



## SCHEDA BIOGRAFICA

Le informazioni contenute in questa scheda verranno pubblicate sul sito dell'Università Telematica UNINETTUNO

Corso di Laurea: Laurea Magistrale in Ingegneria Informatica – indirizzo Programmazione e Sicurezza

Insegnamento/i: Fondamenti di Robotica industriale

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Recapito telefonico da pubblicare sul sito (non obbligatorio):

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Recapito telefonico personale (non pubblicato sul sito):



**Curriculum (in italiano)**

**Curriculum (in inglese)**

## Research Interests

Mathematical modeling, parameter identification and control of industrial and biological systems. In detail, dynamic parameters identification for robotic manipulators and physical human-robot interaction (safety and collaboration issues); modelling of the glucose-insulin system, physiological parameters identification and control of glycemia for insulin-resistant patients.

## Qualifications

In 2019, I obtained the **Qualification as Maître de conférences** (MCF) for the class 61 -*Génie informatique, automatique et traitement du signal* (French National Qualification).



## Work Experience

**03/2016 – today**

Research Fellow (Assegnista di Ricerca) for the project “Dynamic modeling and control of lightweight robot manipulators” at the Department of Computer, Control and Management Engineering (DIAG). Topic: Dynamic modeling, parameters identification and control of lightweight manipulators.

- Participation in the European Project SYMPLEXITY ([www.symplexity.eu](http://www.symplexity.eu)). Dynamic identification of robots for allowing the physical collaboration between humans and robots during industrial polishing operations.

**07/2015 – 11/2015**

Visiting researcher at Deutsches Zentrum für Luft- und Raumfahrt (DLR), Oberpfaffenhofen (Munich), Germany

**04/2015 – 05/2015**

Visiting researcher at Airbus (Airbus Group), Paris (France)

**01/2014 – 08/2015**

Università Cattolica del Sacro Cuore and CNR-IASI, Laboratorio di Biomatematca, Rome.

- Participation in the European Projects EDEN (<https://www.eden-security-fp7.eu/>), IMPRESS, PULSE. Realization of the webservice supplying the Physiological Model for a patient infected by a chemical agent. Collaboration within the modelling phase. Supervisor: Dr. Andrea De Gaetano and Prof. Daniele Gui.

**11/2012 – 11/2015**

Ph.D. Student in Automatic Engineering in Sapienza Università di Roma (winner of a scholarship fund)

- Participation in the European Project SAPHARI ([www.saphari.eu](http://www.saphari.eu)). Dynamic identification for allowing safe and autonomous human-robot collaboration.

**06/2012 – 01/2014**

WLAB srl wireless ideas, Rome. In collaboration with Sapienza Università di Roma

- Participation of the FP7 European Project “Pleased”, PLants Employed As SEnsing Devices (<http://pleased-fp7.eu/>). Signal analysis and classification with Machine Learning techniques. Supervisor: Prof. Andrea Vitaletti.

**03/2012 – 11/2012**

Sapienza Università di Roma, Rome.

- Research fellow for the project “Optimization of the camera-calibration procedure on the field” (Machine Learning techniques adopted, as Artificial Neural Networks). Supervisor: Prof. Luca Iocchi.

**06/2011 – 07/2011**

CNR-IASI (Consiglio Nazionale delle Ricerche – Istituto di Analisi dei Sistemi ed Informatica), Rome

- Development of a web-service performing collaboration between software packages developed in Matlab, R and C++, by means of a GUI developed in php, allowing a remote user to perform several computations, such as data fitting and parameter estimation on compartmental models. The results are shown by means of a Matlab-produced-graph or a Gnuplot-produced-graph. The system is maintained on a server with LAMP architecture. Reference: Dr. Andrea De Gaetano.

**04/2011 – 05/2011**

CNR-IASI (Consiglio Nazionale delle Ricerche – Istituto di Analisi dei Sistemi ed Informatica), Rome

- Realization of the website of the Biomathematics Laboratory of CNR-IASI (<http://www.biomatematica.it/>), by means of the CMS Joomla. Reference: Dr. Andrea De Gaetano.



09/2009 – 06/2010

CNR-IASI (Consiglio Nazionale delle Ricerche – Istituto di Analisi dei Sistemi ed Informatica), Rome

- Regarding the participation of CNR-IASI to the European project “SICMA” (“Simulation of crises management activities”) co financed in FP7 (Sec) ([www.sicmaproject.eu](http://www.sicmaproject.eu)): mathematical modeling and implementation (in C++ language) of the physiology of the virtual patient and his/her management in the instants immediately following the simulated accident, that is the cures on the accident location and the transport to the hospital.  
Supervisor: Dr. Andrea De Gaetano.

