

Europass Curriculum Vitae



Personal information

Surname(s) / First name(s)

Address(es)

Email(s)

Nationality(-ies)

Date of birth

Gender

Stellino, Flavio

Salita superiore san Rocchino 41/9, 16122, Genova (GE), Italy

flavio.stellino@hotmail.it, flavio.stellino@edu.unige.it

Italian

October 03, 1988

Male

Work experience

Dates

Occupation or position held

Main activities and responsibilities

February 2015 - July 2016

Lecturer at University of Genoa

Teaching in the following course: *Filtri analogici e digitali (Analog and digital filters)* for the course of Electronic Engineering.

Dates

Occupation or position held

Main activities and responsibilities

September 2015 - July 2016

Tutor at University of Genoa

Tutoring activity in the following course: *Teoria dei Circuiti (Circuit Theory)* for the courses of Biomedical and Informatics Engineering.

Dates

Occupation or position held

Main activities and responsibilities

February 2015 - July 2015

Tutor at University of Genoa

Tutoring activity in the following course: *Teoria dei Circuiti (Circuit Theory)* for the courses of Electronic, Biomedical and Computer Engineering.

Dates

Occupation or position held

Main activities and responsibilities

October 2013 - December 2013

Occasional collaboration at the Università degli Studi di Genova

The subject of the work was: "Identification of hysteresis models from experimental data and development of design techniques of the embedded control systems".

Review Activity

Dates

Main activities and responsibilities

May - June 2016

Reviewer for "*International Journal of Circuit Theory and Application*".

Research Projects

Dates

November 2013 - April 2014

Occupation or position held	Research contract with ABB Lenno, entitled "Data modelling in order to compensate, by software, measurement of a new pressure transducer with 700 bar limit".
Dates	November 2014 - April 2015
Occupation or position held	Research project with University of Genoa, entitled "Modeling and compensation of hysteresis and creep phenomena".
Education and training	
Dates	January 2014 - present
Occupation or position held	Ph.D. Student at the "Complex systems: nonlinear models and circuits" (COMPsys) laboratory, Department of Electrical, Electronic and Telecommunications Engineering and Naval Architecture (DITEN), Università degli Studi di Genova. School of Electric Engineering, XXIX cycle. Tutor: prof. Marco Storaice.
Educational Activity	Participation in following Phd courses: <ul style="list-style-type: none"> • "General relativity" (48 hours). Professor: Nicola Maggiore. • "Statistical physics" (48 hours). Professor: Nino Zanghì. Exam test: seminar entitled "<i>Renormalization group analysis of the one and two dimensional Ising models</i>" • "Analysis of nonlinear dynamical systems" (25 hours). Professor: Marco Storaice.
Dates	September 2015
Educational Activity	Participation in 10th Sicc International Tutorial Workshop " <i>Topics in nonlinear Dynamics</i> ". "Nonlinear Dynamics in Computational Neuroscience from Physics and Biology to ICT" (21 hours), organized by Fernando Corinto (Politecnico Di Torino, Italy) and Alessandro Torcini (Marseille University, France) in Turin, Italy, Salone d'onore, Castello del Valentino.
Dates	October 2014
Educational Activity	Participation in National PhD school " <i>Ferdinando Gasparini</i> " in Naples (32 hours). Professors: Giovanni Miano, Marcello D'Amore, Pietro Burrascano.
Dates	March 2013
Title of qualification awarded	Graduate degree (Laurea magistrale) in Telecommunications Engineering
Title of dissertation/Description	Characterization of three-dimensional dielectric structures through electromagnetic fields. Development of a new technique for the reconstruction of dielectric properties of three-dimensional unknown objects, extending a 2D tomographic technique to a method that solves a 3D vector problem. Supervisors: prof. Matteo Pastorino, prof. Andrea Randazzo.
Final Score	110/110 with honours
Name and type of organization providing education and training	University of Genoa
Dates	September 2010
Title of qualification awarded	Undergraduate degree (Laurea) in Telecommunications Engineering
Title of dissertation/Description	Air temperature estimated by satellite data with Support Vector Machine. Development of a supervised regression method in order to estimate the air surface temperature by satellite images in thermal infra-red band (TIR). Supervisors: prof. Sebastiano Serpico, prof. Gabriele Moser.
Final Score	110/110
Name and type of organization providing education and training	Università degli Studi di Genova
Dates	July 2007
Title of qualification awarded	Secondary school Diploma
Title of Dissertation/Description	General and Special Relativity

Final Score
Name and type of organization
providing education and training

90/100
Liceo Scientifico Leonardo Da Vinci, Genova (GE)

Personal skills and competences

Mother tongue(s)
Other language(s)

*Self-assessment
European level^(*)*

English

Scientific Competences

Italian

English

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
B2 Indep. user	B2 Indep. user	B1 Indep. user	B1 Indep. user	B2 Indep. user

^(*) Common European Framework of Reference (CEF) level

My research activities allowed me to develop good competences about the following fundamental scientific fields: *Complex nonlinear dynamical systems* (with emphasis on hysteretic system and neuron models), *Information theory*, *Stochastic processes*, *Electrical communications and Modulations*, *Digital signal processing*, *Circuit theory*.

