

CURRICULUM VITAE
MARCO GROSSI



PERSONAL INFORMATIONS

Name Marco Grossi
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Telephone +39 3534102869
E-mail marco.grossi8@unibo.it
ResearchGate Web Page http://www.researchgate.net/profile/Marco_Grossi/
Nationality Italian
Date of birth May 31th 1973

Qualified as Associate Professor for sector 09/E3 (Electronics) from August 28th 2018 to August 28th 2029

RESEARCH EXPERIENCE

- Dates *November 1st 2022 – October 31th 2023*
- Name and address of employer University of Bologna, Department of Physics and Astronomy “Augusto Righi” (DIFA), via Berti Pichat 6/2 , 40136 , Bologna , Italy
- Occupation or position held Research activity
- Main activities and responsibilities Design of an hardware firewall on FPGA devices for the security of infrastructures that require large volumes of data exchange on private networks.

- Dates *April 1st 2017 – June 31th 2018*
- Name and address of employer University of Bologna, Faculty of Engineering, Inter Departments Center for Industrial Reasearch – Advanced Mechanics and Materials, via Risorgimento 2 , 40136 , Bologna , Italy
- Occupation or position held Research activity
- Main activities and responsibilities Design of an electronic embedded system for the monitoring of automatic machines and control of actuators.

- Dates *July 1st 2014 – March 31th 2017*
- Name and address of employer -
- Occupation or position held Research and Development activity
- Main activities and responsibilities Development of battery operated embedded systems.

- Dates *July 1st 2012 – June 30th 2014*
- Name and address of employer University of Bologna, Faculty of Engineering, Department of Electrical, Electronic and Information Engineering “Guglielmo Marconi” (DEI) , via Risorgimento 2 , 40136 , Bologna , Italy
- Occupation or position held Research activity
- Main activities and responsibilities Study on innovative techniques for the measure of quality of olive oil and their implementation in the form of a portable embedded system. The work has been financially supported by the CESAR project, RIDIIT program, funded by the Ministry of Economic Development (Italy).

- Dates *July 21th 2010 – March 31th 2011*
 - Name and address of employer Spinner Consortium, Villa Gandolfi Pallavicini, via Martelli 22-24, 40138, Bologna, Italy
 - Occupation or position held Research activity
 - Main activities and responsibilities Study of the feasibility of bacterial concentration detection in raw milk samples using the impedance technique. The work has been financially supported by the Spinner 2013 program, funded by the Regional Operational Program 2007-2013 (Emilia-Romagna, Italy), the Ministry of Labour, Health and Social Policy (Italy) and the European Social Fund (ESF).
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- Dates *May 1st 2009 – April 30th 2010*
 - Name and address of employer University of Bologna, Faculty of Engineering, Department of Electronics (DEIS) , via Risorgimento 2 , 40136 , Bologna , Italy
 - Occupation or position held Research activity
 - Main activities and responsibilities Development of sensors for bacterial concentration detection for the dairy industry. The work has been financially supported by no A20/1884/00/X09 precompetitive development project entitled "Development of advanced sensors for real-time and in-situ determination of the microbial concentration in milk-based products" presented by Carpigiani Group - ALI SPA and funded in accordance with the notice "Priority Technologies" (DM September 29th 2005) Facilitation of pre-competitive development programs, for the granting of relief fund for technological innovation (FIT).
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- Dates *1st October 2007 – 28th February 2009*
 - Name and address of employer University of Bologna, Faculty of Engineering, Department of Electronics (DEIS) , via Risorgimento 2 , 40136 , Bologna , Italy
 - Occupation or position held Research activity
 - Main activities and responsibilities Development of an embedded portable biosensor system for bacterial concentration detection in ice-cream mix by electrical parameters analysis. The work has been financially supported by no A20/1884/00/X09 precompetitive development project entitled "Development of advanced sensors for real-time and in-situ determination of the microbial concentration in milk-based products" presented by Carpigiani Group - ALI SPA and funded in accordance with the notice "Priority Technologies" (DM September 29th 2005) Facilitation of pre-competitive development programs, for the granting of relief fund for technological innovation (FIT).
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- Dates *1st March 2006 – 31th July 2007*
 - Name and address of employer Carpigiani Group , via Emilia 45 , 40011 Anzola Emilia (BO), Italy
 - Type of business or sector *Development of machines for the production and conservation of ice-cream.*
 - Occupation or position held Industrial research
 - Main activities and responsibilities Study of the feasibility to measure bacterial concentration in ice-cream mix by electrical parameters analysis.

