

Mathieu Bosi

Interactive
Multimedia
Creator

Mathieu Bosi

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Skills

Computer programming (C, C++11, C#, Java, Python, OpenGL, GLSL, Unity 3D, Processing, Cinder, OpenFrameworks, Csound, Pure Data, Max/MSP), mobile development (Android, Gear VR), Git, Linux, Windows, OSX, computer graphics (2D/3D), digital signal processing, computer vision, image processing, sensor/actuator user interfaces, interaction design, sound design, sound spatialization, generative music composition, music composition / transcription / production, teaching, public speaking.

Known languages: Italian (native), English (fluent), Spanish (fluent), Catalan (basic).

Experience

Reactable Systems S.L. / Programmer, Hardware and Software R&D

July 2011 - present, Barcelona, Spain

Released products:

- [Reactable Live!](#)
- [Reactable Mobile](#)
- [Drexler "n"](#) (Jorge Drexler, Warner Music, Samsung, Wake App)
- [Reactable ROTOR](#)

Hardware and Software R&D:

- Research on custom multi-touch force-sensing hardware for music control ([NIME 2012 paper here](#), video [here](#).)
- Research on native synchronous multi-channel mixing and playback of Ogg Vorbis files on Android (prerequisite for the Drexler "n" app).
- Adapted [Essentia](#) to run on iOS devices (also replacing GPL dependencies).
- New sound processing effects: Auto-sidechain and Beatrepeat.
- Algorithm for the detection of distinct arbitrary triangles to be used as fiducial patterns under tangible objects, and procedure for embedding silicone legs in laser-cut and CNC milled bases.
- [ROTOR controllers](#), first prototypes and tracking algorithm.
- Created a prototype Gear VR application [presented at Sónar 2017](#) allowing to interact with spatialized music loops and effects. Developed in Unity3D.

Proto · Pixel + Tigrelab / Freelance composer / sound designer / programmer

December 2014 / October 2015, Barcelona, Spain

Composed the *TripTik* installations soundtracks, including an interactive musical part for version 2.0 ([web page with video](#)).

Proto · Pixel / Freelance programmer / sound designer

May 2014, May 2015, Barcelona, Spain

- Programmed a generative heart-beat and breath sound simulation for the interactive installation "The Glitch Chamber" for Hendrick's *Enajenatorium* in

- Madrid ([video](#)).
- Created a real-time music analysis system for controlling fountains with lights.

Institut d'educació contínua IDEC, Pompeu Fabra University / Lecturer

February 2010 - July 2015, Barcelona, Spain

- Taught Pure Data at the [Postgraduate Course in Designing Interactive Music Systems](#) (the course was closed in 2014.)
- Taught Pure Data and interactive systems at the [Master in Digital Arts](#) (the master degree was closed in 2015.)

Pompeu Fabra University + Reactable Systems S.L. / Industrial PhD student, Collaborator

October 2009 - June 2014, Barcelona, Spain

- Developed a musical video game based on typing dexterity.
- Developed signal analysis and synthesis system for the sonification of EEG data (NIME 2011 conference paper [here](#).)
- Received a 3 years grant for an industrial PhD from [AGAUR](#).

Ping Pong Technologies / Freelance programmer

February 2011 - June 2011, Barcelona, Spain

Developed the following solutions for the [Campus BBVA project](#):

- Two multiplayer games for horizontal multi-touch screens: Space Invaders and Football ([video](#)).
- An adjustable projection blending software for 4 projectors that enables large-scale projection of interactive OpenGL content.
- A software to interface OpenFrameworks with [SensaCell](#) touch-screens ([video](#)).

Roland Olbeter + FESTO Automation / Freelance programmer

April 2011 - November 2011, Barcelona, Spain

Implemented the real-time control system for the *Pollywogs* robotic musical instruments including custom Arduino firmware to control the electromechanical and pneumatic actuators (pick, piano hammer, *e-Bow*), and PLC control (precision robotic linear actuators). These are some related links:

- First test: [video](#).
- Sónar 2012: [webpage](#) and [video](#).
- [Official video](#).
- FESTO: [project page](#).

Gràcia Territori Sonor + Illa Diagonal / Freelance programmer

April 2011 - September 2011, Barcelona, Spain

Developed a software system that creates generative music and soundscapes on eight separate channels, distributed across various zones of the [Illa Diagonal](#) shopping mall. A pleasant and non boring listening experiences is offered both to the visitors, and to the owners of the shops located in the areas and venues in each zone. The developed system has also been the basis for extensions by subsequent artists.