I have an academic knowledge in following : *General relativity*, *Statistical physics*, *Signal and image processing*, *pattern recognition*, *Theory of Electromagnetic fields* and *Electromagnetic propagation*, *Remote sensing* and *Electromagnetic diagnostic*, *Array signal processing*, *General physics*, *Mathematical Analysis* (in particular *Fourier Analysis*, and *Functional analysis*), *Digital communications*, *Telecommunications system*, *System theory* and *Control theory*, *Data compression* and *Signal restoration*, *Electronics*, *Cognitive System*, *Telematics* and *Telecommunications networks*.

Research Interests

During the PhD school I worked on the following scientific fields:

1. **Complex Nonlinear Dynamical System** with emphasis on:

- **Identification and compensation of dynamical hysteretic systems for nan positioning application.** In this work I defined an analytical model of dynamical hysteresis, identified from experimental data, collected on a Piezoelectric Actuator (PEA) [3,6]. Nan positioning devices are based on PEAs, which exhibit stress-strain characteristic subject to hysteresis and creep, nonlinear phenomena which compromise positioning accuracy. In order to compensate for these phenomena I employed an open loop control [1,5], based on a feedforward controller, called compensator, defined by an analytical inversion of the proposed model. Furthermore, this model has been compared with other models of hysteresis and creep [2,7].
- **Neuron Models.** I analysed different deterministic neuron models through bifurcation theory, to reproduce qualitatively different neural responses. Furthermore I considered stochastic neuron models, by solving Langevin equations or simulating Markov Models, in order to reproduce a more realistic behaviour of the neural response, subject to *channel noise* and *synaptic noise*.

2. **Neural Coding:** I employed neuron models to study neural communication codes on two different aspects:

- **Ability of neurons to transmit information.** I applied Information Theory to estimate Shannon Entropy and Mutual Information, that quantify in absolute terms the transmitted information of neural spike trains in response to a synaptic stimulus. This approach has been employed also when the neuron works in *bursting* conditions.
- **Study of neural stimuli encoding.** Action Potential is the stereotyped neural response which codes synaptic input stimulus. The main problem of Neural Coding concerns the identification of stimulus parameters (*features*) which modulate neural response, transmitting information. In my work I studied phase codes, evaluating correlation between the phase of the input stimuli (computed by Hilbert Transform) and the neural response and I defined an analytical method, based on phase analysis of synaptic stimulus to predict burst onset [4].

Technical skills : Hardware

I worked with Breadboards, Oscilloscopes, Spectrum Analyzer, Signal Generators

Technical skills : Software

MatLab (good knowledge), Simulink, PSpice

Programming languages

MatLab, L^AT_EX, C/C++

Other computer skills and competences

Microsoft Office; Operative Systems (working knowledge): Windows, Linux

Driving licence(s)

A,B

Additional information

Personal Interests

High predisposition for the technical-scientific field, strong interest in theoretical physics and mathematics. I really love fundamental research and the philosophical evidence that it entails.

I am very interested to expand my knowledge through scientific and cultural activities or work experiences, related to research fields. I attended many seminars, mostly at the Science Festival in Genoa. I like teaching activities.

I practised for over 11 years martial arts (Kung Fu) and I have a great interest in Eastern Disciplines.

Publications

Journals

- [1] A. Oliveri, F. Stellino, G. Caluori, M. Parodi, M. Storace, *Open-Loop Compensation of Hysteresis and Creep Through a Power-Law Circuit Model*, IEEE Transactions on Circuits and Systems I:Regular Papers, vol.63, no.3, pp.413-422, March 2016.
- [2] A. Oliveri, F. Stellino, M. Parodi, M. Storace, *Hysteresis and creep: Comparison between a power-law model and Kuhn's model*, Physica B: Condensed Matter, vol.486, no.1, pp.2-6, April 2016.
- [3] M. Biggio, A. Oliveri, F. Stellino, M. Parodi, M. Storace, *A circuit model of hysteresis and creep*, IEEE Transactions on Circuits and Systems II, vol.62, no.5, pp.501-505, May 2015.
- [4] F. Stellino, A. Mazzoni, M. Storace, *A phase analysis method for burst onset prediction*, Physical review E, 2017, 95.2: 022412.

Conferences

- [5] M. Biggio, F. Stellino, M. Parodi, M. Storace, *A Circuit Model for open-loop compensation of Hysteresis*. 2015 IEEE International Symposium on Circuits and Systems (ISCAS), May 2016.
- [6] M. Biggio, F. Stellino, M. Parodi, M. Storace, *A Low-Complexity Circuit Model of Hysteresis*. 2015 IEEE International Symposium on Circuits and Systems (ISCAS), pp.1326-1329, 24-27 May 2015.
- [7] A. Oliveri, F. Stellino, M. Parodi, M. Storace, *Modelling Hysteresis And Creep Through A Nonlinear Circuit*. 10th International Symposium on Hysteresis modelling and Micromagnetics (HMM), May 18-20, 2015, Iasi, Romania.

Date February 27, 2017