09/2009

CNR-IASI (Consiglio Nazionale delle Ricerche – Istituto di Analisi dei Sistemi ed Informatica), Rome

- Co-organization role (13-26 September 2009) of the International Biomathematics Summer School held in Lipari (Italy) (September 2009) (<http://www.biomatematica.it/lipari2009/index.html> ).  
Supervisor: Dr. Andrea De Gaetano.

06/2009-09/2009

CNR-IASI (Consiglio Nazionale delle Ricerche – Istituto di Analisi dei Sistemi ed Informatica), Rome – in collaboration with 3M Deutschland GmbH.

- Realization of a web-service for storing data related to a multicentric efficacy study of the 3M™ Tegaderm™ CHG Chlorhexidine Gluconate IV Securement Dressing. In detail, database design and implementation of the related structures for insert and retrieve data by means of a user-interface (used languages: SQL, Asp).  
Reference: Dr. Andrea De Gaetano.

## Teaching Experience

A.Y. 2019 – 2020

Teacher for the course of Robotics (*Fondamenti di Robotica Industriale*) for the students of the Master course of Ingegneria Informatica (Computer Engineering). Università Telematica Internazionale UNINETTUNO

A.Y. 2018 – 2019  
and 2019 – 2020

Teacher for the course of *Control of Electromechanical Systems* for the students of the Erasmus Mundus Master Course in Sustainable Transportation and Electrical Power Systems. Sapienza University of Rome

A.Y. 2016 – 2017  
and 2017 – 2018

Teaching assistant (tutor) for the course of *Mathematical Analysis 2 (Analisi Matematica 2)* for the students of Management Engineering (Ingegneria Gestionale) at Sapienza University of Rome. Reference: Prof. Daniele Andreucci

From A.Y. 2014 –  
2015 to present

Assistance to students of Robotics courses (bachelor and master deg.), especially for projects and theses. Teaching assistant for Robotics classes.

## Seminars

12/04/2019

CNRS – IRISA (Institut de Recherche en Informatique et Systèmes Aléatoires), Rennes (France).

## Active Collaborations

- CNRS – IRISA (Institut de Recherche en Informatique et Systèmes Aléatoires), Rennes (France) with Dr. Paolo Robuffo Giordano.
- CNR – IASI (Istituto di Analisi dei Sistemi ed Informatica), Rome (Italy) with Dr. Andrea De Gaetano and Dr. Pasquale Palumbo.
- Università dell'Aquila, L'Aquila (Italy) with Prof. Costanzo Manes.



## Publications

- M. Capotondi, G. Turrisi, C. Gaz, V. Modugno, G. Oriolo, A. De Luca. An Online Learning Procedure for Feedback Linearization Control without Torque Measurements. In *Proc. of the International Conference on Robot Learning (CoRL)*, 2019.
- C. Gaz, M. Cognetti, A. Oliva, P. Robuffo Giordano, A. De Luca. Dynamic identification of the Franka-Emika Panda robot with retrieval of feasible parameters Using Penalty-based Optimization, *IEEE Robotics and Automation Letters*, 2019.
- A. De Gaetano, C. Gaz, S. Panunzi, Consistency of compact and extended models of glucose-insulin homeostasis: The role of variable pancreatic reserve. *PLoS ONE*, 2019
- N. Cacciotti, A. Cifonelli, C. Gaz, V. Paduano, A.V. Russo, M. Vendittelli, Enhancing force feedback in teleoperated needle insertion through on-line identification of the needle-tissue interaction parameters. In *Proc. IEEE Conference on Biomedical Robotics and Biomechatronics (BioRob)*, Enschede (NL), Aug. 2018
- C. Gaz, E. Magrini, A. De Luca, A model-based residual approach for human-robot collaboration during manual polishing operations. *Mechatronics*, 2018
- C. Gaz, A. De Luca, Payload Estimation Based on Identified Coefficients of Robot Dynamics – with an Application to Collision Detection. In *Proc. Int. Conference on Intelligent Robots and Systems (IROS)*, Vancouver (Canada), Sept. 2017
- C. Gaz, A. De Gaetano, C. Manes, P. Palumbo, A. Borri, S. Panunzi, Effective Control of Glycemia using a Simple Discrete-delay Model. In *IFAC PapersOnLine*, 2017.
- C. Gaz, F. Flacco, A. De Luca. Extracting Feasible Robot Parameters from Dynamic Coefficients Using Nonlinear Optimization Methods. In *Proc. Int. Conference on Robotics and Automation (ICRA)*, Stockholm (Sweden), May 2016.
- E. Pacciani, A. Borri, PM. Soave, D. Gui, S. Magalini, S. Panunzi, C. Gaz, P. Gaudio, A. Malizia, A. De Gaetano. “Modelling and Simulation for Major Incidents: an Innovative Approach to Medical Response”. In *Int. Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth)*, 2015.
- De Gaetano, S. Panunzi, P. Palumbo, C. Gaz and T. Hardy. Data Driven Modeling on Diabetes Progression. In book *Data-driven Modeling for Diabetes* by V. Marmarelis and G. Mitsis (eds.), 2014.
- De Gaetano, C. Gaz, P. Palumbo and S. Panunzi. A Unifying Organ Model of Pancreatic Insulin Secretion. *PLOS ONE*, 2015.
- Gaz, F. Flacco, A. De Luca. Identifying the dynamic model used by the KUKA LWR: a reverse engineering approach. *Proceedings of the 2014 International Conference on Robotics and Automation (ICRA 2014)*, Hong Kong, China.
- Pennisi, D. Bloisi, C. Gaz, L. Iocchi, D. Nardi. Novel patterns and methods for zooming camera calibration. *Journal of WSCG 06/2013*; 21(1):59-67. In proceeding of: 21st International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision (WSCG 2013).



