# University of Genoa, DIBRIS Casa Paganini–InfoMus

*Missione scientifico-tecnologica:*
*- intersezione tra la ricerca scientifica sulle future tecnologie dell'informazione e della comunicazione (ICT) e la ricerca artistica e umanistica su user-centric media;*
*- ricerca su human-centered computing e sistemi interattivi multimediali, ispirata dalle arti e dalla cultura umanistica.*



*Casa Paganini – InfoMus: main lab space, in the monumental building of S.Maria delle Grazie La Nuova in Genoa.*



*"An UnVeiled Dance" - case study on automated analysis of expressive movement: dance of the seven veils, Salome, R.Strauss. Opera House Carlo Felice, 2016 (DANCE EU Horizon 2020 ICT Project)*



www.casapaganini.org
www.youtube.com/InfoMusLab

*Founded in 1984 at DIST-University of Genoa, InfoMus Lab originated the Casa Paganini-InfoMus Research Centre in 2005. From 2014, the research centre is part of the ARIEL Augmented Rehabilitation Joint Lab with the Gaslini Children Hospital of Genoa.*

*Casa Paganini–InfoMus cultivates the intersection of scientific research in ICT with artistic and humanistic research in new media. The mission of Casa Paganini – InfoMus consists of carrying out scientific and technological research on human-centered computing where art and humanistic culture are a fundamental source of inspiration in a trans-disciplinary approach.*

*Scientific and technological research: development of computational models and systems for the automated analysis of non-verbal multimodal expressive and social behavior; sound and music computing; interactive sonification; multimodal interactive systems and serious games for therapy and rehabilitation, sport, edutainment, museums and cultural institutions, entertainment. Multimedia systems and services for the creative industry (e.g., active music listening, interactive dance, theatre, museums and cultural heritage institutions), development of innovative multimodal interactive systems.*

*The Casa Paganini – InfoMus Research Centre coordinates and participates as partner in international projects (Coordinator of 6 EU ICT and FET Projects, and Partner in over 25 EU projects; partner in research projects in Canadian, UK, and South-Korean national project) on scientific and technological research, education. Development of multimedia systems, platforms, and applications for industry partners and institutions.*

*The multimedia software platform EyesWeb, conceived, designed, and developed by Casa Paganini – InfoMus, is adopted by thousands of users worldwide for scientific research, education, and industry applications. INTEL selected EyesWeb for their products on independent living.*

*The FET Unit of the EU Commission selected Casa Paganini – InfoMus to create an interactive dance and music performance to demonstrate scientific results on real-time analysis of non-verbal social signals (final session of the European Future Technologies Conference and Exhibition FET11, 4-6 May 2011). EU Commission (DG CONNECT) selected Casa Paganini-InfoMus for a dance performance at EU Celebration of the 60 years of the Treaty of Rome, based on the results of the DANCE EU ICT project.*
*Development of interactive systems for Luciano Berio music theatre operas at Teatro La Scala di Milano and Salzburg Festival; collaborations at Biennale Venezia and other artistic and cultural institutions.*

