Curriculum Vitae
(updated July 2018)

Leonardo Gabrielli, PhD

Personal information

E-mail	leonardo.o.gabrielli@gmail.com
Nationality	Italian
Date of birth	1986
Gender	M

Summary

Audio and Music Signal Processing Researcher

Since 2011 I conduct academic research at Università Politecnica delle Marche, as a PhD student first and currently as a post-doc research assistant. Since 2016 I am also appointed as lecturer for the perfectioning course in Computer Music Production at the same university for the academic years 2016/17 and 2017/18. In the same years I have been conducting seminars and classes for other music schools for young professionals and music producers. Since 2014 I conduct DSP laboratory classes for MSc and BSc students based on Texas Instruments hardware. I am soon releasing a book for undergraduate and postgraduate courses on virtual analog DSP based on the open-source software platform VCV Rack.

As a research and engineer I have been developing novel DSP algorithms for sound synthesis and machine learning tools for sound and music computing. My recent research topics are machine learning for audio classification and for Computational Sound Design.

From 2012 to Jan 2016 I've also been co-founder, technical director and developer for an award-winning start-up company dealing with the Internet of Things (IoT) and wireless communication for home energy saving.

Since 2006 I conduct activities with local musical instrument manufacturers (from acoustic instrument to digital pianos). I have constant contact with AES, music fairs and the music business.

I have been scientific coordinator for the electronic music festival Acusmatiq since 2013 and I conduct dissemination activities on music technology and the history of the electronic music industry in Italy.

Key skills:
- signal processing and machine learning
- embedded audio hardware design
- technology scouting, R&D management

Professional Experience

January 2015 to present.

Research Assistant at Università Politecnica delle Marche

Research activities in the music technology field:
- Machine Learning for Computational Sound Design
- Sound synthesis by DWG and Virtual Analog (VA)
- Wireless and fiber-optics networked music performances

Teaching and mentoring activities:
- Laboratory lessons on Digital Signal Processing using Texas Instruments OMAP processors for undergraduate and postgraduate students (6 hours each)
- Mentoring for BSc and MSc theses (approx 3-4 students per year)
- Mentoring for PhD students on computational audio analysis
- Organizing short seminars on music technology topics with distinguished academics and developers

Laboratory activities:
- I have created the third Italian LOLA end-point for networked music activities
- Currently building a Steinberg-certifiied teaching lab for music production

R&D activities:
- for Viscount Spa (contract co-funder) in the development of novel digital organs
- for ASK Industries (contract co-funder) in the development of Machine Learning algorithms for road surface detection

Academic Years 2016 and 2017

Lecturer for the Computer Music Production course

Topics: sound synthesis, audio effects, audio post-production.
Duties: teaching (21 hours over 48 total), organization of the course, evaluation of the final projects

September 2012 to January 2016

Co-founder and CTO of "DowSee" Srl

"DowSee" is a university spin-off company, born from a team composed experienced researchers and engineers. The company was started after being awarded 80k€ from Telecom Italia and eCapital for a revolutionary wireless sensor network concept.
The company current focus in on firmware development and hardware co-design for IoT and energy saving. I have been designing prototypes, scouting for technologies and components, writing technical specifications and developing demo tools. In 2015 the company enlarged with the entrance of new shareholders including the CEO of Netribe group, as a startup mentor.
After January 2016 I have kept being among the company associates but I am not anymore responsible of its activities.

March 2015, March 2014 and March 2013

Lecturer for "Corso Computer Music", organized by students' association Gulliver

DSP for Music Processing, taught to students of the Università Politecnica delle Marche. It also featured AES-sponsored seminars.

January 2012 to December 2014

PhD student at the Dept. Information Engineering, Università Politecnica delle Marche, Ancona, Italy

The outcome of the three PhD years is a wireless audio networking tool suite, able to stream at very low latency (<15ms RTT) in indoor or large outdoor environments. The system is based on a GNU/Linux embedded ARM Cortex-A platform, python and shell scripting, and open software for audio networking. It also provides seamless device discovery and connection. Part of the PhD was aimed also at developing advanced sound synthesis algorithms based on physics-based sound synthesis and able to run in real-time. Part of this work has been exploited by Viscount International, a digital instruments manufacturer company for their flagship product, Physis Piano.

26 July 2013

Lecturer for a Seminar on Music Synthesis with Pure Data at Acusmatiq Festival, Ancona

DSP for Music Processing in the Pure Data programming framework

March 2011 – April 2012

Sound Designer at Viscount Italy

- Design and parametrization of the Electric Piano (Fender Rhodes, Wurlitzer, Hohner Clavinet) physical models for the Physis Piano with emphasys on flexibility, realism and fidelity. Their quality was appraised by several musical instrument magazine reviewers.
- Accurate digital sampling of the magnificent Cavaillé-Coll organ in the Basilique of Saint-Denis

2006-2010

Sporadic freelance collaborations with musical instruments companies

- Recording of demo songs for digital rotary organ emulator and church organs
- User guide writing, translating and paging (10+ different products: digital church organs, pianos, loudspeakers and PA systems)
- Graphics projects (printed and web)

October 2007 – March 2008

Software Quality Engineer at Intel (Software Solutions Group, Ulm, Germany)

Design and implementation of an automated test system for the Intel Atom debugger.

