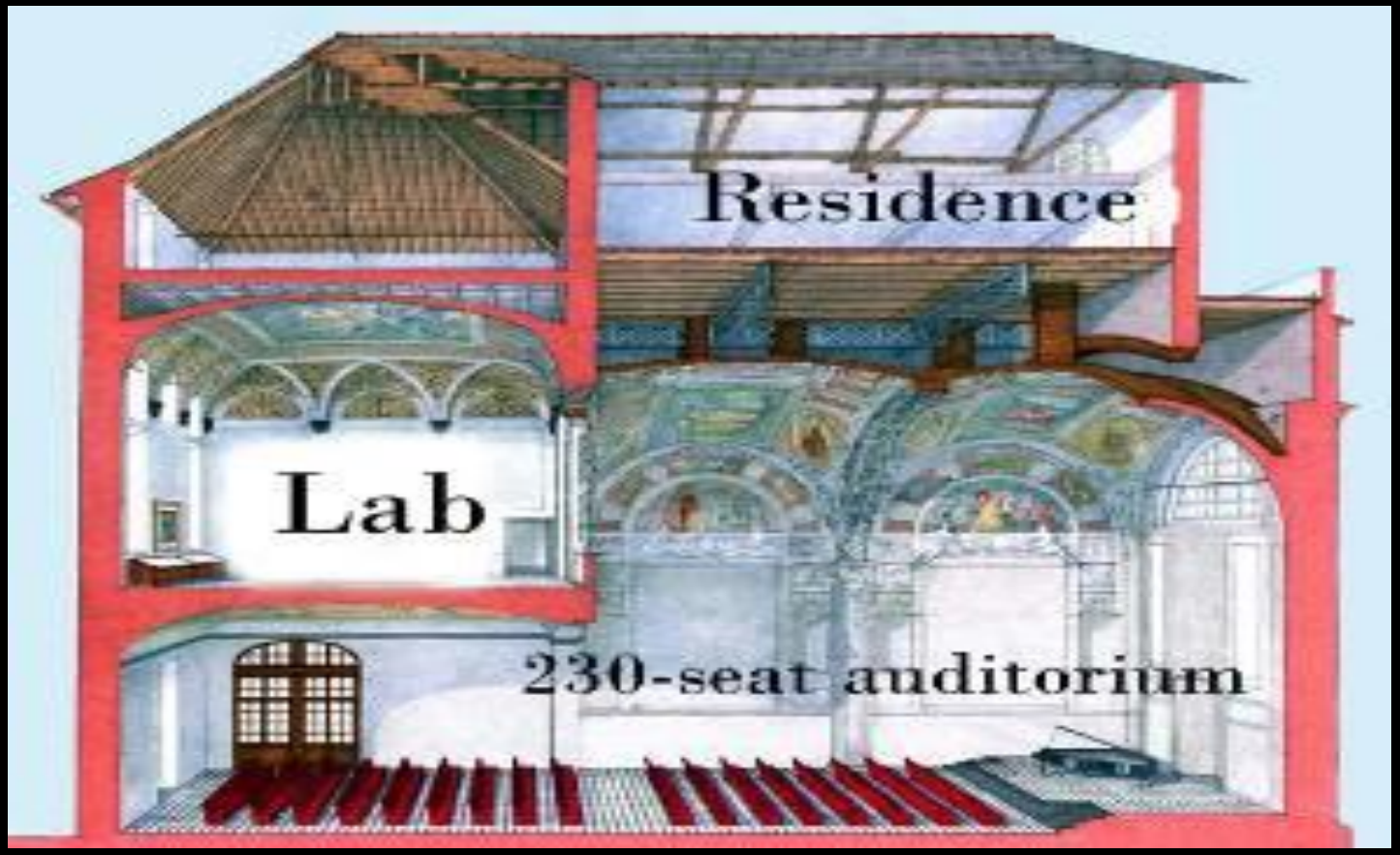
casa Paganini infomus



The mission of Casa Paganini – InfoMus Research Center consists of carrying out scientific and technological research on human-centered computing where art and humanistic culture are one of the fundamental sources of inspiration.

casa Paganini infomus

Contemporary reuse of a monumental building as a site for scientific research (S. Maria delle Grazie La Nuova, Genoa).

Research

- Cross-fertilisation between **research in science and technology** and **humanistic and artistic research**

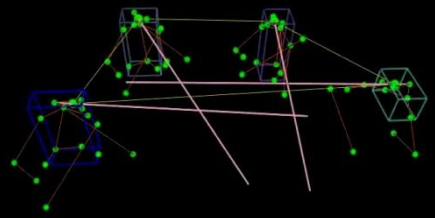
- **Art for ICT**: Artistic and humanistic theories as source of inspiration for scientific-technological research
- **ICT for Art**: Research results from science and technology as a source of inspiration for art languages and artistic projects

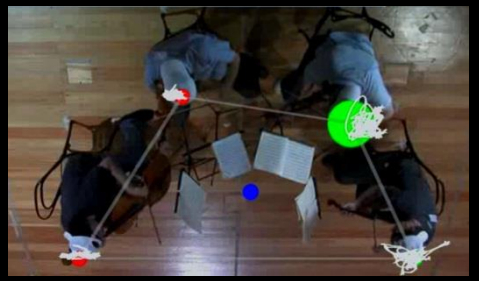
A.Camurri, G.Volpe (2016), “The Intersection of art and technology“, *IEEE Multimedia*, Vol.23, No.1.