*DANCE EU Horizon 2020 ICT Project on automated analysis of movement qualities: an example on Fragility (left) and Lightness (Below), collaboration with choreographer Virgilio Sieni.*
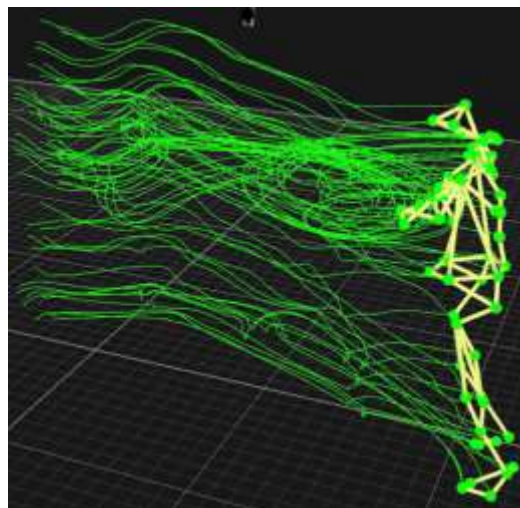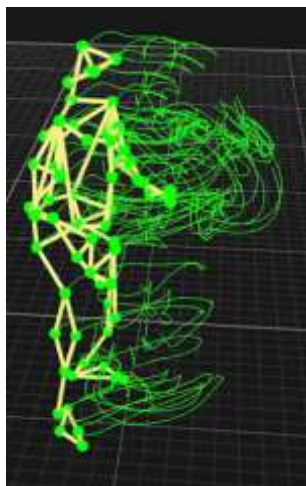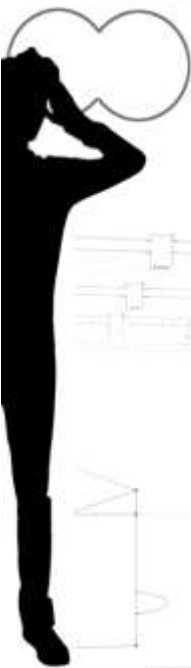
# Viaggiatori di sguardo

Un progetto unico in Italia e all'estero. Nuove tecnologie multimediali. Nuove modalità di fruizione attiva di beni culturali.

Un'ombra luminosa sulla parete segue ogni tuo spostamento e ti consente di ritagliare sullo schermo buio zone visibili in base ai tuoi movimenti.

Simula, con le mani, di impugnare un binocolo: i Palazzi dei Rolli si apriranno al tuo sguardo, attraversando le superfici, scoprendo visioni distanti, ove potrai scrutarne i tesori nascosti.

La *Via Aurea* prende vita intorno agli occhi e al corpo del visitatore, aprendosi al gesto, rivelandosi allo sguardo.

*Palazzo Ducale Fondazione per la Cultura, Genova, "Viaggiatori di sguardo" interactive installation (2009-2012): a virtual visit of the UNESCO treasure of Palazzi dei Rolli, by means of the metaphor of the "virtual binocular".*



***TanGO Touching Music**, Closing Session FET11, European Future Technologies Conference and Exhibition FET11, Budapest Congress Centre, 4-6 May 2011.*
*Live interactive performance for dancers and voice, commissioned by EU: demonstration of technologies and research results obtained by Casa Paganini – InfoMus in the EU ICT FET SIEMPRE Project. Emotion and social cues are measured from full-body movement of dancers to activate and shape in real time a tango music.*
*www.fet11.eu*
*Video: www.youtube.com/InfoMusLab*
*www.siempre.infomus.org*



*Museum Enrico Caruso, Villa Bellosguardo, Firenze Signa, permanent multimedia interactive exhibits (2010-2014): visitors evoke and manipulate, by means of their individual or group movement and behavior, short fragments ("music gushes") of recordings of the voice of the famous tenor.*

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## Casa Paganini–InfoMus Research Centre

## Research Projects

Casa Paganini - InfoMus participates as Coordinator or Partner to international projects, including EU funded projects in the 5th, 6th, 7th and Horizon 2020 Framework Programmes.

**EU Projects, Horizon 2020:**

- FET PROACTIVE EnTimeMent, (Coordinator, 2019-2022): multi-timescales sensitive movement technologies (entimement.dibris.unige.it).

- ICT DANCE – Dancing in the Dark (Coordinator, 2015-2017): automatic analysis of expressive movement qualities and sensory substitution (interactive sonification of dance). *http://dance.dibris.unige.it*

- ICT WholoDance (2016-2019) – interactive ICT to support dance education. *http://wholodance.eu*

- ICT TELMI (2016-2019) – interactive ICT to support music education. *http://telmi.upf.edu/*

- ICT WeDraw (2017-2019) – interactive ICT to support children education of arithmetic and geometry. *http://wedraw.eu*

**EU Projects, 7th Framework Program:**

- ICT ASC INCLUSION (STREP, 2011-2014): development of interactive networked serious games characterized by multimodal interaction for the support and therapy of autism.