POSTGRADUATE COURSES

- Dates *February 2011*
 - Place and teacher of the course Study visit (3 days) to research centers in France, organized by Spinner International
 - Course content Study visit to research centers placed in Lyon and Grenoble
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- Dates *December 2010*
 - Place and teacher of the course Spinner Consortium, Villa Gandolfi Pallavicini, Bologna, Italy, held by Dott. Alessandro Anghileri
 - Course content Financing of innovation projects
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- Dates *September 2010*
 - Place and teacher of the course Spinner Consortium, Villa Gandolfi Pallavicini, Bologna, Italy, held by Avv. Clizia Cacciamani
 - Course content Patents, trademarks and designs
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- Dates *July 2003*
 - Place and teacher of the course University of Bologna , held by National Instruments
 - Course content Course on LabVIEW 7.0 Express and the new modules for PalmPC and FPGA

- Dates *December 2002*
- Place and teacher of the course University of Bologna , held by National Instruments
- Course content Course on Data Acquisition with LabVIEW
- Dates *June 2002*
- Place and teacher of the course University of Bologna , held by National Instruments
- Course content Course on LabVIEW (graphical programming language)

AFFILIATION WITH SCIENTIFIC INSTITUTIONS

- Dates *November 1st 2022 – October 31th 2023*
- Institution National Institute of Nuclear Physics (INFN)

EDUCATION AND TRAINING

- Dates *April 2004*
- Name and type of organisation providing education and training University of Bologna , Faculty of Engineering, Bologna, Italy
- Title of Ph.D. thesis High performance multilevel Flash memories , tutor Prof. Bruno Riccò
- Title of qualification awarded Ph.D. degree in Electronic Engineering
- Dates *October 2000*
- Name and type of organisation providing education and training University of Bologna , Faculty of Engineering, Bologna, Italy
- Title of thesis Multilevel programming of Flash EEPROM memories , tutor Prof. Bruno Riccò
- Title of qualification awarded Laurea degree in Electronic Engineering with vote 100/100 cum laude
- Dates *July 1992*
- Name and type of organisation providing education and training Liceo Scientifico Statale Augusto Righi , Bologna, Italy
- Title of qualification awarded High School degree

TEACHING

- Dates *February 2019 – January 2020*
- Course Informatic (C programming), University of Bologna, Italy
- Role Adjunct Professor
- Dates *November 2018*
- Role Lecture on the topic “Design and simulation of digital circuits with VHDL”.
- Dates *March 2017 – February 2018*
- Course Digital electronics, University of Bologna, Italy, held by Prof. Bruno Riccò
- Role Teacher assistant
- Dates *April 2017*
- Role Lecture on the topic “Embedded ICT systems for food safety”.
- Dates *March 2016 – February 2017*
- Course Digital electronics, University of Bologna, Italy, held by Prof. Bruno Riccò
- Role Teacher assistant

- Dates *April 2016*
- Role Lecture on the topic "Embedded ICT systems for food safety".

- Dates *March 2015 – February 2016*
- Course Digital electronics, University of Bologna, Italy, held by Prof. Bruno Riccò
- Role Teacher assistant

- Dates *March 2015*
- Role Lecture on the topic "Embedded ICT systems for food safety".

- Dates *February 2012*
- Course Integrated course of nanobiotechnology and biosensor, University of Bologna, Italy, held by Prof. Bruno Riccò
- Role Lecture on the topic "A portable biosensor for bacterial concentration detection in liquid and semi-liquid samples"

- Dates *January 2004 – April 2010*
- Course Analog electronics, University of Bologna, Italy, held by Prof. Massimo Lanzoni
- Role Teacher assistant

RESEARCH ACTIVITY

Design and implementation of a network security system based on FPGA. The objective of the research activity is the development of a hardware device for data protection at universities and research centers. Two possible implementations of this device were evaluated: 1) Firewall device (intrusion prevention system, IPS), equipped with a pair of ports operating in full duplex, which analyzes the network traffic on the input ports and, on the basis of defined rules by the user, allows outgoing data transfer if it does not detect potential security risks or blocks them otherwise. 2) Packet sniffer device (intrusion detection system, IDS) that operates in passive mode, analyzing network traffic on the input port and sending an alarm signal to a remote server if security risks are detected.

The devices described have been implemented on a commercial development board produced by Xilinx (KC705) which integrates within it, among other things, an FPGA device from the Kintex-7 family, a chip for managing the physical layer of the network protocol, clock generators, volatile and non-volatile memories. Network traffic protection devices were implemented using the Verilog language within the Vivado software. Simulations at RTL level were carried out to validate the correct functioning of the system before its implementation on FPGA. The devices created were first tested using an Ethernet packet generator (made using another FPGA development board) in order to verify the behavior of the system in the presence of a controlled flow of data (packets of well-defined type and length with a controllable time interval between one packet and the next) and, subsequently, via real network traffic, by connecting the device to an Ethernet switch connected to the network. Different versions of these systems have been implemented, characterized by different data throughput values (1 Gbit/s, 10 Gbit/s, 100 Gbit/s)..

Investigation of the aging effects on the performance of analog and digital circuits. The objective of the research activity is the evaluation of the impact of aging effects on the performance of analog and digital circuits. In this regard, the study was carried out on the aging mechanism called Bias Temperature Instability (BTI) which produces variations over time in the threshold voltage of MOSFET transistors. Different types of circuits, both analog and digital, have been analyzed (clock de-skew buffers, operational voltage amplifiers, ring oscillators) and, for each of these, the reduction in performance due to the aging mechanism has been evaluated through circuit simulations carried out with the software LTSpice. In addition to evaluating the impact of the aging mechanism on circuit performance, circuit solutions have been proposed with the aim of mitigating the effects of aging and improving performance.