Examples of scientific projects at Casa Paganini - InfoMus based on cross-fertilisation of ICT and art

From artistic project…	…to S&T research
Music Theatre Opera “Outis” Luciano Berio Teatro Alla Scala di Milano (1996)	Invisible interfaces for on-stage interaction and synchronisation with audio
Music Theatre Opera “Cronaca del Luogo”, Luciano Berio, opening Salzburg Festival (July 1999)	Real-time analysis of full-body movement, non-verbal expressive behaviour qualities. The EyesWeb software platform.
Music Theatre Opera “Un Avatar del Diavolo”, Roberto Doati, La Biennale Venezia (2005)	Tangible acoustic interfaces: give the sense of touch to everyday objects
Museum “Enrico Caruso”, permanent interactive installation	Visitors non-verbal behaviour analysis for active experience of Caruso voice
EU FET11 Closing Performance: “TanGO Touching Music” (6 May 2011)	Performance built upon scientific results of the European ICT FET SIEMPRE Project.
Study of music joint performance: string quartets, orchestra sections	S&T research in EU ICT FET SIEMPRE Project

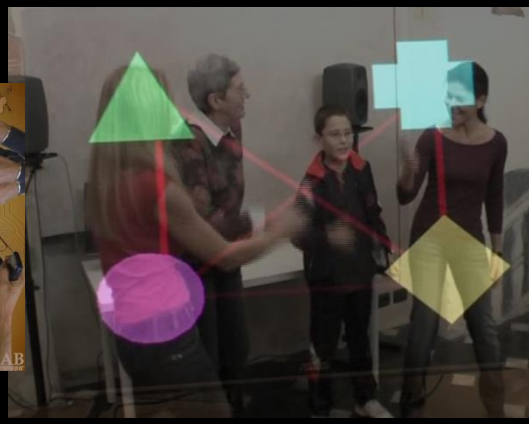
Research





Real-time multimodal analysis of expressive gesture, non verbal affective and social signals in ecological environments

Active experience of cultural heritage



(Socio-mobile) active music listening

Research

Therapy and rehabilitation:
interactive software
to support patients with
disabilities

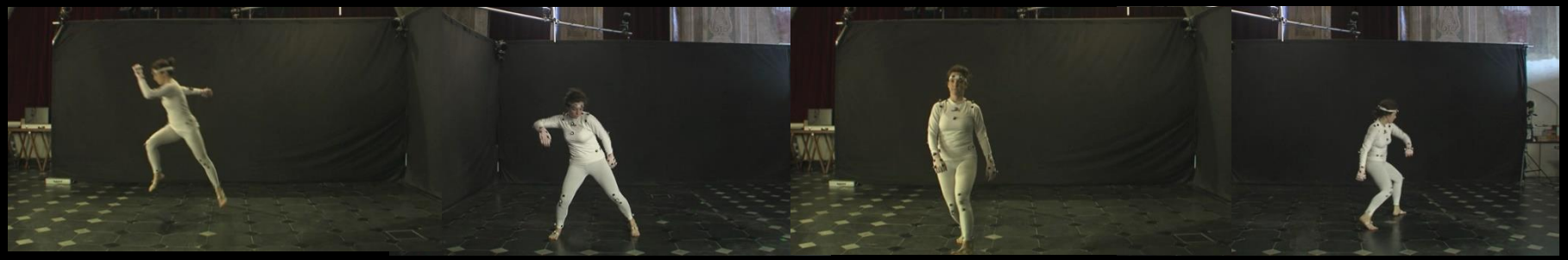
Education: interactive
software for education in
performing arts

Graphics by Compedia

Interactive sonification

EU-H2020-ICT DANCE

- Consortium:
  - Casa Paganini-InfoMus, Univ Genoa (Coord)
  - Maastricht University
  - KTH, Stockholm
- Close your eyes to perceive the deep expressive qualities in movement
- Computational models and systems to measure full-body non-verbal language of bodies that communicate
- “To listen to a choreography”, “to feel a ballet”
- Focus on blind as well as non blind people



EU-H2020-ICT DANCE

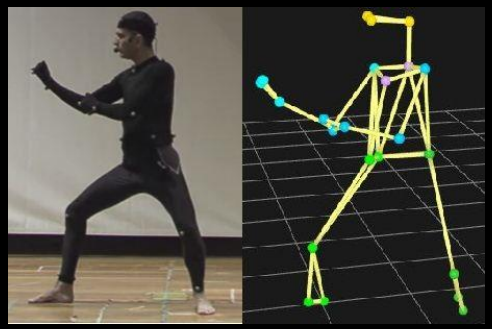
- Atlante del Gesto_Genova, Virgilio Sieni, November 2016- March 2017
- Dancers and 150 audience members as active participants

(Facebook page)

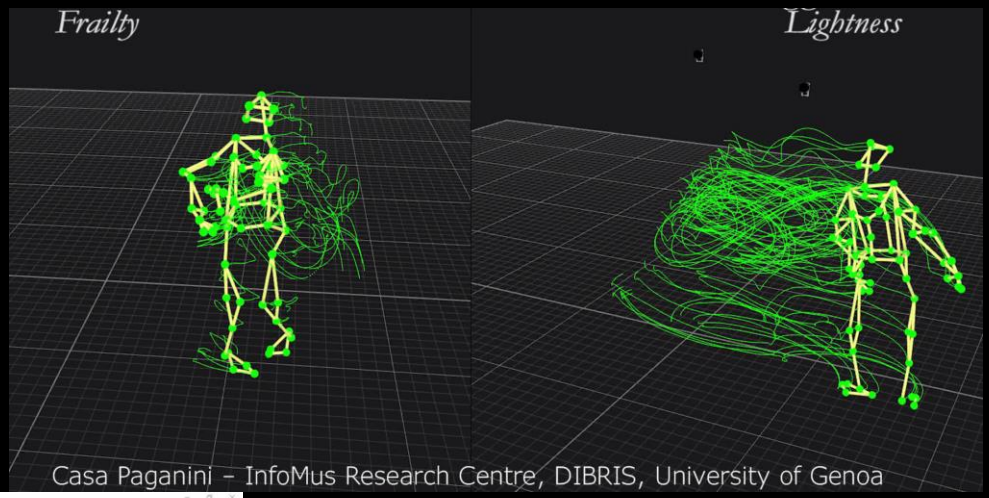
Analysis of movement qualities

- Techniques to detect whether a movement is rigid, fluid, fragmented, hesitant, impulsive, …