Patents

Italian Patent UA2016A004762

Voice + Music separation method ("procedimento per la separazione e cancellazione di una componente vocale da un segnale audio")

Digital Signal Processing

Italian Patent UB2015A001421

Electromechanical Measuring Device ("Totalizzatore Elettromeccanico")

Water and Gas Metering

Publications

Book

L. Gabrielli, S. Squartini, "Wireless Networked Music Performance"

Springer, 2016

Book Chapter

"Domestic Water and Natural Gas Demand Forecasting by Using Heterogeneous Data: A Preliminary Study", Marco Fagiani, Stefano Squartini, Leonardo Gabrielli, Susanna Spinsante and Francesco Piazza

Chapter in: Advances in Neural Networks: Computational and Theoretical Issues, Springer - tional Publishing, 2015

+ More than 30 international scientific papers on peer-reviewed journals and conference proceedings (see full list of publications for further details)

Education

October 2016

Masterclass with Barry Truax (SFU Vancouver) at Conservatorio Rossini, Pesaro, Italy

Title "Soundscape composition as Context-based Creation: from the real to the virtual"

February 2015

PhD Degree in Electronics Engineering from Università Politecnica delle Marche

Digital audio signal processing, Wireless Audio Networking for Low-Latency Music Performance

26-27 June 2014

Workshop: Real-Time Scheduling in the Linux Kernel, Scuola Superiore Sant'Anna, c/o CNR, Pisa, Italy

Real-Time scheduling in the Linux Kernel, the new Kernel SCHED_DEADLINE, its use. Linux Kernel internals and more.

May 2-4 2012

Timely COST Workshop, IIASS, Vietri sul Mare, Italy

Dynamical systems for psychological timing and timing in speech processing

April – July 2011

Stage: "Ecapital2011: Write your business idea", Istituto Adriano Olivetti (ISTAO), Ancona

Writing a business plan, foundations of economy, how to build a startup company.

11 - 14 April 2011

Seminar: "Intelligent Audio Analysis" by dr. Bjorn Schuller (Teknische Universität München)

Audio analysis, segmentation, classification for speech and music. Speech recognition and human emotion recognition.

October 2008 – February 2011

MSc. in Electronic Engineering, (grade: 110/110 summa cum laude) from Università Politecnica delle Marche

Title of the thesis: "Modeling of the Clavinet using Digital Waveguide Synthesis Techniques" conducted at the Aalto University of Finland

August 2010 – October 2010

Visiting student at the Aalto University, Espoo, Finland

September 2004 – October 2008

Bsc. In Electronic Engineering from Università Politecnica delle Marche

Title of the thesis "Development of automated test frameworks for an Intel Software Tool Suite" conducted at Intel Germany

September 1999 – June 2004

High school, Scientific degree (Diploma di Maturità Scientifica) from Liceo Scientifico Corridoni-Campana, Osimo (AN)

Personal skills and competences

Mother tongue(s) | **Italian**

Other language(s)

Self-assessment

European level (*)

	Understanding			Speaking				Writing	
	Listening		Reading		Spoken interaction		Spoken production		
English	C1	Proficient	C2	Proficient	C1	Proficient	C2	Proficient	C2	Proficient
French	A2	Basic	B1	Independent	A2	Basic	A1	Basic	A1	Basic

(*) Common European Framework of Reference for Languages

Organisational skills and competences

Attitude in managing the workflow and speed up team activities. Experience with Agile development (Redmine, Kanban) with a team of up to 5 individuals.
Experience in managing R&D activities in an industrial framework and university research activities.

Technical skills and Computer skills

High competence with Python and its scientific libraries such as Keras and Scikit.
High competence in optimized C/C++ for DSP on x86 platforms.
High competence in user interface design and OOP (C++, GTP, Qt)
High competence in coding and optimizing C/C++ under embedded controllers (ARM Cortex-M, TI CC3200, Freescale coldfire), DSP (Texas Instruments OMAP).
High competence with Embedded Linux on ARM Cortex-A processors
High competence with Matlab and its toolboxes
High competence in fast prototyping for sound synthesis in Puredata, Max/MSP and VCV Rack.
Competence in electronic schematic reading and validation
Experience with technical specifications writing for firmware and communication protocols
Competence in PHP coding for the Web
Administration of Linux servers
High competence in vector graphics design and Latex paging.

Artistic skills and competences

Musician, plays electric guitar and synths since the age of 10. Played live on stage since the age of 13, recently playing as an experimental electronic music solo act. Amateur dancer