Design and programming of an embedded system for the monitoring of automatic machines and control of actuators. The objective of the research activity is the design of an embedded electronic system, based on the microcontroller STM32F334, for the wireless transfer of power in order to control a set of 5 linear motors. The system consists of two electronic boards, a pair of coils for wireless power transfer operating at 6.78 MHz and placed at a distance of 10-20 cm from each other and five linear motors. The electronic transmission board (TX) is controlled by a laptop PC via serial interface. The power input to the transmission coil is generated by an inverter circuit driven by four PWM signals generated by a high resolution timer inside the microcontroller (resolution 217 ps). Through the channels of the analog-to-digital converter (ADC) integrated in the microcontroller, some parameters are acquired, including voltage and current on the coil and the temperature of the inverter for efficient and reliable control of the system. The receiving electronic board (RX) is powered by the receiving coil to which the power is transferred wirelessly. This board controls the five linear motors through a pair of digital outputs of the microcontroller and acquires the current and voltage values of the board power supply through the microcontroller's ADC channels. Communication between the TX and RX boards takes place via a pair of Bluetooth modules.

Development of rapid techniques for quality analysis of Metalworking fluids. The objective of the research is to develop rapid techniques for in-situ measurements on metalworking fluids, used in the metalworking industry for the lubrication and lowering the temperature of the working tools as well as machined part.

The measure of the oil concentration of the metalworking fluids is an important parameter that must be maintained stable during the entire operating life of the fluid in order to maximize performance and ensure the quality of manufactured products. To this end has been developed a portable electronic system, realized with the STM32 microcontroller based electronic board, which estimates the concentration of oil by measuring the viscosity of the fluid according to the principle of falling ball: an high precision chrome steel ball is allowed to roll inside a cylindrical conduit filled with the sample to be analyzed and the time taken to fall between two defined points is measured and converted to the concentration of oil. The presence of the ball is detected by means of inductive proximity sensors and the temperature (used to compensate for viscosity changes due to temperature variations) is measured with a PT100 thermistor. The instrument thus realized measure the oil concentration with good accuracy and is little affected by any contaminants present in the fluid.

A second electronic system for measuring the concentration of oil in metalworking fluids has been developed. This system realizes automatically a conductometry titration with HCl 0.5M for assessing the alkaline reserve of the sample (which is correlated with the concentration of oil). The designed system is based on the Arduino Uno board: the sample to be analyzed is placed in a test vial equipped with a couple of stainless steel electrodes to measure the conductivity and the titrant (HCl) inside a syringe where the plunger is pressed through a stepper motor controlled by Arduino. The oil concentration is estimated from the number of drops of titrant required to induce a significant change in the measured electrical conductivity. The system has the advantage of measuring the concentration of oil in an automatic way by using the official technique of titration with HCl which is not affected by contaminants present in the sample.

It was also evaluated with success the possibility to measure the bacterial concentration of a sample by using an impedance based biosensor system previously developed.

Development of innovative techniques to measure quality parameters in olive oil. The objective of the research is the development of fast and simple methods for the determination of olive oil quality parameters, that can be easily automated for in-situ determination directly in the oil mill or in industries. The techniques developed are based on different principles such as the measurement of electrical parameters and the optical properties of the sample.

The measure of the acidity of the oil is obtained by measurement of the electrical characteristics of an emulsion between a hydroalcoholic solution and the sample of olive oil. The electrical characteristics are measured by an Agilent E4980A. The emulsion is created in a test tube of 50 ml capacity equipped with a pair of stainless steel electrodes in direct contact with the liquid. The electrical conductance of the emulsion is a function of the oil acidity and can be used for an accurate measurement of this parameter. The technique has been implemented in the form of portable electronic embedded system for in-situ measurements: all the operations of electrical characteristics determinations are implemented within an electronic board designed "ad hoc" based on the microcontroller DSPIC33ep512.

The measure of the peroxide index and of the total content of polyphenols was made with an analysis of the optical type. The sample of olive oil is used to create an emulsion with an aqueous reagent (based on the FOX reagent for the peroxide index and the Folin-Ciocalteu reagent for the total content of polyphenols). The optical density of the emulsion is then measured after a time between 5 and 10 minutes: a LED (featuring a wavelength peak of 569nm and 835nm for the peroxide index and total content of polyphenols respectively) generates a light radiation which is transmitted through the emulsion and detected by a photodiode. Increasing the concentration of the compounds to be detected consequently increases the optical density. The tube of 25ml capacity used to contain the emulsion is housed in a cylindrical chamber designed using the software SolidEdge and built with the 3D printer MakerBot Replicator. Also in this case the technique was subsequently implemented in the form of electronic embedded system based on the microcontroller DSPIC33ep512.

Determination of bacterial concentration in liquid and semi-liquid media by electrical characteristics analysis. The objective of the research is to implement a procedure for the determination of bacterial concentration that is competitive in terms of time response with the traditional technique of plate count and easily automated in industrial field. This has been achieved through the application of the impedance technique: the analyzed sample is maintained at a constant temperature to favor the growth of the bacterial population and the electrical characteristics are monitored at regular intervals of 5 minutes. Until the bacterial concentration of the sample is kept below a critical threshold (10^7 cfu/ml) the impedance as well as its resistive and reactive components remain constant, while when this threshold is exceeded they begin to decrease due to the microbial metabolism. The initial bacterial load of the sample can then be assessed by measuring the time required to detect a deviation of the electrical characteristics compared to the baseline value.

