Giovanni Gibertoni

PH.D. ELECTRONICS ENGINEER

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ResearchGate

Education

Ph.D. Information and Communication Technologies — *Modena, Italy*
DEPARTMENT OF ENGINEERING "ENZO FERRARI" — *Nov 2019 - March 2023*

- Electronics and Telecommunications - Instrumentation and Measurement
- Research Topic: "Optoelectronic Methods and Instrumentation for Human Vision Science"
- Advisor: Prof. Luigi Rovati

MS in Electronics Engineering — *Modena, Italy*
DEPARTMENT OF ENGINEERING "ENZO FERRARI" — *2016 - 2018*

- Thesis: "Optoelectronic device for Pupillary Light Reflex Analysis" at OptoLAB
- Advisor: Prof. Luigi Rovati
- Grade: 110/110 *Cum Laude*

BS in Electronics Engineering — *Modena, Italy*
DEPARTMENT OF ENGINEERING "ENZO FERRARI" — *2013 - 2016*

- Thesis: "Internet of Things: Smart Home wireless communication technologies"
- Advisor: Prof. Maria Luisa Merani

Expert In Electronics and Telecommunications — *Modena, Italy*
HIGH SCHOOL - TECHNICAL INSTITUTE "ENRICO FERMI" — *2008 - 2013*

Professional Experience

Assistant Professor — *Modena, Italy*
DEPARTMENT OF BIOMEDICAL, METABOLIC AND NEURAL SCIENCES, UNIMORE — *Oct 2024 - Present*

- **Research Areas:** Biosensors, Ophthalmic Instrumentation
- Development of non-invasive diagnostic technologies for ophthalmology and biosensing
- AI-enhanced vison-based techniques for ocular imaging

Postdoctoral Researcher — *Modena, Italy*
DEPARTMENT OF ENGINEERING "ENZO FERRARI", UNIMORE — *Oct 2023 - Oct 2024*

- **Topic:** NIRS-based biosensors for prosthetic control
- Research on human-machine interfaces in the Fit4MedRob project
- Bioprinting and strechable PCB realization with modern techniques, Voltera NOVA

Scietific Consultant — *Lugano, Switzerland (Remote)*
OCULOX TECHNOLOGY SA — *Feb 2023 - June 2023*

- **Topic:** Test and Calibration of LEDs based optical engine for Eye Stimulation suitable for ophthalmic instrumentation
- Software Development with National Instrument © LabVIEW
- Intrumentation: Hamamatsu © Spectrometer, Thorlabs © Powermeter.
- Collaborator: Prof. M. Geiser

Ph.D. - Internship *New York City, US*

SUNY - College of Optometry *April 2022 - October 2022*

- Development and testing of Ophthalmic Instrumentation - Pupillometry, Electroretinography
- Design of 3D Components for Optical Instruments with SolidWorks©
- Lab Measurements and data analysis with MATLAB
- Advisor: Prof. S. Viswanathan
- Co-Advisor: Dr. Kenneth Ciuffreda

R&D Firmware Engineer - External Consultant *Reggio Emilia, Italy*

Galileo Engineering s.r.l *2019 - 2023*

- **#C++** 32-bit Microcontroller Programming - Nordic Semiconductor©, Zephir® Env.
- CanOPEN® Protocol Stack
- National Instrument © LabVIEW

Hardware and Firmware Engineer - Full Time *Reggio Emilia, Italy*

Galileo Engineering s.r.l *Apr. 2019 - Nov 2019*

- **#C** Programming - Nordic uC, PID Control
- Bluetooth Low Energy Device Communication
- PCB Design with Autodesk© Eagle
- Android App Developer - Android Studio IDE**#Java**, Link

Teaching Experience

2025	**Opthalmic Technology**, Short Course,	*Modena, IT*
2024	**Biosignals Measurements**, Course,	*Modena, IT*
2021-2025	**Instrumentation and measurement methods**, Lab Course (English), Link	*Modena, IT*
2021-2025	**Industrial Measurements**, Lab Course (English),Link	*Modena, IT*
2020	**Instrumentation and measurement methods**, Lab Course (English), Online	*Modena, IT*
2020-2022	**Networking Technologies and Protocols**, Additional teaching materials	*Modena, IT*

Patents

G. Gibertoni, L. Rovati, and D. Cassanelli, F.Oddone, L. Quaranta "Optical device for automatic screening of the irido-corneal angle", *Patent Pending*, Filing Date: 28/06/2024, Applicant Reference: P8050IT00, Type of Application: Ordinary, Number of Claims: X, Patent Application No.: 102024000015049, Affiliations: G. Gibertoni, L. Rovati, D.Cassanelli (University of Modena and Reggio Emilia); F. Oddone (Fondazione Bietti, Rome, Italy); L. Quaranta (VISION RESEARCH SRL, Brescia, Italy)