- ICT FET ILHAIRE (STREP, 2011-2014): study of cognitive and emotional foundations of laughter, develop computational models and techniques to analyze laugher in human-computer communication and in future multimedia systems.

- ICT FET SIEMPRE, (Coordinator, STREP, 2010-2013): computational models and algorithms for the analysis of non-verbal creative communication within groups of people: empathy, entrainment, leadership, co-creation, emotional contagion. Ensemble musical performance as main testbed. Partners: IIT, Queens Univ of Belfast, PFU Univ. Barcelona, Univ. of Geneva.

- ICT FET SIEMPRE-INCO Extension, (Coordinator, INCO, 2012-1013): Partners: Stanford University, Virginia Tech, Waseda University Tokyo.

- ICT I-SEARCH (STREP, 2010-2012): Novel search engines based on non-verbal multimodal content. Coordinator: CERTH; Partners: Casa Paganini – InfoMus, GOOGLE Ireland Ltd, JCP-Consult, INRIA, Engineering SpA, Exalead, Erfurt University of Applied Sciences, Accademia Nazionale di Santa Cecilia, EasternGraphics Gmbh

- ICT MIROR (STREP, 2010-2012): development of an innovative and adaptive system for music learning and teaching based on the reflexive interaction paradigm, focusing on early childhood music education. The platform integrates the EyesWeb platform with Sony CSL Continuator.

- ICT SAME, (Coordinator, STREP, 2008-2010): Mobile Active Music Listening: Development of new context-aware interactive systems for active listening of pre-recorded music. Partners: Nokia Research Centre; KTH (S); Universitat Pompeu Fabra (E); IRCAM (Paris); Helsinki Aalto University.

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- ICT CAPSIL(Coordination Action, 2008-2010): Independent living: Monitoring elderly patients to anticipate diagnosis of cognitive and motoric decline – INTEL project coordinator.

**EU Projects, Culture Programme**

- EU Culture Project MetaBody (2013-2018): cultural diversity, non-verbal communication and embodied expressions as primary substrate of cultural heritage. (metabody.eu)

- EU Culture Project CoMeDiA (2008-2010): Networked music performance. (www2.comedia.eu.org/wordpress/).

**EU IST- ICT Projects, 6th Framework Programme:**

- IST TAI-CHI (STREP, 2004- 2006): Tangible Acoustic Interfaces for Computer-Human Interaction.

- ENACTIVE: (EU Network of Excellence 2004 – 2007), European network of main research centers on Human-Machine Interaction and Enactive Multimodal Interfaces.

- HUMAINE (EU Network of Excellence, 2004– 2007), European network of main research centers on Human-Machine Interaction and computational models of emotion and multimodal interfaces.

- ConGAS (COST Action, April 2003 - March 2007), Gesture CONtrolled Audio Systems.

- S2S^2 (Coordinated Action, June 2004 - May 2007) Sound to Sense - Sense to Sound: to coordinate and build a research Roadmap for the Sound and Music Computing discipline and industry: smcnetwork.org

- U-CREATE (UE CRAFT Project) Creative Authoring Tools for Edutainment Applications, development end technology transfer to SME of multimedia tools and applications based on EyesWeb.

**EU-IST Projects:**

- IST Project MEGA Multisensory Expressive Gesture Applications (STREP, 2000- 2003). Project coordinator: InfoMus Lab.

- TMR Network MOSART: Network of EU research centers on Music Orchestration Systems in Algorithmic Research and Technology, 2000-2003).

- IST Project MEDIATE: Multisensory Environment Design for an Interface between Autistic and Typical Expressiveness (2003).

- IST Project CARE HERE: Creating Aesthetically Resonant Environments for the Handicapped, Elderly and Rehabilitation (2002).

- Esprit Project MIAMI: Multimodal Interaction for Advanced Multimedia Interfaces (1994-1997).