Reactable Systems S.L. + UTE Fonts / Freelance programmer

July 2010 - December 2010, Barcelona, Spain

Programmed a 3D simulator of the [Magic Fountain of Montjuïc](#), one of the major attractions in the city of Barcelona. The simulator allows to visualize in real-time any

choreography, making it easier for the user to efficiently accomplish the desired performance of the Fountain saving time, water, and economic resources (local on-line press articles: [el mundo](#), [el Periódico](#) ([video](#)), [directe!cat](#), [aldia.cat](#).)

Musical band "Corpo musicale La Cattolica" / Sound designer, live multi-channel sound staging and spatialization programmer

February 2007, Cantú, Italy

Implemented a live octophonic sound effects staging system, including a sonic simulator of a spatialized "arrow storm" using a combination of Max/MSP, Csound, and C++ for score generation. The system was used during the Saint Apollonia concerto "[Musiche nuove, suggestioni antiche](#)" held at Cineteatro Fumagalli.

University of Bologna + CINECA Consortium / Intern programmer

September 2005 - April 2006, Bologna, Italy

Implemented interaction prototyping software for a wireless data-glove developed at the university's microelectronics lab. Adapted an existing application, "Memory Wall", to be used with the glove ([video](#)).

Education

Pompeu Fabra University / Master degree in Sound and Music Computing

September 2008 - September 2009, Barcelona, Spain

Attended master degree organized by the [Music Technology Group](#). Received a research grant to study the extension of the Reactable digital musical instrument capabilities.

Thesis: [Extending Physical Computing on the Reactable](#).

Music Conservatory Giuseppe Verdi / Degree in Electronic Music and Sound Technologies

September 2006 - September 2008, Como, Italy / Barcelona, Spain

- 2008: *Erasmus* program student at [ESMÚC](#) Sonology department, Barcelona.
- Thesis work about multi-touch painterly interfaces for musical creation, summa cum laude.

Università degli Studi di Milano / Bachelor degree in Digital Communication

September 2002 - April 2006, Milan and Bologna, Italy

- June-July 2005, Inter-university consortium [CINECA](#) in Bologna: selected student for participating to the 5th edition of the [Summer School on Scientific Visualization](#) and Interactive 3D graphics.
- September 2005 / April 2006: graduation apprenticeship at Inter-university consortium CINECA, and at University of Bologna, Department of Electronics, Informatics and Systems (DEIS).
- Bachelor's degree [thesis](#) on the topic "Natural Interaction in Virtual Reality Environments: Techniques, Instruments and Examples". Degree accomplished April 27th 2006 summa cum laude.

Lorenzo Respighi Scientific high school / Scientific maturity diploma

September 1996 - June 2001, Piacenza, Italy

Graduated with 95/100.

Music conservatory and middle school Giuseppe Nicolini in Piacenza / Middle school diploma and Solfège diploma

September 1993 - June 1996, Piacenza, Italy

Attended middle school annexed with the music conservatory. 4th year of piano studies accomplished. Participation as pianist in solo and chamber music concerts organized by the institute.

Technology
related Public
Speaking and
Performances

NIME 2012 Conference / Conference talk

May 2012, University of Michigan, Ann Arbor, United States

Presentation of the research paper "Towards fast multi-point force and hit detection in tabletops using mechanically intercoupled Force Sensing Resistors".

GARR 2007 Conference - Network Humanitatis / Conference talk

October 2007, Rome, Italy

Talk and demonstrations on the topic "Multimodal Systems for Sound Control and Spatialization".

Politecnico di Milano - Image and Sound Processing Group / Seminar

November 2007, Milan, Italy

Talk and demonstrations on the topic "Multimodal Systems for Sound Control and Spatialization".

Sound and Music Computing Conference 2009 / Concert performance

July 2009, Porto, Portugal

Live performance with the Barcelona Laptop Orchestra of an interactive audiovisual piece I composed called "Poème symphonique pour 100n métronomes", inspired by the quasi homonymous work by György Ligeti ([video](#)).

Concert: "Musiche nuove, suggestioni antiche" / Live Electronics performance

February 2007, Cantù, Italy