An experimental setup for the measurement of bacteria using the impedance technique has been built using benchtop instrumentation. The system is composed of an electronic board (featuring a function generator for the sinusoidal voltage test generation and an I/V converter that provides a voltage proportional to the current through the sensor), a DC power supply and an analog-to-digital acquisition board (National Instruments). The waveforms are then acquired and elaborated via programs written in LabVIEW language in order to extract the electrical parameters of the system sensor-sample and analyzed using an appropriate equivalent electrical model. The sensor is constituted by a container of 10 ml capacity equipped with a pair of hemispherical stainless steel electrodes in direct contact with the sample. Such a system was used for the measurement of bacteria in different types of liquid and semi-liquid media including ice cream, raw milk, pasteurized milk, beer, water.

The benchtop experimental setup was the first step to the development of a portable system for in-situ bacterial concentration measures. This portable system is constituted by an electronic board for the measurement of electrical parameters (based on the microcontroller STR912 ARM), a thermoregulation board (based on microcontroller Atmel ATmega168) and an incubation chamber, which features a pair of electrodes for measuring of the electrical characteristics, a temperature sensor (LM335) and a pair of adhesive resistors for the heating of the sample using the Joule effect. The system communicates via serial port with an eeePC used for graphical real time display of the impedance curves and data filing.

Multilevel programming of high performance Flash EEPROM memories. The Research is aimed at developing efficient algorithms for programming reliable Flash memory EEPROM at 4, 8 and 16 levels. In this regard, test chip NOR Flash memory (4 Mbit) provided by ST- Microelectronics (Agrate Brianza) were used that allow access beyond that of normal digital inputs (cell address, chip select, write/read) such as complete control on the analog voltages applied to the terminals of the Control Gate, Drain , Source, and Bulk during reading, writing and erasing .

An experimental setup was built with benchtop instrumentations (DC power supply ,function generator) and an analog-to-digital acquisition board for the study of flash memory devices . All programs for the management of read write and erase, as well as the on-screen display of the results of these operations and data filing have been developed using the programming language LabVIEW (National Instruments) . The programming of the memory is made by channel hot electron injection with a particular procedure (ramp programming), which provides a better control over the writing of the cells. Using this programming technique, it has been demonstrated the possibility of an efficient and reliable writing of the memories of four levels without the use of programverify algorithms.

In order to extend the programming of the memory to 8 and 16 levels, it was necessary to implement an algorithm that further reduces dispersion on the programmed threshold voltage and, at the same time, maintaining a high throughput program . The results of measurements have shown the applicability of this algorithm in the case of memories to 8 levels , while in the case of memories to 16 levels is probably necessary to implement code for the detection and/or correction of errors to ensure the reliability of the operation.

Finally, tests were performed concerning reliability of programming when the memory is subjected to a variable number of programming/erasing cycles. Tests have shown that ,following the stress test, random errors occur in the programming that affect the reliability of write operations in the presence of a number of program-erase cycles exceeding 10000 in the case of programming to 16 levels.

OTHER ACTIVITIES

REVIEWER FOR DIFFERENT
INTERNATIONAL SCIENTIFIC
JOURNAL

- IEEE Transaction on Electron Devices
- IEEE Sensors Journal
- Elsevier Biosensors and Bioelectronics
- IEEE Transaction on Instrumentation and Measurement
- Elsevier Measurement
- IET Science, Measurement & Technology
- PLOS ONE
- Elsevier Sensor and Actuators A: Physical
- Environmental Engineering and Management Journal
- Food Analytical Methods
- MDPI Sensors
- MDPI Electronics
- MDPI Micromachines

EDITOR FOR DIFFERENT
INTERNATIONAL SCIENTIFIC
JOURNALS

- Lead Guest Editor for the Special Issue “**Sensors and Embedded Systems in Agriculture and Food Analysis**” of the Journal of Sensors edited by Hindawi.
- Guest Editor for the Special Issue “**Applications of Electrical Impedance Spectroscopy (EIS) in the Development of Sensors and Sensing Systems**” of *Sensors (MDPI)*.
- Guest Editor for the Special Issue “**Portable Sensor Systems for Microbial Application**” of *Sensors (MDPI)*.

