Programming” (Informatica 1 e 2), “Algorithms and Data Structure” (Strutture Software), “Advanced Programming” (Tecniche avanzate di progettazione software), “Multimedia Systems”. Master Degree in Robotic Engineering, European Master on Advanced Robotics (EMARO), Erasmus Mundus, Electronic Engineering and Biomedical Engineering, University of Genoa, Italy.

Postgraduate research and teaching activity

Supervision of PhD students, residents and post-doctoral fellows

2017 - present Co-supervision of Giorgio Ballestin, PhD program in Computer Science and Systems Engineering of the Department of Computer Science, Bioengineering, Robotics and Systems Engineering of the University of Genova

2016 - present Co-supervision of Chiara Bassano, PhD program in Computer Science and Systems Engineering of the Department of Computer Science, Bioengineering, Robotics and Systems Engineering of the University of Genova

2012 – 2015 Supervision of a Research fellow, working on the following topic: development of virtual and augmented reality environments, based on stereoscopic visualization.

PhD committees membership

Member of the PhD Board of the PhD program in Computer Science and Systems Engineering of the Department of Computer Science, Bioengineering, Robotics and Systems Engineering of the University of Genova (DOT1311744)

Postgraduate (PhD) teaching activity

Lecturer for the Course 'Interaction in Virtual and Augmented Reality” for the PhD program in Computer Science and Systems Engineering of the Department of Computer Science, Bioengineering, Robotics and Systems Engineering and for the PhD Program in Bioengineering and Robotics of the University of Genova.

Lecturer for the Course 'C++ Programming techniques" for the PhD Program in Bioengineering and Robotics of the University of Genova.

Research interests

I am active in two main streams of research activities:

(i) *the study of novel methods and technologies to achieve a Natural Human-Computer Interaction.*

I combine methods from Computer Science and Computer Vision with methods from psychophysics in order to study the perception issues that arise when using HCI, in particular in virtual and augmented reality environments. My interests are related to the study of misperception, immersion, and natural fruition of HCI. The application fields are the study of the visuo-motor coordination, and the development of systems for the cognitive rehabilitation, by using augmented reality systems.

I study the use of novel sensing technologies (e.g. Microsoft Kinect, Leap Motion, Intel Real Sense) and of visualization devices (e.g. 3D monitors, head-mounted-displays, mobile devices) to develop natural interaction systems, always having in mind the human perception. In particular, I am active in studying misperception issues, visual stress and fatigue that arise by using such systems.

(ii) *the development of cortical models for bio-inspired computer vision and feature extraction.*

My research focuses on the development of neural models for the estimation of optic flow and disparity, based on distributed populations of cells, inspired by the processing of cortical areas V1 and MT. The preliminary steps of this work are described in my PhD thesis. A recent achievement on this field is the development of a bio-inspired model for optic flow computation with performances comparable to the state-of-the-art (called Heeger++ and FFV1MT models, see Middlebury Flow Dataset for a quantitative analysis).

Editorial activity

2018 – pres. Member of the Program Committee of ACVR Workshop

2017 – pres. Member of the Program Committee della Conferenza VISAP

2017 – 2018 Guest Editor (with Fabio Solari, University of Genoa, Genoa, Italy; Eris Chinellato, Middlesex University, London, UK; Jean-Pierre Bresciani, University of Fribourg, Fribourg, Switzerland) for the Special Issue 'Advances in Human-Computer Interactions: Methods, Algorithms, and Applications (AHCIM)' in Computational Intelligence and Neuroscience, Hindawi.

<https://www.hindawi.com/journals/cin/si/412469/>

2017 – pres. Program Co-chair of the International Conference HUCAPP (International Conference on Human Computer Interaction Theory and Applications, part of VISIGRAPP) <http://www.hucapp.visigrapp.org/>

2016 - Member of the Publicity Committee for the Conference IFSA-SCIS

2017: Joint 17th World Congress of International Fuzzy Systems Association and 9th International Conference on Soft Computing and Intelligent Systems (<http://ifsa-scis2017.j-soft.org/>)

2012 - Member of the editorial committee of 'Human-Centric Machine

Vision'. M. Chessa, F. Solari, S.P. Sabatini. InTech, ISBN: 978-953-51-0563-3, 188 pages, 2012

<http://www.intechopen.com/books/human-centric-machine-vision>

2012 - Member of the editorial committee of 'Machine Vision - Applications and Systems'. F. Solari, M. Chessa, S.P. Sabatini. InTech, ISBN:

978-953-51-0373-8, 284 pages, 2012.

<http://www.intechopen.com/books/machine-vision-applications-and-systems>

REVIEWER ACTIVITIES

Reviewer for Journals: "Displays", "Applied Ergonomics", "Integrated Computer-Aided Engineering", "International Journal of Neural Systems", "Journal of Vision", "PLOS-One", "IEEE Systems, Man and Cybernetics: Systems", "IEEE Transactions on Circuits and Systems for Video Technology", "Concurrency and Computation: Practice and Experience", 'Neurocomputing', 'Sensors'.

Reviewer for International Conferences: "International Joint Conference on Neural Networks", 'ACVR', 'EPIC', 'VISIGRAPP', 'WACV', 'ISMAR'.