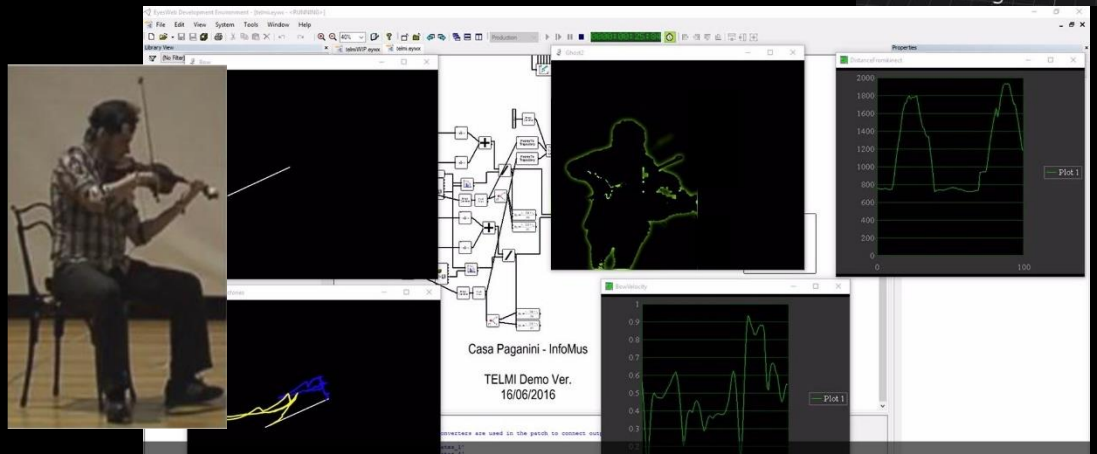
In sport, e.g., martial arts



In dance



In music performance



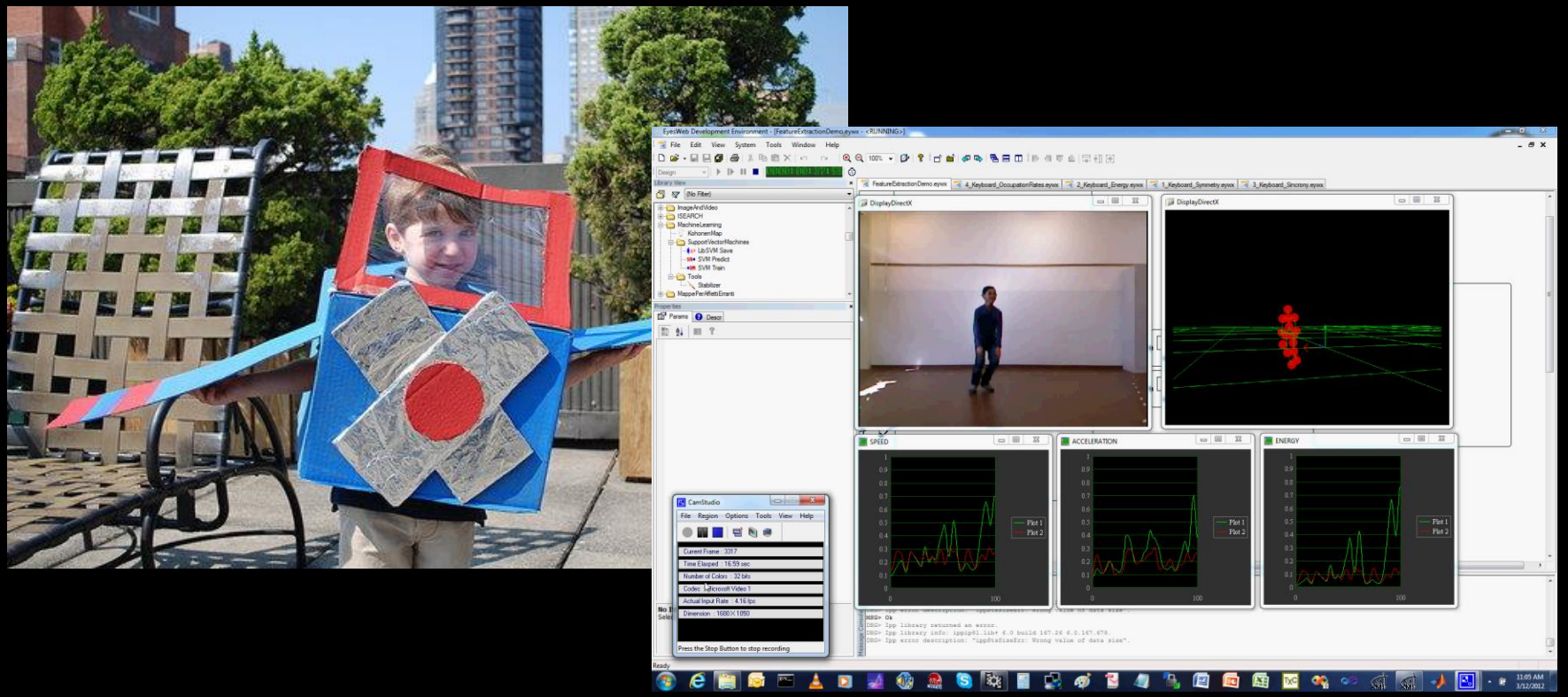
Camurri et al., Proceedings of Intl. Conf. MOCO, 2016

Real-time multimodal analysis of non-verbal affective and social behavior in ecological environments

- Single user
  - Analysis of expressive qualities of full-body movement and gesture
- Multiple users
  - Analysis of social interaction
  - Temporal and affective entrainment [Phillips-Silver and Keller, 2012].
  - Leadership

Single user: example

- EU-FP7-FET MIROR: Embodied reflexive systems for music education



G. Varni, G. Volpe, R. Sagoleo, M. Mancini, and G. Lepri, “Interactive reflexive and embodied exploration of sound qualities with BeSound”, Proc. 12th Int’l Conf. on Interaction Design and Children (IDC2013), 2013, pp. 531-534.