POSITIONS IN DIFFERENT
INTERNATIONAL CONFERENCES

- Member of the **Program Committee (PC)** of the 32th Conference of Open Innovations Association FRUCT held in Zilina (Slovakia), Finland from 24th to 26th May 2023.
- Member of the **Selection Committee** of the PhD Forum of the Design Automation and Test in Europe 2023 (DATE 2023) Conference, held in Antwerp, Belgium from 17th to 19th April 2023.
- Member of the **Reviewer Board** of the IEEE Applied Sensing Conference (APSCON 2023) held in Bengaluru, India from 23th to 25th January 2023.
- Member of the **Jury for the best poster award** of the PhD Forum of the Design Automation and Test in Europe 2022 (DATE 2022) Conference, held in Antwerp, Belgium from 14th to 23th March 2022.
- Member of the **Program Committee (PC)** of the 31th Conference of Open Innovations Association FRUCT held in Helsinki, Finland from 27th to 29th April 2022.
- Member of the **Technical Program Committee (TPC)** of the International Instrumentation & Measurement Technology Conference (I2MTC) held in Ottawa, Canada from 16th to 19th May 2022.
- Member of the **Selection Committee** of the PhD Forum of the Design Automation and Test in Europe 2022 (DATE 2022) Conference, held in Antwerp, Belgium from 14th to 23th March 2022.
- **Invited Speaker** at the 2021 AOCs Annual Meeting and Expo online conference (3-14 May 2021) in the session "Rapid and high-throughput screening methods" with the presentation "In-the-field determination of free acidity in olive oil using a portable battery-operated sensor system".
- Member of the **International Program Committee** for the IFSA Frequency & Time Conference (IFTC 2021) held in Palma de Mallorca (Spain), 14-16 September 2021.
- Member of the **Technical Program Committee (TPC)** of the International Instrumentation & Measurement Technology Conference (I2MTC) held in Glasgow, Scotland from 17th to 20th May 2021.
- Member of the **Jury for the best poster award** of the PhD Forum of the Design Automation and Test in Europe 2021 (DATE 2021) Conference, held as virtual conference from 1st to 5th February 2021.
- Member of the **Selection Committee** of the PhD Forum of the Design Automation and Test in Europe 2021 (DATE 2021) Conference, held as virtual conference from 1st to 5th February 2021.
- Member of the **Technical Program Committee (TPC)** of the International Instrumentation & Measurement Technology Conference (I2MTC) held in Dubrovnik, Croatia from 25th to 28th May 2020.
- Member of the **Selection Committee** of the PhD Forum of the Design Automation and Test in Europe 2020 (DATE 2020) Conference, held in Grenoble (France) from 9th to 13th March 2020.
- Member of the **Local Organizing Committee (Audio Visual)** of the 1ST IEEE COMPUTER SOCIETY GLOBAL CHAPTER SUMMIT, held on 7th December 2019 in Bologna, Italy.
- Member of the **Local Organizing Committee (Audio Visual)** of the IEEE Technical Meeting on Reliable, Safe, Secure, and Time-Deterministic Intelligent Systems, held on 6th December 2019 in Bologna, Italy.
- Member of the **International Program Committee** for the IFSA Frequency & Time Conference (IFTC 2019) held in Barcellona (Spain), 23-25 October 2019.

ADJUNCT EXPERT MEMBER IN
THE COMMISSION OF STATE
EXAMINATION FOR THE
REGISTERING TO THE
ENGINEERING PROFESSION
(INFORMATION TECHNOLOGY
SECTOR)

- Year 2015, session II
- Year 2016, session I
- Year 2016, session II
- Year 2017, session I
- Year 2017, session II
- Year 2018, session I
- Year 2018, session II
- Year 2019, session I
- Year 2019, session II

PERSONAL SKILLS AND COMPETENCES

NATIVE LANGUAGE	Italian
OTHER LANGUAGES	
• Reading skill	English Excellent
• Writing skill	Excellent
• Spoken interaction	Good
COMPUTER SKILLS AND COMPETENCES	MICROCONTROLLERS : ATMEL , TI MSP430 , CYPRESS PsOC, STM32 FPGAs: XILINX 7-SERIES, GOWIN FPGAs OPERATING SYSTEMS : UNIX (SUN) , WINDOWS DEVELOPMENT TOOLS : SPICE , MATLAB , FEMLAB , KICAD PROGRAMMING LANGUAGES : LABVIEW , ASSEMBLER 8086 , C , PASCAL
TECHNICAL SKILLS AND COMPETENCES	Use of most common laboratory instruments : Oscilloscopes, power supply, waveform generators, digital multimeters, use of analog and digital data acquisition boards and virtual instrumentation management with LabVIEW.
OTHER SKILLS AND COMPETENCES	Statistical analysis with Microsoft EXCEL.
DRIVING LICENCE	B licence

Publications

- [1] Marco Grossi, Fabrizio Alfonsi, Marco Prandini, Alessandro Gabrielli, “A high throughput Intrusion Detection System (IDS) to enhance the security of data transmission among research centers”, *Journal of Instrumentation*, 18, 2023, C12017.
- [2] Marco Grossi, Enrico Valli, Alessandra Bendini, Tullia Gallina Toschi, Bruno Riccò “Un Sistema elettronico portatile per analisi di qualità degli oli vergini di oliva”, *Nutra Horizons*, 5, 2023, https://digital.teknoscienze.com/nutra_horizons_5_2023_ita/un_sistema_elettronico_portatile_per_analisi_di_qualita_degli_oli_vergini_di_oliva.
- [3] Marco Grossi, Fabrizio Alfonsi, Marco Prandini, Alessandro Gabrielli, “A Highly Configurable Packet Sniffer Based on Field-Programmable Gate Arrays for Network Security Applications”, *Electronics*, 12 (21), 2023, 4412.
- [4] Marco Grossi, Alessandra Bendini, Enrico Valli, Tullia Gallina Toschi, “Field-Deployable Determinations of Peroxide Index and Total Phenolic Content in Olive Oil Using a Promising Portable Sensor System”, *Sensors*, 23 (11), 2023, 5002.
- [5] Marco Grossi, Martin Omaña, Daniele Rossi, Biagio Marzulli, Cecilia Metra, “Novel BTI Robust Ring-Oscillator-Based Physically Unclonable Function”, *IEEE 28th International Symposium on On-Line Testing and Robust System Design (IOLTS)*, 2022, 1-7.
- [6] Martin Omana, Marco Grossi, Cecilia Metra, “Early detection of photovoltaic system inverter faults”, *Microelectronics Reliability*, 135, 2022, 114594.
- [7] Marco Grossi, Enrico Valli, Alessandra Bendini, Tullia Gallina Toschi, Bruno Riccò, “A Portable Battery-Operated Sensor System for Simple and Rapid Assessment of Virgin Olive Oil Quality Grade”, *Chemosensors*, 10 (102), 2022.