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## *Casa Paganini–InfoMus Research Centre*

## *Industry partnership (excerpt)*

- Contracts and license released to *INTEL* of the software platform EyesWeb (conceived, designed, and developed by InfoMus Lab: www.eyesweb.org ): EyesWeb is adopted by INTEL as standard for their hardware products for "independent living".

- Contracts with *SUGAR Srl* music label on joint research on active music listening products.

- Contracts with *SIPRA SpA* media advertising industry, for prediction of TV audience based on KANSEI technology (2000-2008).

- Development of the MotionComposer product based on EyesWeb, for *IMM Group* and *Palindrome* (2013-2014).

- Design and development of interactive on-stage technology for several music theatre operas, including "Outis" (Luciano Berio, Teatro alla Scala, Milano), "Cronaca del Luogo" (Luciano Berio, Salzburg Festival 1999), and Biennale di Venezia, Teatro La Fenice of Venezia, opera house Teatro Carlo Felice of Genoa.

- Interaction design and development of EyesWeb interactive systems for performing arts.

*Atlante del Gesto_Genova on Facebook (DANCE EU H2020 ICT Project)*



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***Casa Paganini–InfoMus Research Centre Projects with Cultural Institutions (excerpt)***

Design and development of interactive systems and multimedia installations for museums, science centers, exhibits in Italy and abroad, exploiting the scientific and technological results obtained by the research:

- "Museo Enrico Caruso", Villa Bellosguardo, Firenze Signa: Permanent multimedia interactive installations (2010-2013).

- "Mobile Music", museum exhibition on active music listening, Casa Paganini, Festival della Scienza, Genova 2010.

- Festival Della Scienza 2011, Progetto EU ICT MIROR: "MusicPotter – il vasaio di suoni, Giocare alla musica con le nuove tecnologie", Laboratorio di Educazione Musicale Interattiva per bambini da 4 a 11 anni.

- "Viaggiatori di sguardo", permanent interactive installation, virtual visit to UNESCO Treasure of Palazzi dei Rolli, Palazzo Ducale Fondazione per la Cultura, Genova, opened Dec. 2009-2011.

- "Come un'onda premuta da un'onda", interactive museum exhibition on science and technology, Casa Paganini, Festival della Scienza, Genova Oct-Nov 2009-2010.

- Temporary interactive exhibition at Teatro dell'Opera Carlo Felice, Genova, Sept 2009.

- "Strade di Suoni", interactive museum exhibition on science and technology, Casa Paganini, Festival della Scienza, Genova, Oct-Nov 2008

- "Esploratore d'Orchestra" Interactive installation, Museum of Musical Instruments, Accademia Nazionale Santa Cecilia, Rome, 2008.

- "Metamorfosi del senso", interactive museum exhibition on science and technology, Casa Paganini, Festival della Scienza, Genova, Oct-Nov 2007.

- "Cimenti d´Invenzione e Armonia", interactive museum exhibition on science and technology, Casa Paganini, Festival della Scienza, Genova, Oct-Nov 2006.

- Interactive permanent installations, museum Le Pavillon De La Roche D ´Oëtre in Normandy, June 2006.

- Permanent hands-on interactive exhibits, Museo del Balì science center, Fano, 2007.

- Interactive installation for Paola Rodari, Science Center, Turin, 2007.

- Design and implementation of twelve permanent interactive installations, Città della Scienza science center, Napoli, 2001.

- Interactive multimedia systems for the Museo del Mare e della Navigazione of Genova (2001), the Acquario di Genova (1997), and the Città dei Bambini of Genova (1997).