Multiple users: example

- EU-FP7-FET SIEMPRE: Synchronization and leadership in music ensembles

D. Glowinski, M. Mancini, R. Cowie, A. Camurri, C. Chiorri, C., and C. Doherty, "The movements made by performers in a skilled quartet: a distinctive pattern, and the function that it serves", Frontiers in Psychology, vol. 4, 841, 2013.

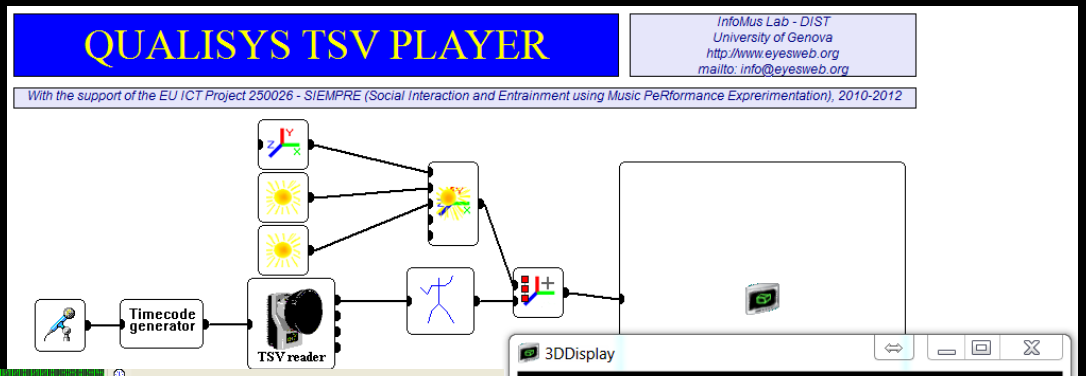
Technological outputs: EyesWeb

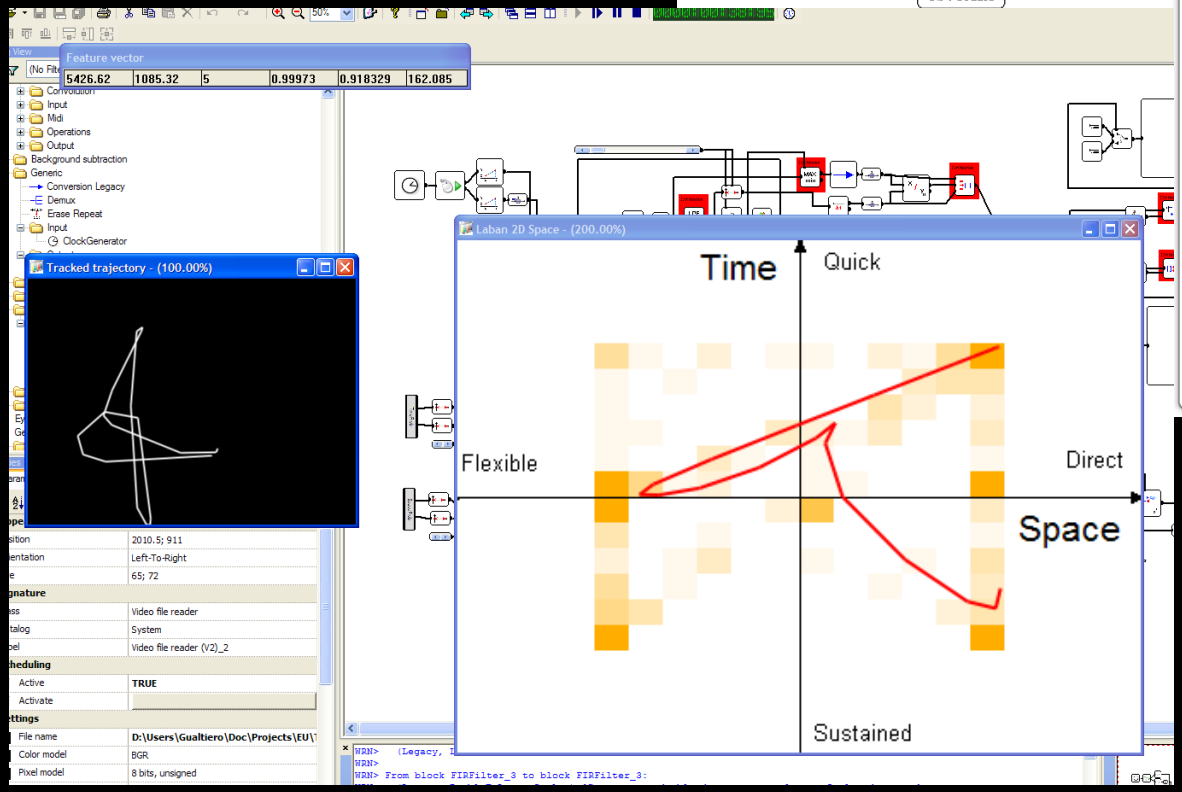
- Platform supporting fine-grain synchronised recordings of multimodal (audio, video, MoCap, biometric) data, performing pre-processing and analysis of multimodal signals in real-time
- Modular, flexible and adaptable
- Widely employed for developing real-time dance, music, and multimedia apps. Adopted by universities, industry, artists, cultural institutions
- Downloadable for free

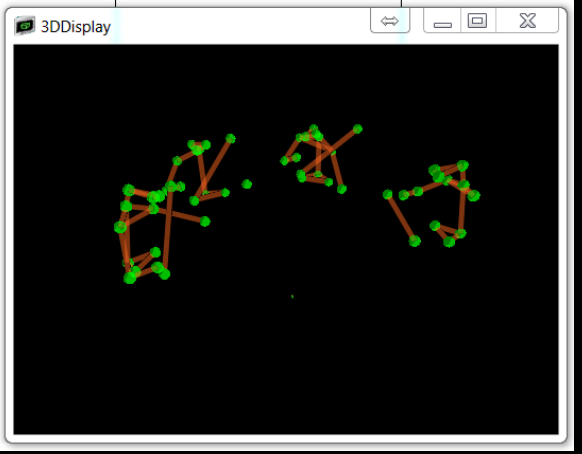
A. Camurri, S. Hashimoto, M. Ricchetti, R. Trocca, K. Suzuki, and G. Volpe, “EyesWeb – Toward Gesture and Affect Recognition in Interactive Dance and Music Systems.” Computer Music Journal, vol. 24, no. 1 pp. 57-69, MIT Press, 2000.