G. Gibertoni, L. Rovati, and G. Borghi, "Method for Estimating a Compliant Position of an Eye, Ophthalmic Examination Device Implementing Such Method, and Related Electronic Kit for Updating an Ophthalmic Device", *Patent Pending*, Filing Date: 15/12/2023, Applicant Reference: P7745IT00, Type of Application: Ordinary, Number of Claims: 11, Patent Application No.: 102023000026841, Affiliations: G. Gibertoni, L. Rovati (University of Modena and Reggio Emilia); G. Borghi (University of Bologna)

Presentations

** presenting author*

Jan 2025 - **Gibertoni, G.*** et al., *Enhancing Ophthalmic Examinations with Real-Time Eye Position Monitoring Using SVM*. Oral presentation at Photonic West, BiOS 2025, San Francisco, CA, US.

March 2023 - **Gibertoni G.*** et al., *Optoelectronics Methods and Instrumentation for Human Vision Science*. PhD Dissertation, DDAY, Modena, Italy

Jan 2022 - **Gibertoni, G.*** et al., *A simple Maxwellian optical system to investigate the photoreceptors contribution to pupillary light reflex*. Poster presentation at Photonic West, BiOS 2022, San Francisco, CA, US.

March 2021 - **Gibertoni G.*** et al., *Towards the development of a new model for the oculomotor system*. Online Webinar Poster Presentation. SPIE BiOS, 2021. Link

September 2019 - **Gibertoni G.*** et al., *Design and realization of a binocular pupillometer for RGB flicker annoyance estimation*. Presentation at XXXVI National Congress of Electrical and Electronic Measurements, GMEE, Perugia, Italy

Awards, Fellowships, & Grants

2022	**SPIE Travel Award**, SPIE – The international society for Optics and Photonics	*$ 1,000*
2019-2023	**Ph.D. Scholarship**, UNIMORE – University of Modena and Reggio Emilia	
2019	**Young Research candidate to F.Cennamo award (Master Thesis)**, GMEE	

Mentoring

2021-2022	**Manuel Botrugno**, Master's Degree Thesis Co-Advisor, UNIMORE, Link	*Modena, IT*
2021	**Valentina Di Pinto**, Master's Degree Thesis Co-Advisor, UNIMORE, Link	*Modena, IT*
2020	**Luca Esposito**, Bachelor's Degree Thesis Co-Advisor, UNIMORE	*Modena, IT*
2019	**Gianluca Bellocchi**, Master's Degree Thesis Co-Advisor, UNIMORE, Link	*Modena, IT*

Extra-curricular Training Activities

2023	**Master's Course - Optical System Design**, UNIMORE, Prof. M. Geiser	*Modena, Italy*
2020	**Doctoral School in Instrumentation and Measurement**, GMEE, Link	*Online*
2012	**English Language Summer School**, Griffith College, Link	*Dublin, Ireland*
2011	**English Language Summer School**, Oxford Brookes University, Link	*Oxford, UK*

Participation in National and International Research Groups

- Member: Measurements, Instrumentation and Sensors Group, OptoLAB, UNIMORE, Link
- Collaborator: Biological & Vision Sciences Group, State University of New York, College of Optometry, Link
- Collaborator: Prof. Manuel Spitschan, Technical University of Munich (TUM), Link
- Collaborator: Prof. Martial H. Geiser, University of Applied Sciences and Arts Western Switzerland (HES-SO), Link
- Collaborator: Oculox Technologies SA, CEO Filippo Piffaretti, Link

Participation in National and International Projects

- UNIMORE - FIT4MEDROB, Project "Fit4MedRob- Fit for Medical Robotics", National Complementary Plan (PNC) – Funding for research initiatives on technologies and innovative pathways in the healthcare and assistance sector, Project Code PNC0000007 – CUP B53C22006810001. Role: Link
- UNIMORE, IRCCS Fondazione Bietti, Rome, "Development of a new non-contact screening method for the detection of narrow ocular anterior chamber angle", Project No. 1278, funded by Velux Foundation, Switzerland

Participation in National and International Conferences and Workshops

1. "Development of 3D Imaging and LIDAR Sensors: Issues and Technologies", Prof. Silvano Donati, Dept. of Engineering Enzo Ferrari, 04/12/2019
2. "Machine Learning sold out?", Matteo Roffilli, Dept. of Physical, Computer and Mathematical Sciences, UNIMORE, 09/12/2019
3. "Research, Innovation, and New Challenges of ICT for Biomedical Applications", Chair: Prof. Luigi Rovati, Tecnopolo of Mirandola, Dept. of Engineering Enzo Ferrari, 19/12/2019
4. Doctoral School in Instrumentation and Measurement 2020, "Italo Gorini", Prof. Pasquale Arpaia and Prof. Claudio de Capua, 04-09/09/2020