- [8] Marco Grossi, Enrico Valli, Virginia Teresa Glicerina, Pietro Rocculi, Tullia Gallina Toschi, Bruno Riccò, “Optical Determination of Solid Fat Content in Fats and Oils: Effects of Wavelength on Estimated Accuracy”, *European Journal of Lipid Science and Technology*, 124, 2022, 2100071.
- [9] Marco Grossi, Meryem Bouras, Martin Omana, Hassan Berbia, “Low-Cost Strategy to Detect Faults Affecting Scrubbers in SRAM-Based FPGAs”, *Microprocessors and Microsystems*, 89, 2022, 104437.
- [10] Marco Grossi, “Measurement of water salinity using a capacitively coupled contactless conductivity sensor”, *Procedia Environmental Science, Engineering and Management*, 8 (3), 2021, 657-666.
- [11] Marco Grossi, Martin Omana, “Investigation of the Impact of BTI Aging Phenomenon on Analog Amplifiers”, *Journal of Electronic Testing*, 37, 2021, 533-544.
- [12] Marco Grossi, Enrico Valli, Alessandra Bendini, Tullia Gallina Toschi, Bruno Riccò, “Evaluation of Olive Oil Quality Grade using a Portable Battery-Operated Sensor System”, *Chemistry Proceedings*, 5 (40), 2021.
- [13] Marco Grossi, “Energy Harvesting Strategies for Wireless Sensor Networks and Mobile Devices: A Review”, *Electronics*, 10, 661, 2021.
- [14] Marco Grossi, Enrico Valli, Virginia Teresa Glicerina, Pietro Rocculi, Tullia Gallina Toschi, Bruno Riccò, “Practical determination of solid fat content in fats and oils by single-wavelength near-infrared analysis”, *IEEE Transactions on Instrumentation and Measurement*, 69 (2), 2020, 585-592.
- [15] Marco Grossi, Carola Parolin, Beatrice Vitali, Bruno Riccò, “Computer vision approach for the determination of microbial concentration and growth kinetics using a low cost sensor system”, *Sensors*, 19, 2019, 5367.
- [16] Marco Grossi, Carola Parolin, Beatrice Vitali, Bruno Riccò, “Measurement of bacterial concentration using a portable sensor system with a combined electrical-optical approach”, *IEEE Sensors Journal*, 19 (22), 2019, 10693-10700.
- [17] Tullia Gallina Toschi, Rosa Palagano, Stefania Vichi, Alba Tres, Enrico Valli, Marco Grossi, Chiara Cevoli, Merav Marom Shamur, Maurizio Servili, Maria Tsimidou, Diego Luis Garcia-Gonzales, Alessandra Bendini, “The OLEUM project: an overview of new in-house validated analytical methods”, *17th Euro Fed Lipid Congress and Expo*, Book of abstracts, 2019, 145-145.
- [18] Marco Grossi, Martin Omana, “Impact of Bias Temperature Instability (BTI) aging phenomenon on clock deskew buffer”, *Journal of Electronic Testing*, 35, 2019, 261-267.
- [19] Marco Grossi, Rosa Palagano, Alessandra Bendini, Bruno Riccò, Maurizio Servili, Diego Luis Garcia-Gonzales, Tullia Gallina Toschi, “Design and in-house validation of a portable system for the determination of free acidity in virgin olive oil”, *Food Control*, 104, 2019, 208-216.
- [20] Marco Grossi, Carola Parolin, Beatrice Vitali, Bruno Riccò, “Electrical Impedance Spectroscopy (EIS) characterization of saline solutions with a low-cost portable measurement system”, *Engineering Science and Technology, an International Journal*, 22, 2019, 102-108.
- [21] Marco Grossi, Annachiara Berardinelli, Edward Sazonov, Wesley Beccaro, Martin Omaña, “Sensors and embedded systems in agriculture and food analysis”, Editorial of the Special Issue of *Journal of Sensors*, 2019.
- [22] Marco Grossi, “A sensor-centric survey on the development of smartphone measurement and sensing systems”, *Measurement*, 135, 2019, 572-592.
- [23] Corrado Florian, Marco Grossi, Kreshnik Velju, Rudi Paolo Paganelli, Francesco Berra, Diego Masotti, Massimo Lanzoni, Alberto Santarelli, Bruno Riccò, Marco Gavesi, Alessandra Costanzo, “A 150-W IR WPT embedded system at 6.78-MHz for the supply and control of linear motors”, *Proceedings of the IEEE Wireless Power Transfer Conference (WPTC)*, June 3-7 2018, Montreal, Canada.
- [24] Marco Grossi, Bruno Riccò, “A portable instrument with disposable cells for in-situ measurements of viscosity in liquids”, *Journal of Applied Research and Technology*, 16 (3), 2018, 170-176.
- [25] Marco Grossi, Carola Parolin, Beatrice Vitali, Bruno Riccò, “A portable sensor system for bacterial concentration monitoring in metalworking fluids”, *Journal of Sensors and Sensor Systems*, 7, 2018, 349-357.