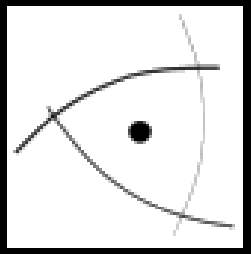
Technological outputs: EyesWeb

http://www.infomus.org



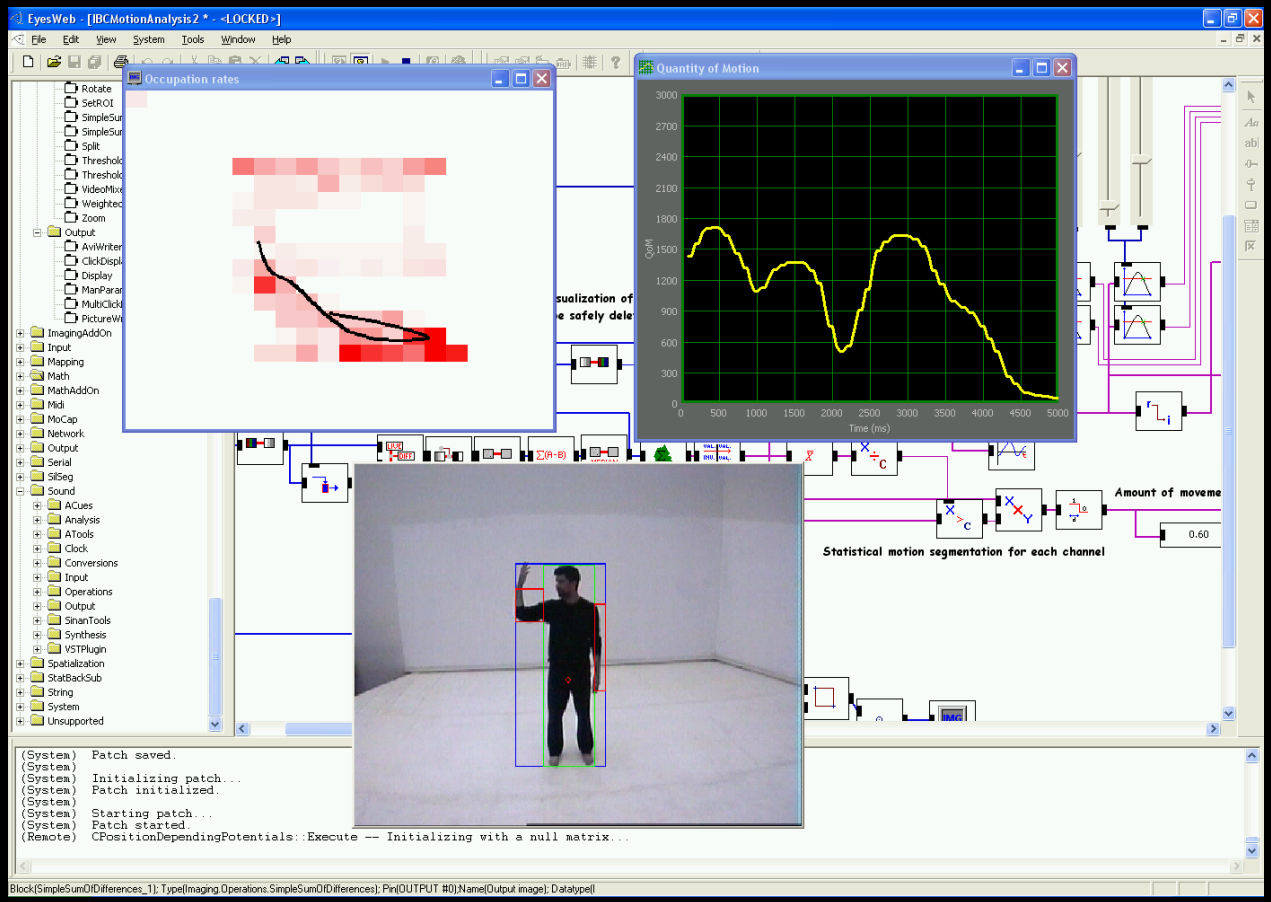






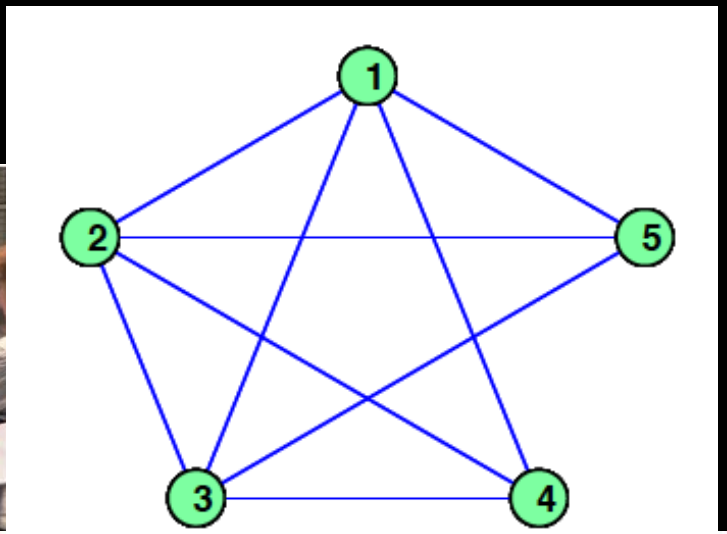
Technological outputs

Libraries for real-time analysis of body movement: motion features (e.g., kinematics, amount of movement, impulsivity, directness, fluidity, and so on) can be computed, stored on file, and viewed in real-time or off-line