- De Gaetano, C. Gaz, C. Gori Giorgi, P. Palumbo. An islet population model of pancreatic insulin production. *Proceedings of the 52<sup>nd</sup> IEEE Conference on Decision and Control*, 2013.
- Gaz, G. Cremona, S. Panunzi, B. Patterson, A. De Gaetano. A geometrical approach to the PKPD modeling of inhaled bronchodilators. *Journal of Pharmacokinetics and Pharmacodynamics*, 2012.
- Fagiolini, A. Matone, C. Gaz, S. Panunzi, A. De Gaetano. Confronto farmacoeconomico di ziprasidone con altri antipsicotici atipici per il trattamento della schizofrenia. *Farmeconomia*, 2011.

## Education

<b>05/2016</b>	PhD in Automation and Operational Research at Sapienza – Università di Roma (winner with scholarship)
<b>12/2011</b>	Sapienza – Università di Roma (Rome, Italy). Master Degree in Systems Engineering ( <i>Laurea Specialistica in Ingegneria dei Sistemi</i> ). Thesis title: A controllers population model for the pancreatic insulin production. Score: 110/110
<b>03/2006</b>	Università Roma Tre (Rome, Italy) Bachelor Degree in Computer Engineering ( <i>Laurea in Ingegneria Informatica</i> ). Thesis title: Control of a robot with flexible forearm by means of a nonlinear observer. Score: 110/110
<b>07/2001</b>	Liceo Cornelio Tacito, Rome. High school qualifications on classical literature ( <i>Diploma di maturità classica</i> ) . Score: 100/100

## Known languages

<b>Italian</b>	mother tongue
<b>English</b>	Estimated level: C1
<b>French</b>	Estimated level: B1 (currently studying)
<b>German</b>	Estimated level: A2
<b>Russian</b>	Level A1 certified by the Pushkin State Russian Language Institute

## Skills and expertise



**Programming  
Languages**

Very good knowledge of the following software and programming languages:

- C/C++
- Matlab
- Php
- Asp
- Java
- Jsp
- SQL (MySQL databases)

**Operating Systems**

Experience of use of the following O.S.s

- Windows (XP, 7)
- Linux (Ubuntu Desktop distribution)

**Curriculum (in francese)**

Ai sensi del D. L.gvo del 30 giugno 2003, n. 196 (Codice in materia di protezione dei dati personali), informato delle finalità del trattamento dei dati e della loro registrazione su supporti informatici, nonché dei soggetti responsabili dello stesso,

AUTORIZZO

con la trasmissione di questa scheda, UNINETTUNO Università Telematica nella figura del Rettore prof. Maria Amata Garito al trattamento dei dati personali contenuti in questo modulo per esclusive finalità didattiche e di ricerca al fine di consentire lo svolgimento dell'insegnamento e delle pratiche amministrative collegate.