5. ”Workshop on Neuromorphic Computing”, Phase-Change Switch Research Group and IBM Research, 17 December 2020
6. ”Seminar on Big Data in Science”, M3ES Doctoral School, 12-14 April 2021
7. ”The Artificial Intelligence Act: What is Happening in Europe?”, Prof. P. Dario, F. Battaglia, F. Merenda, Scuola Superiore Sant’Anna, Pisa - 12 May 2021
8. ”Workshop on Brain-Inspired Computing”, UNIMORE - International Doctorate in ICT, 7-8 October 2021
9. ”Building Smaller and More Efficient Power Converters Using GaN Technology”, STMicroelectronics, Online, 25 January 2022
10. ”Leveraging the New Features of the STM32 Ecosystem to Improve Your STM32U5 Projects”, STMicroelectronics, Online, 16 November 2022
11. ”Visible Light Communications Using Organic Photodetectors”, Prof. Pablo Corral González, Dept. of Engineering Enzo Ferrari, UNIMORE, 10 May 2022
12. ”Ultra-Low Power Solution for ST’s Time-of-Flight Sensors”, STMicroelectronics, Online, 19 May 2022
13. ”The Evolution of Software Engineering Methods”, Prof. Fabio Mora, Dept. of Mathematics, UNIMORE, 19 May 2022
14. ”From Animal Models to Myopia Control”, SUNY – College of Optometry, SIVR Seminar – 26 May 2022, New York City
15. ”Lens and System Design”, Prof. Martial Geiser, UNIMORE, 25 May 2023
16. ”Test & Measurement DAY”, 7 November 2023, Bologna.
17. ”BEYOLEX High-Temperature Stretchable Film for Soft-Circuit Applications”, 30 November 2023, Webinar, VOLTERA
18. ”Printing Electronics with Flexible Inks”, 28 March 2024, Webinar, VOLTERA

Outreach & Professional Development

Skills

Lab Experience - Hands-On

Electrical Instrumentations: Thin Soldering, Bench Electronics Instrumentation, DAC&ADC

Optical Instrumentations: Spectrometers, Power&Photo-meters, Lasers & Incoherent Light Sources, Interferometers

Optics: Optical-Bench, Optical-Lens, Optical-Filters, Specialty Mirrors, CMOS Cameras& Imaging Lenses, Linear Stages

Misc: 3D Printing (Filament Fused Deposition), Desktop Computer Assembly, Laser Cutting&Engraving

Programs & Software Suites:

- MATLAB
- NI LabVIEW
- SolidWorks - 3D CAD Design
- Autodesk EAGLE - PCB Design
- PyCharm - Image Analysis - OpenCV and TensorFlow
- Visual Studio Code - Keil uv5
- Android Studio
- Adobe Photoshop & Lightroom
- Quadoa - Optical CAD Design

Programming Languages

Proficient: C/C++, Python, MATLAB, Visual-G (NI LabVIEW), LaTeX

Basic Knowledge: Java, JavaScript, HTML, PHP

Summer Schools

2020	**Instrumentation&Measurement PhD School**, GMEE, Link	*Online Seminars*
2012	**English Accademy**, Griffith College, Link	*Dublin, Ireland*
2011	**English Accademy**, Oxford Brookes University, Link	*Oxford, UK*

Peer Review

2021 - 2023 - Reviewer for IEEE International Workshop on Metrology for Automotive, Link
2024 - Reviewer for MDPI Sensors, Link
2024 - Reviewer for MDPI Electronics, Link
2024 -2025 Reviewer for IEEE Transactions on Instrumentation and Measurement (TIM), Link
2023 -2024 - Reviewer for Computers in Biology and Medicine (CBM), Link
2024 -2025 Reviewer for Computer Methods and Programs in Biomedicine (CMPB), Link

Professional Memberships

GMEE - National Group of Electric and Electronics Measurements
SPIE - The International Society of optics and photonics

Volunteering

AGESCI	**Educator with children 8-15 y/o,** Scout Group Modena 5	*2015 - 2023*
WOSM	**Completion of Leader Training of Scout Associations ,** The Wood Badge	*2019*

Publications

[1] Di Pinto, V., Galli, G., **Gibertoni, G.**, Ferrari, A., Ferrarini, M., Morisi, N., Rovati, L. (2025). *Towards the monitoring of dialysis treatment through absorption and endogenous fluorescence techniques.* Measurement. Sens. Link