Technological outputs

Libraries for real-time social signal processing: synchronisation (Recurrence Quantification Analysis, Event Synchronisation), leadership (e.g., chronemic leadership, analysis based on Graph Theory)

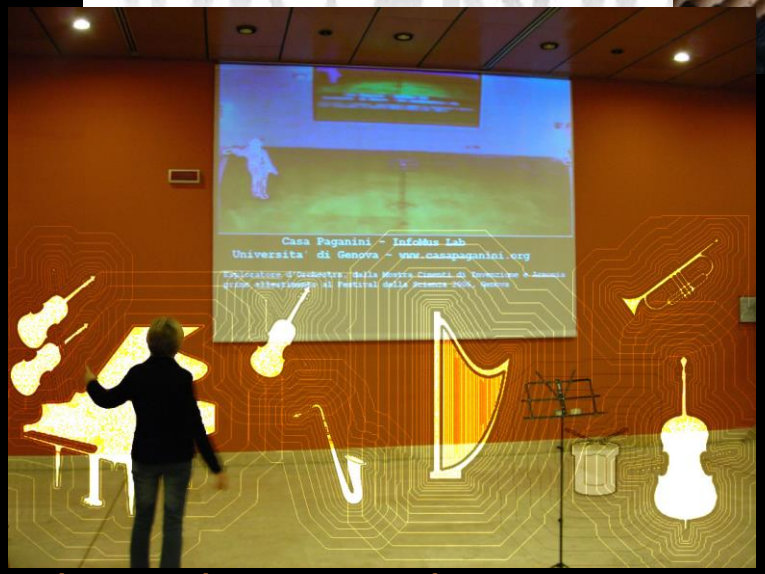


Technological outputs: apps

Systems for: social active experience of music, interactive dance, experience of cultural heritage, rehabilitation, education

iDJ

Sync'n'move



The Orchestra Explorer

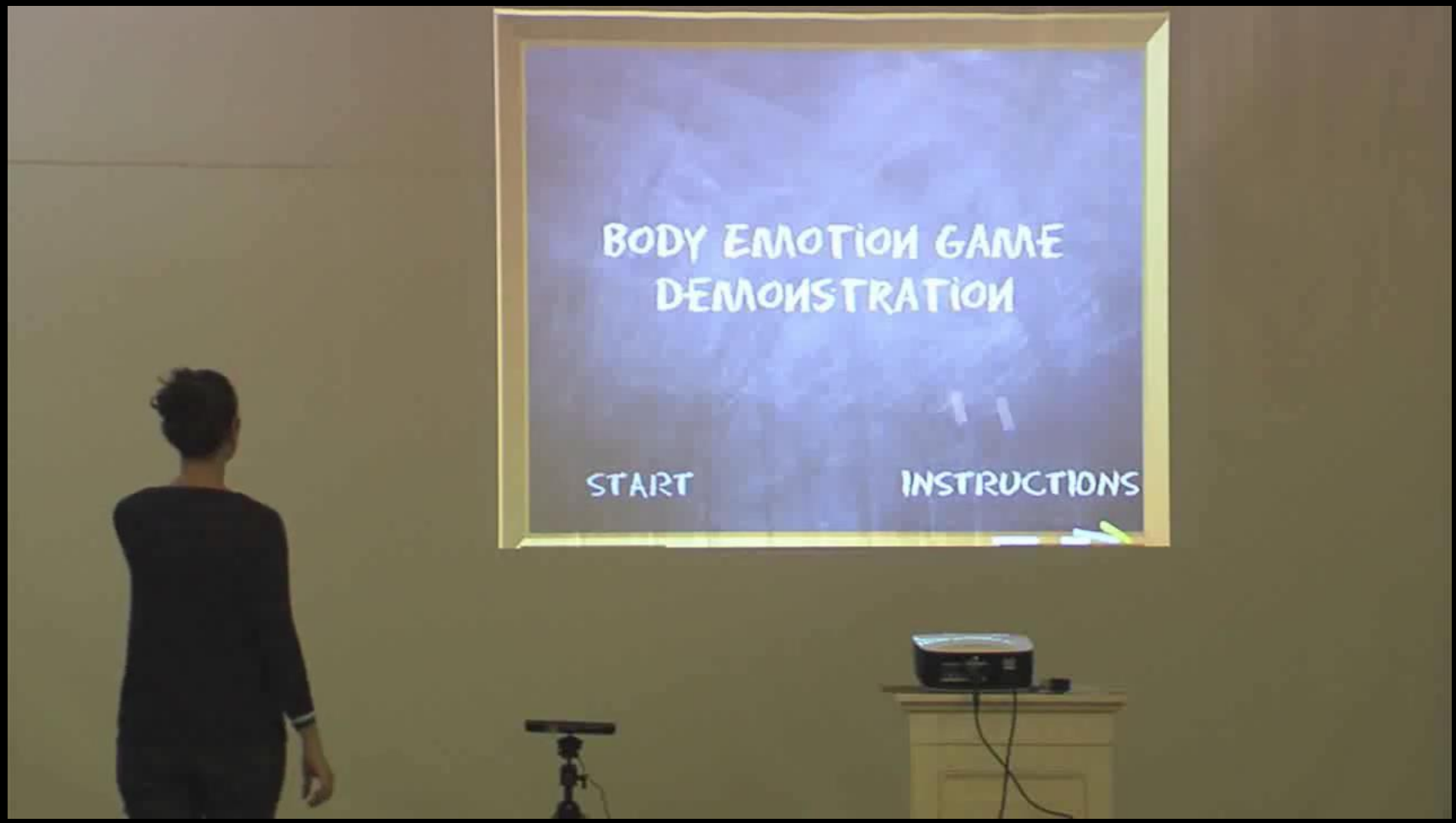
Mappe per affetti erranti

BeSound: edutainment

Graphics by Compedia

G. Varni, G. Volpe, R. Sagoleo, M. Mancini, and G. Lepri, “Interactive reflexive and embodied exploration of sound qualities with BeSound”, Proc. 12th Int’l Conf. on Interaction Design and Children (IDC2013), 2013, pp. 531-534.

