



# Federico Cecati

CONTROL ENGINEER · PIANIST AND COMPOSER

Via Mira Flores 13, L'Aquila(AQ) - Italy

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## Basic Information

**Date of birth** 4th May 1994  
**Gender** Male  
**Nationality** Italian  
**Civil Status** Unmarried  
**Driving license** A, B

## Engineering Education

### M.Sc. in Control Engineering with Honors

UNIVERSITÀ DEGLI STUDI DELL'AQUILA

*L'Aquila - Italy*

*October 2015 - October 2017*

- Thesis title: "MODELING AND NONLINEAR CLOSED - LOOP GAIT CONTROL OF HUMANOID ROBOTS". Supervisor: Prof. Costanzo Manes; Language: English

### B.Sc. in ICT Engineering with Honors

UNIVERSITÀ DEGLI STUDI DELL'AQUILA

*L'Aquila - Italy*

*October 2012 - July 2015*

- Thesis title: "LQR OPTIMAL CONTROL OF A BALL-ON-PLATE SYSTEM MOUNTED ON AN INDUSTRIAL ROBOT". Supervisor: Prof. Costanzo Manes; Language: Italian

## Skills

### ENGINEERING SKILLS

- Linear Systems Analysis and Control
- NonLinear Systems Analysis and Control
- Model Identification and Kalman Filtering Theory
- Digital Electronics and Hardware Architectures
- FPGA and MicroController Based Systems
- Hybrid Systems Modeling and Control
- Time-Delay Systems Analysis and Control
- Stochastic Processes and Stochastic Control
- Optimal and Robust Control, Convex Optimization
- Robotics and Motion Control
- Signal Theory, Modulation Theory applied to Telecommunications
- Analog Electronics
- Digital Signal Processing and Filtering
- Audio and Image Processing
- Fundamentals of Electrical Science, Electrical Drives
- Power Electronics and Power Systems

### COMPUTER SKILLS

- Matlab and Simulink
- C oriented to Embedded Systems
- C++
- Java
- FPGA programming and VHDL
- LaTeX
- ECDL Certification

### LANGUAGES

- Italian (*Mother tongue*)
- English (*Proficient*)
- German (*Basic*)

## Engineering Experience

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### Guest Researcher involved in HEART project

Kiel - Germany

CHRISTIAN-ALBRECHTS-UNIVERSITÄT ZU KIEL

January 2018 - June 2018

He was a scientific staff member of Chair of Power Electronics of University of Kiel, headed by Prof. Marco Liserre. He was involved in the project "the Highly Efficient And Reliable smart Transformer (HEART), a new Heart for the Electric Distribution System". His researches deal with control of Smart Transformer-Fed Grid with high penetration of renewable energies. Particular attention is posed on the phenomenon of Harmonic Instability caused by frequency couplings, interaction between power converters, computation and transmission delays. NonLinear control, robust control, distributed control, parameter estimation applied to power electronic based power systems are object of the research.

### University Projects

L'Aquila - Italy

UNIVERSITÀ DEGLI STUDI DELL'AQUILA

October 2012 - October 2017

- Trajectory tracking applied to car obstacle avoidance
- Random labyrinth generation and exit algorithm with shortest path
- FIR filter implementation via FPGA: design of the MAC and processor interfacing
- Simulation of space vector modulation algorithm
- Robust state observer applied to Micro Grid with sensors subject to cyber attacks
- Several projects related to audio processing and electronic musics

## Awards & Scholarships

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### SCIENTIFIC

**ESKH Doctoral Scholarship Winner**, he won the scholarship provided by Gesellschaft für Energie und Klimaschutz Schleswig-Holstein GmbH (EKSH). The scholarship provides a monthly stipendium for a

2018 period of three years to support a research project in the field of energy and climate protection. The title of the presented project is "Stability Analysis and Control of a Distribution Grid with High Penetration of Wind Energy". Additional information can be found on the [EKSH official website](#)

Kiel - Germany

**GSSI Scholarship Winner**, he won one of the four scholarships for Master Degree students provided by

2016 Istituto Nazionale di Fisica Nucleare (INFN) - Gran Sasso Science Institute (GSSI) branch, with merit. The duration of the scholarship is two years.

L'Aquila - Italy

## Extracurricular Activity

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### Staff Member of IEEE IECON 2016

Florence - Italy

STAFF MEMBER

October 2016

His role was managing conference registrations, payments and invoices.

### Member of Rock Bands

KEYBOARD PLAYER

He has been member of several bands playing different genres including Funk, Blues, Hard Rock, Progressive Rock, Classic Rock, Jazz. He likes improvisation, so he often performs in jam sessions in Kiel, in Rome and in L'Aquila.

### Theater Acting

L'Aquila - Italy

THEATER ACTOR

September 2014 - November 2016

He has studied theater acting under direction of Mrs. Rosanna Lancione.

# Musical Education and Performances

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## Conservatory Diploma in Piano

L'Aquila - Italy

CONSERVATORY OF MUSIC OF L'AQUILA

October 2004 - July 2017

Ten years Conservatory diploma in Piano, with Maestro Luciano Bellini. In compliance with Italian law existing in 2017, the Conservatory diploma is considered as a Master Degree. Program of the final exam:

- **Bach:** *Italian Concerto*
- **Beethoven:** *Sonata op. 90*
- **Scriabin:** *Sonata n. 5*
- **Debussy:** *La fille aux cheveux de lin, La cathédrale engloutie*
- **Chopin:** *Nocturne op. 37 n. 1, Nocturne op. 27 n. 1, Mazurka op. 63 n. 2*
- **Saint-Saëns:** *Le Cloches de la Palmarie*

## Music Composition Bachelor Student

L'Aquila - Italy

CONSERVATORY OF MUSIC OF L'AQUILA

October 2013 - July 2017

He was admitted to the Composition class at the Conservatory of Music of L'Aquila, ranked first. He was a Bachelor student of Music Composition with Maestro Claudio Perugini as supervisor.

## Musical Masters and Performances

Italy

### ITALY

- He attended with merit several composition masterclasses and seminars. He discussed his musical works with international composers including Sydney Corbett, Alessio Elia, Andrea Portera, gaining their appreciation. His works were performed in several concert halls, including "Auditorium del Parco" in L'Aquila, "Villa Castiglione Music Hall" in Florence, and "Auditorium of The Conservatory of Music of L'Aquila"
- He attended with merit to several piano masterclasses under supervision of musicians like Maestro Fausto Di Cesare, Maestro Massimiliano Scatena and Maestro Luciano Bellini. He plays music by Johann Sebastian Bach, Wolfgang Amadeus Mozart, Ludwig van Beethoven, Fryderyk Chopin, Claude Debussy, Johannes Brahms, Aleksandr Nikolaevich Scriabin and many others. He has played in several concert halls in Italy
- He attended with merit to several orchestral conducting masterclasses with Maestro Luciano Bellini. Most relevant performances: Beethoven 5th and 7th Symphonies, Dvořák 9th Symphony and Rachmaninov 2nd Piano Concerto performed with Orchestra Internazionale di Roma in "Torti Theater", Bevagna (Perugia) - Italy

# Personal Information

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## ABOUT ME

I always have a mathematical approach to engineering problems and I like to see how abstract maths takes shape in real systems. I like to find relationships among apparently far topics and to observe the same problem under several points of view. I love music, cinema and art. I like nature, therefore I practice sports like ski, jogging, mountain biking and sea swimming. In the past I have practiced several team sports like football, basketball, volleyball, handball. I love to travel and meet new people.