[2] **Gibertoni, G.**, Hromov, A., Piffaretti, F., Geiser, M. H. (2024). *Development of an Innovative Pupillometer Able to Selectively Stimulate the Eye's Fundus Photoreceptor Cells*, Diagnostics, 14(17). Link

[3] **G. Gibertoni**, G. Borghi, and L. Rovati, "*Compact High-Resolution Multi-wavelength LED Light Source for Eye Stimulation*", Electronics, vol. 13(6), 1127, **March 2024**, Special Issue on Emerging Optoelectronics Devices: Materials, Designs, and Applications, Link

[4] **G. Gibertoni**, "*Optoelectronics Methods and Instrumentation for Human Vision Science*", PhD Thesis, International Doctorate in Information and Communication Technologies, University of Modena and Reggio Emilia, **Mar 2023**, Supervisor: L. Rovati

[5] **G. Gibertoni**, A.B. Pothiadia Irungovel, S. Viswanathan, and L. Rovati, "*Silent stimulation of Cones: a comparison between the ERG and PLR responses*", Proc. SPIE 12360, Ophthalmic Technologies XXXIII, 123600T, **Mar 2023**, Link

[6] **G. Gibertoni**, G. Borghi, and L. Rovati, "*Vision-based Eye Image Selection for Ophthalmic Measurement Systems*", Sensors, vol. 23(1), 386, **Jan 2023**, Link

[7] T. Fedullo, D. Cassanelli, **G. Gibertoni**, "*Assessment of a Vision-Based Technique for an Automatic Van Herick Measurement System*", IEEE Transactions on Instrumentation and Measurement, vol. 71, pp. 1–11, **Aug 2022**, Link

[8] T. Fedullo, E. Masetti, **G. Gibertoni**, F. Tramarin, and L. Rovati, "*On the Use of an Hyperspectral Imaging Vision Based Measurement System and Machine Learning for Iris Pigmentation Grading*", in 2022 IEEE International Instrumentation and Measurement Technology Conference (I2MTC), **May 2022**, pp. 1–6, Link

[9] **G. Gibertoni**, N. Lenzini, L. Ferrari, and L. Rovati, "*Design and Performance of a Near-Infrared Spectroscopy Measurement System for In-Field Alfalfa Moisture Measurement*", Photonics, vol. 9, no. 3, Art. no. 3, **Mar 2022**, Link

[10] D. Cassanelli, T. Fedullo, **G. Gibertoni** et al., "*Training of an artificial intelligence algorithm for automatic detection of the Van Herick grade*", in Ophthalmic Technologies XXXII, **Mar. 2022**, vol. 11941, pp. 35–41, Link

[11] **G. Gibertoni**, V. D. Pinto, S. Cattini, F. Tramarin, M. Geiser, and L. Rovati, "*A simple Maxwellian optical system to investigate the photoreceptors contribution to pupillary light reflex*", in Ophthalmic Technologies XXXII, **Mar 2022**, vol. 11941, pp. 52–60, Link

[12] T. Fedullo, D. Cassanelli, **G. Gibertoni** et al., "*A Machine Learning Approach for a Vision-Based Van-Herick Measurement System*", in 2021 IEEE International Instrumentation and Measurement Technology Conference (I2MTC), **May 2021**, pp. 1–6, Link

[13] D. Cassanelli, **G. Gibertoni**, S. Cattini et al., "*A new screening system for the estimation of ocular anterior chamber angle width*", in Ophthalmic Technologies XXXI, **Mar. 2021**, vol. 11623, pp. 101–105, Link

[14] **G. Gibertoni**, S. Cattini, and L. Rovati, "*Towards the development of a new model for the oculomotor system*", in Ophthalmic Technologies XXXI, **Mar 2021**, vol. 11623, pp. 93–100, Link

MS Thesis

M. Botrugno, **G. Gibertoni**, E. Masetti, L. Rovati, and E. Bassoli, '*Using Additive Manufacturing for the Optomechanical Design of a Compact Ophthalmic Instrument for Pupillary Light Reflex Analysis*', University of Modena and Reggio Emilia, 2022.

V. Di Pinto, **G. Gibertoni**, and L. Rovati, '*A Device for Investigating the ipRGC Contribution to Pupillary Light Reflex with Silent Substitution Technique*', 2021.

G. Bellocchi, **G. Gibertoni**, and L. Rovati, '*Characterization and performance improvement of a pupillometer prototype for flicker annoyance measurement*', 2019.

G. Gibertoni, S. Cattini, and L. Rovati, '*Design and realization of a binocular pupillometer for RGB flicker annoyance estimation*', 2019.

I hereby declare that the information in this curriculum vitae is true and accurate, in accordance with applicable laws.

Modena,
27 febbraio 2025

Signed,
Giovanni Gibertoni