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**International Conferences and Workshops**
**International Education Programs (excerpt)**

- *EU Erasmus Intensive Program ISSSM 2014 – International School on Systematic Musicology and Sound and Music Computing, 9-20 March 2014, www.isssm2014.dibris.unige.it*
- EyesWeb Week 2014, The 4th International Workshop and Tutorial on the EyesWeb open platform, March 2014.
- SYSMUS 2013 – Sixth International Conference of Students of Systematic Musicology, 12-14 September 2013, https://sites.google.com/site/sysmusconference/sysmus13
- *INTETAIN 2011*, 4th International Conference on Intelligent Technologies for Interactive Entertainment, May 25-27, 2011, www.intetain.org
- *EyesWeb Week 2010*, The 3rd International Workshop and Tutorial on the EyesWeb open platform, 8-12 February 2010
- *eNTERFACE '09*, The 5th International Summer Workshop on Multimodal Interfaces, 13 July – 7 August 2009.
- *The First International Workshop on Social Behavior in Music*, IEEE, Vancouver, Canada, August 2009.
- *SMC 2008*, 4th Summer School in Sound and Music Computing" – EU research project S2S2 "Sound to Sense, Sense to Sound", 9-11 June 2008. www.smcnetwork.org
- *NIME 2008*, 8th International Conference on New Interfaces for Musical Expression, 4-8 June 2008. www.nime.org
- *EyesWeb Week 2008*, The 2nd International Workshop and Tutorial on the EyesWeb open platform, 11-15 February 2008
- *CIM 2006*, XVI Colloquio di Informatica Musicale, 24-25 October 2006
- *HUMAINE 2006*, 3rd Humaine Summer School – EU research project Humaine "Human-Machine Interaction Network on Emotion", 22-28 September 2006
- *New York University Summer Program*, 3-21 July 2006: 6-credit joint education program, University of Genoa and NYU.
- *EyesWeb Week 2006*, The 1st International Workshop and Tutorial on the EyesWeb open platform, 6-11 February 2006
- *ENACTIVE 2005*, 2nd International Conference on Enactive Interfaces - EU research project Enactive "Enactive Interfaces", November 2005
- *SMC2005*, 1st Summer School on Sound and Music Computing, EU research project - S2S2 "Sound to Sense, Sense to Sound", 25-29 July 2005
- *New York University Summer Program*, July 2005: 6-credit joint education program, University of Genoa and NYU.

Joint education activities between the laurea magistrale in Computer Engineering at University of Genoa and the School of Music Technology of the Music Conservatory of Genoa. Joint education and master theses with the faculties of Humanities and Psychology of University of Genoa, including the laurea magistrale in Digital Humanities.

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**Support to Artistic Projects (excerpt)**

Exploitation of results from scientific and technological research:
*Atlante del gesto_Genova*, Virgilio Sieni and DANCE EU ICT Project, November 2016 – October 2017.
https://www.facebook.com/atlantedelgestoGenova/

*Europa: Gestures of History* Dancing Science and Art non to forget EU identity (Invited by EU Commission) Demo Performance based on DANCE EU ICT project results at EU Celebration of the Treaty of Rome, La Lanterna, Rome, choreography Virgilio Sieni, dancer Giulia Mureddu, sonic design Andrea Cera, March 2017
https://www.youtube.com/watch?v=IhB6lJNMO6o&list=PLEVgkiAQI8zIFbTFv8I7ioEpuDHNbYsdC

*Una Danza sVelata / An unVeiled Dance*, Public demonstration of scientific research on the analysis of expressive movement qualities based on the choreography of the *dance of the seven veils* of Salome by R.Strauss. Teatro Carlo Felice, May 2016 Dancer Beate Vollack. Movement analysis (EyesWeb)
https://www.youtube.com/watch?v=V0uir8E1yeY

*Emobodies*, performance by Bert van der Brink and Sagi Gross. The performance exploits technologies developed in EU DANCE Project (more at: http://dance.dibris.unige.it/)
https://www.youtube.com/watch?v=dcq4FkLJnf8

**EU FET11** Closing Performance "TanGO Touching Music", Budapest, 6 May 2011. Interactive dance and music performance to explain scientific research on non-verbal emotional and social communication (EU ICT FET Project SIEMPRE).

**Invisible Line** interactive networked performance, in collab. with **Ircam – Centre Pompidou, Paris**, music Andrea Cera, 2009 and 2010 (EU Project Culture 2007 CoMeDiA).