- [26] Marco Grossi, Bruno Riccò, “Metalworking Fluid Degradation Assessment by Measurements of the Electrical Parameters at Different Temperatures”, *Procedia Environmental Science, Engineering and Management*, 4 (2), 2017, 59-68.
- [27] Bruno Riccò, Marco Grossi, “Prospects of Electronic Systems”, *Journal of Electrical & Electronic Systems*, 6 (3), 2017, 1-2.
- [28] Marco Grossi, Bruno Riccò, “Electrical impedance spectroscopy (EIS) for biological analysis and food characterization: a review”, *Journal of Sensors and Sensor Systems*, 6, 2017, 303-325.
- [29] Marco Grossi, Carola Parolin, Beatrice Vitali, Bruno Riccò, “Bacterial concentration detection using a portable embedded sensor system for environmental monitoring”, *Proceedings of the 7th IEEE International Workshop on Advances in Sensors and Interfaces (IWASI) 2017*, Vieste (FG), Italy, June 15-16 2017, 246-251.
- [30] Marco Grossi, Bruno Riccò, “An automatic titration system for oil concentration measurement in metalworking fluids”, *Measurement*, 97, 2017, 8-14.
- [31] Marco Grossi, Bruno Riccò, “Reducing waste disposal of metalworking fluids by electrical impedance monitoring”, *Procedia Environmental Science, Engineering and Management*, 3 (2), 2016, 95-104.
- [32] Enrico Valli, Alessandra Bendini, Annachiara Berardinelli, Luigi Ragni, Bruno Riccò, Marco Grossi, Tullia Gallina Toschi, “Rapid and innovative instrumental approaches for quality and authenticity of olive oils”, *European Journal of Lipid Science and Technology*, 118, 2016, 1601-1619.
- [33] Marco Grossi, Bruno Riccò, “A portable electronic system for in-situ measurements of oil concentration in MetalWorking fluids”, *Sensors and Actuators A: Physical* 243, 2016, 7-14.
- [34] Monique Mancuso, Marco Grossi, Alessandro Ciro Rappazzo, Renata Zaccone, Gabriella Caruso, Bruno Riccò, Alessandro Bergamasco, “Development of a sensor for the detection of Escherichia coli in brackish waters”, *Journal of Coastal Life Medicine* 4 (3), 2016, 200-202.
- [35] Marco Grossi, Giuseppe Di Lecce, Marco Arru, Tullia Gallina Toschi, Bruno Riccò, “An opto-electronic system for in-situ determination of peroxide value and total phenol content in olive oil”, *Journal of Food Engineering* 146, 2015, 1-7.
- [36] Marco Grossi, Massimo Lanzoni, Diego Matteuzzi, Bruno Riccò, “Data Transformation Algorithm for Reliable Bacterial Concentration Detection Using the Impedance Method”, *Journal of Electrical Engineering and Electronic Technology* 3 (1), 2014, 1-5.
- [37] Marco Grossi, Giuseppe Di Lecce, Tullia Gallina Toschi, Bruno Riccò, “A novel electrochemical method for olive oil acidity determination”, *Microelectronics Journal* 45 (12), 2014, 1701-1707.
- [38] Marco Grossi, Bruno Riccò, “Oil concentration measurement in metalworking fluids by optical spectroscopy”, *Procedia Environmental Science, Engineering and Management* 1 (1), 2014, 13-17.
- [39] Marco Grossi, “Un sistema elettronico portatile per la misura dei parametri di qualità dell’olio di oliva”, *Riunione Conclusiva Progetto CESAR Bando RIDIT*, Bari, October 23 2014.
- [40] Marco Grossi, Giuseppe Di Lecce, Tullia Gallina Toschi, Bruno Riccò, “Fast and accurate determination of olive oil acidity by electrochemical impedance spectroscopy”, *IEEE Sensors Journal* 14 (9), 2014, 2947-2954.
- [41] Marco Grossi, Diego Matteuzzi, Bruno Riccò, “Minimizing the environmental impact of metalworking fluids by automatic detection of bacterial contamination”, *Environmental Engineering and Management Journal* 12 (S11), 2013, 49-52.
- [42] Giuseppe Di Lecce, Marco Grossi, Bruno Riccò, Tullia Gallina Toschi, “Virgin olive oil free acidity: an electrochemical determination”, *11th Euro Fed Lipid Congress*, Antalya, Turkey, October 27-30 2013.
- [43] Marco Grossi, Giuseppe Di Lecce, Tullia Gallina Toschi, Bruno Riccò, “A novel electrochemical method for olive oil acidity determination”, *Proceedings of the IEEE International Workshop on Advances in Sensors and Interfaces (IWASI) 2013*, Bari (BR), Italy, June 13-14 2013, 162-167.
- [44] Marco Grossi, Roberto Lazzarini, Massimo Lanzoni, Anna Pompei, Diego Matteuzzi, Bruno Riccò, “A portable sensor with disposable electrodes for water bacterial quality assessment”, *IEEE Sensors Journal* 13 (5), 2013, 1775-1782.