Games for teaching autistic children to learn emotions



EU-FP7-ICT Project ASC-INCLUSION

On going projects: EU-H2020-ICT DANCE

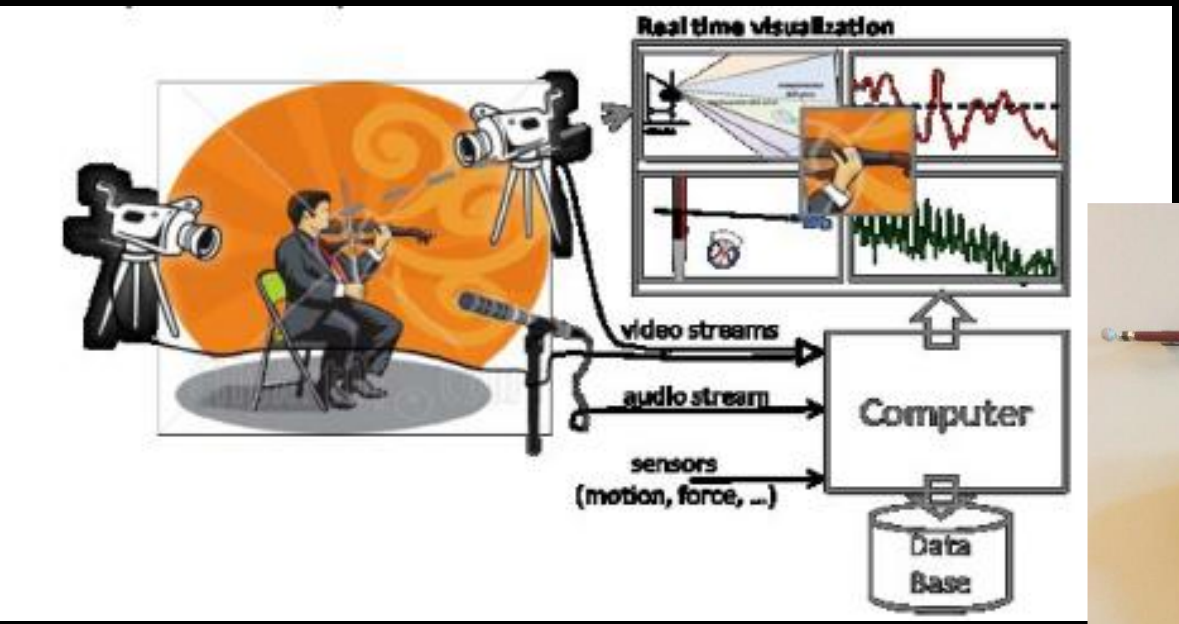
- Main objective: investigating how sound and music can express, represent, and analyze the affective and relational qualities of body movement. Particular focus on blind people.
- Current work: sonification of motion features extracted from sample dance performances

EU-H2020-ICT WhoLoDance Teaching full-body movement

- Real-time analysis of full-body movement and gesture for applications to dance and to teach movement, in sport, rehabilitation etc.

EU-H2020-ICT TELMI

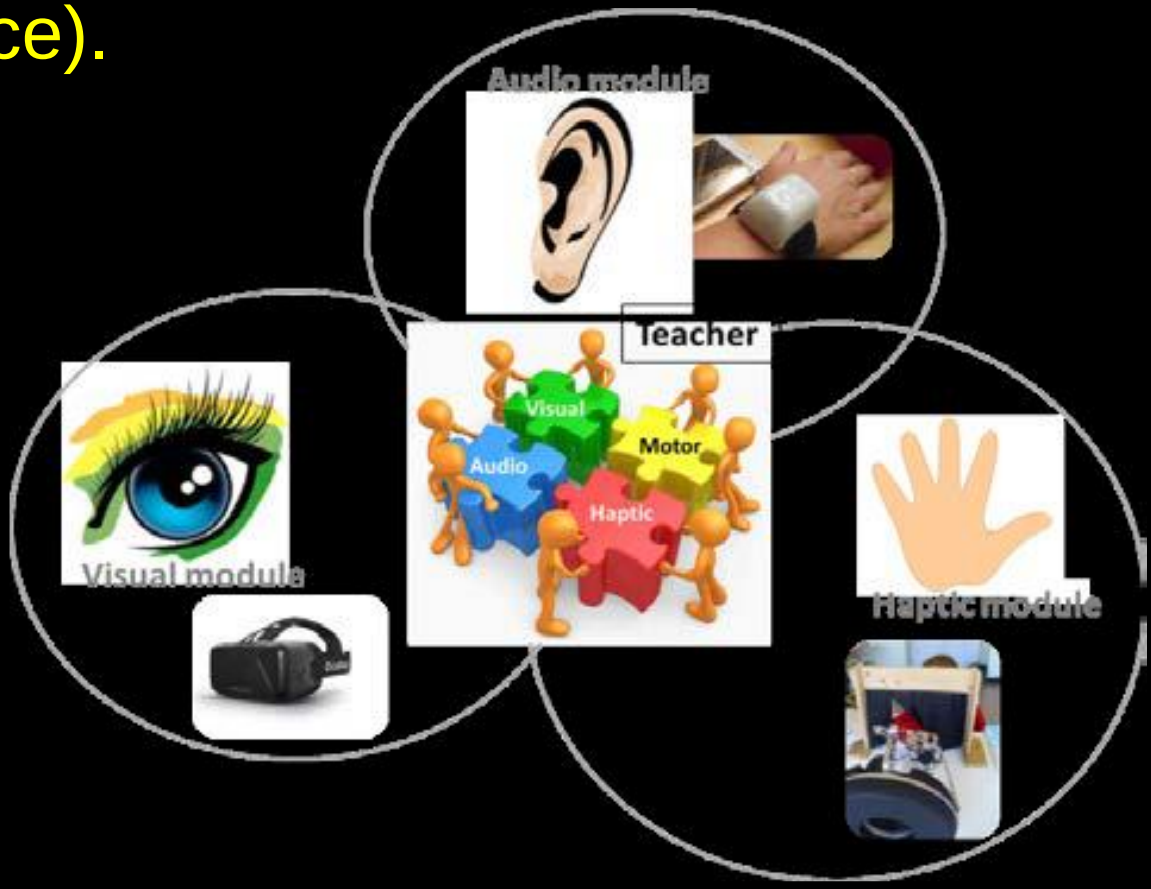
- Analysis of Motion Capture, video, and audio data of violin players for music education.