**La Biennale di Venezia, Festival di Musica Contemporanea**, "Un Avatar del Diavolo", Music Roberto Doati. Interactive technologies development by Casa Paganini - InfoMus, May–Sept. 2005.

Concerts at **NYU Summer Program 2003, 2004, 2005** on music, dance and new technologies, Genova Teatro dell'Opera Carlo Felice and Teatro Ariston Sanremo.

**Teatro La Fenice di Venezia**, concert "Allegoria dell'opinione verbale", music Roberto Doati, Concert Season of Theatre La Fenice, September 2001, and Opera House Carlo Felice, Genova, March, 2002.

**Opera House Carlo Felice**, Concert Season 1999-2000, Scrjabin "Promethee", September 18th, 1999: hardware and software design for the "light keyboard".

**Salzburg Festval 1999**, opening opera by Luciano Berio, "Cronaca del Luogo", July-August 1999.

**Mittelfest, Cividale del Friuli**, concert, Roberto Fabbriciani and Alvise Vidolin, July 1998.

**Teatro alla Scala**, Milano, opera "Outis", Luciano Berio, Milan, October 1996 and September 1999; and Opera in Paris, November 1999.

Multimedia Concert, Auditorium Montale, **Opera House Carlo Felice, Genova**: interactive dance performance and robot-human interaction, 1998, at First International KANSEI Workshop.

Scientific research results are presented each year in scientific performances, workshops, and Laboratories at the **Festival della Scienza** of Genoa.

*www.casapaganini.org*
*www.infomus.org*
*youtube.com/InfoMusLab*

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**DIBRIS –** *Dipartimento di Informatica, Bioingegneria, Robotica e Ingegneria dei Sistemi*

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# Casa Paganini–InfoMus Research Centre

## Research and Development Team

*Antonio Camurri, Gualtiero Volpe, Corrado Canepa, Andrea Cera, Paolo Coletta, Nicola Ferrari, Giorgio Gnecco, Simone Ghisio, Vincenzo D'Amato, Ksenia Kolykhalova, Alberto Massari, Roberto Sagoleo, Eleonora Ceccaldi, Erica Volta*

## Collaborations UNIGE

*Davide Anguita, Luca Oneto, Marcello Sanguineti (DIBRIS)*
*Elisa Bricco (LCM)*
*Marcello Frixione (DAFIST)*
*Lauro Magnani (DIRAAS)*

## Former Staff Members

*Paolo Alborno, Francesca Cavallero, Roberto Chiarvetto, Mirko Demurtas, Alessandro Fausto, Donald Glowinski, Giacomo Lepri, Maurizio Mancini, Cesare Mastroianni, Barbara Mazzarino, Massimiliano Peri, Radoslaw Niewiadomski, Stefano Piana, Matteo Ricchetti, Andrea Ricci, Marzia Simonetti, Francesca Sivori, Alessandra Staglianò, Giovanna Varni.*

## Visiting Researchers

*Alan Marsden (1997-1998, Lancaster University)*
*Kenji Suzuki (1997-1998, Waseda University, Tokyo)*
*Koen Tanghe (2000, Ghent University, Belgium)*
*Sofia Dahl (2001, KTH, Stockholm)*
*Joanne McElligott (2001, University of Limerick)*
*Declan Murphy (2002, University of Copenhagen)*
*Renee Timmers (2002-2003, University of Nijmegen)*
*Olivier Villon (2002-2003, Université Nice Sophia-Antipolis)*
*Matija Marolt (2003, Ljubljana University)*
*Philip McAleer (2003, Glasgow University)*
*Anne-Marie Burns (2004, McGill University, Montreal)*
*Isabelle Viaud-Delmon (2004, CNRS, Paris)*
*Alicia Penalba (2006, University of Valladolid)*
*Jean-Julien Filatreau (2007, University Catholic Louvain)*
*Alfonsina Scarinzi (2012, University College London)*
*Carolina Labbé (2013, Swiss Inst. for Affective Sciences)*
*Florian Dardard (2013, TELECOM ParisTech)*