- [45] Marco Grossi, “Metodo rapido di misura per acidità e qualità dell’olio di oliva”, *Aiuti e strumenti per l’innovazione alle aziende agroalimentari – Analisi delle esigenze di innovazione e strutturazione del portafoglio tecnologico – Programma RIDITT – Progetto CESAR*, Foggia, February 28 2013.
- [46] Marco Grossi, Bruno Riccò, Daniele Gazzola, Manuele Onofri, Giampaolo Zuccheri, Diego Matteuzzi, “Bacterial concentration detection in water by microfabricated impedance biosensor”, *Proceedings of ECOMONDO 2012*, Rimini Fiera (RN), Italy, November 7-10 2012, Maggioli Editore, 989-994.
- [47] Marco Grossi, Massimo Lanzoni, Roberto Lazzarini, Bruno Riccò, “Automatic ice-cream characterization by impedance measurements for optimal machine setting”, *Measurement* 45, 2012, 1747-1754.
- [48] Anna Pompei, Marco Grossi, Massimo Lanzoni, Giuseppe Perretti, Roberto Lazzarini, Bruno Riccò, Diego Matteuzzi, “Feasibility of lactobacilli concentration detection in beer by automated impedance technique”, *MBAA Technical Quarterly* 49 (1), 2012, 11-18.
- [49] Marco Grossi, Massimo Lanzoni, Roberto Lazzarini, Bruno Riccò, “Linear Non Iterative Sinusoidal Fitting Algorithm for Microbial Impedance Biosensor”, *IFSA Sensors & Transducers Journal* 137 (2), 2012, 235-244.
- [50] Marco Grossi, Roberto Lazzarini, Massimo Lanzoni, Bruno Riccò, Diego Matteuzzi, “Raw milk microbial quality detection with a portable electrochemical biosensor system”, *IDF World Dairy Summit 2011*, Fiera di Parma (PR), Italy, October 15-19 2011.
- [51] Marco Grossi, Massimo Lanzoni, Anna Pompei, Roberto Lazzarini, Diego Matteuzzi, Bruno Riccò, “A portable biosensor system for bacterial concentration measurements in cow’s raw milk”, *Proceedings of the IEEE International Workshop on Advances in Sensors and Interfaces (IWASI) 2011*, Borgo Egnazia, Savelletri di Fasano (BR), June 28-29 2011, 132-137.
- [52] Marco Grossi, Roberto Lazzarini, Massimo Lanzoni, Bruno Riccò, “A novel technique to control ice cream freezing by electrical characteristics analysis”, *Journal of Food Engineering*, 106, 2011, 347-354.
- [53] Marco Grossi, Anna Pompei, Massimo Lanzoni, Roberto Lazzarini, Diego Matteuzzi, Bruno Riccò, “Detection of coliforms concentration in water samples by portable impedance-based biosensor system”, *Proceedings of ECOMONDO 2010*, Rimini Fiera (RN), Italy, November 3-6 2010, Maggioli Editore, 1062-1067.
- [54] Marco Grossi, Massimo Lanzoni, Anna Pompei, Roberto Lazzarini, Diego Matteuzzi, Bruno Riccò, “An embedded portable biosensor system for bacterial concentration detection”, *Biosensors and Bioelectronics* 26, 2010, 983-990.
- [55] Marco Grossi, Anna Pompei, Massimo Lanzoni, Roberto Lazzarini, Diego Matteuzzi, Bruno Riccò, “Total bacterial count in soft-frozen dairy products by impedance biosensor system”, *IEEE Sensors Journal* 9 (10), 2009, 1270-1276.
- [56] Marco Grossi, Massimo Lanzoni, Anna Pompei, Roberto Lazzarini, Diego Matteuzzi, Bruno Riccò, “A portable system for microbial concentration detection in dairy products by impedance measurements”, *FISV (Federazione Italiana Scienze della Vita)*, Riva del Garda (TN), Italy, September 24-27 2008.
- [57] Marco Grossi, Massimo Lanzoni, Anna Pompei, Roberto Lazzarini, Diego Matteuzzi, Bruno Riccò, “Detection of microbial concentration in ice-cream using the impedance technique”, *Biosensors and Bioelectronics* 23, 2008, 1616-1623.
- [58] Marco Grossi, Massimo Lanzoni, Bruno Riccò, “Erratic cell behavior in Channel Hot Electron programming of NOR flash memories”, *IEEE Transaction on Electron Devices* 51 (10), 2004, 1613-1620.
- [59] Marco Grossi, Massimo Lanzoni, Bruno Riccò, “A novel algorithm for high-throughput programming of multilevel flash memories”, *IEEE Transaction on Electron Devices* 50 (5), 2003, 1290-1296.
- [60] Marco Grossi, Massimo Lanzoni, Bruno Riccò, “Program schemes for multilevel flash memories”, *Proceedings of the IEEE* 91 (4), 2003, 594-601.