EU-H2020-ICT WeDraw

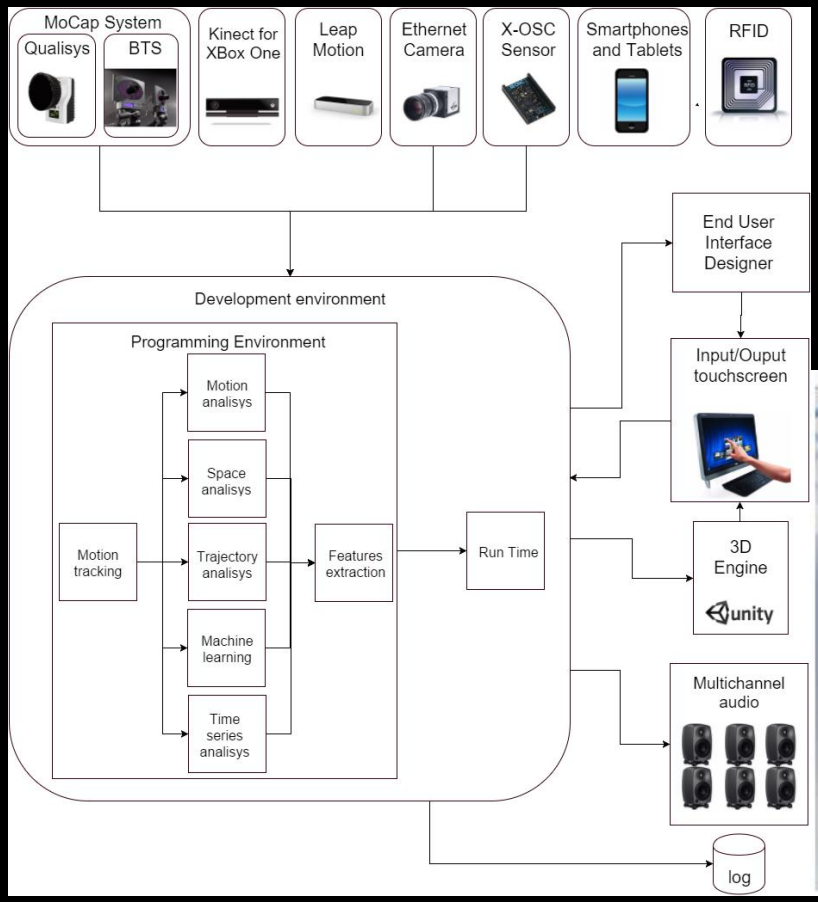
- New methodology to teaching and novel technology for deeper learning of numbers (time) and geometry (space).

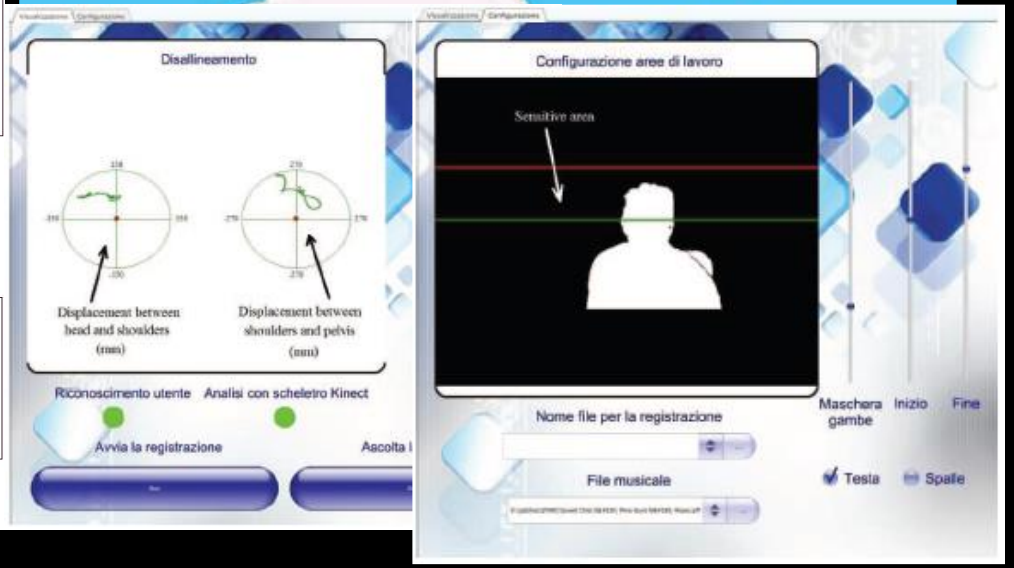
Serious games
associating in new ways
music with arithmetic
and
drawing with geometry



Joint Lab with Gaslini Children hospital
Augmented Rehabilitation Lab (ARIEL)

ariel.unige.it





Info and contacts

Videos: www.youtube.com/InfoMusLab
Web: www.casapaganini.org

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