CURRICULUM VITAE - PIETRO RICCI

PERSONAL INFORMATION:

Birth Date: 03/10/1993
Nationality: Italy
Home: Viale Guidoni, 75, 50127, Florence, Italy
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PROFESSIONAL EXPERIENCES:

My research focuses on experimental optics, photonics, and system engineering for the development of next-generation imaging instruments. During my PhD, I worked on the design and optimization of light-sheet and AOD-based systems for fast volumetric imaging and precise light control. Subsequently, in Barcelona, I contributed to the implementation of acousto-optic and photoacoustic methods for light propagation in complex scattering media. Currently, at the University of Florence, I am developing a hyperspectral imaging platform for rapid, multi-wavelength optical characterization of biological and soft matter samples within the HyperProbe project to enhance real time neuronavigation.

☑ RESEARCH

RTDa (August 2024 – Ongoing)
University of **Florence**, Department of Physics and Astronomy
Research Fellow (June 2022 – August 2024)
University of **Barcelona**, Department of Applied Physics
Research Fellow (November 2021 – June 2022)
University of **Florence**, Department of Physics and Astronomy
PhD (Atomic and Molecular Photonics) (November 2018 – October 2021)
European Laboratory for Nonlinear Spectroscopy, **Sesto Fiorentino**

☑ INTERNSHIPS

Institute of Experimental Medicine, Femtonics Labs, **Budapest** (April 2021 – July 2021)
Nanolabs, University of **Trento** (February 2018 – Sep. 2018)

☑ GUEST EDITOR

Sensing and Bio-Sensing Research (July 2025 – Ongoing)
Integrative Microscopy and Spectroscopy Techniques for Bio-sensing and Diagnostic Applications

☑ TEACHING

University of **Florence**, Department of Physics and Astronomy (September 2024 – Ongoing)
350 hours devoted to teaching and student support, including:
- 40 hours (>3 CFU) of face-to-face teaching (**Laboratory of Physics I**)
- 8 hours of supplementary teaching of physics exercises in the Biotechnology degree program

EDUCATION:

☑ MASTER'S DEGREE

University of **Trento**, Experimental physics (October 2016 – October 2018)

☑ BACHELOR'S DEGREE

University of **Florence**, Physics and Astrophysics (October 2012 – October 2016)

SCIENTIFIC PRODUCTION:

☑ PUBLICATIONS

1. Versatile and comprehensive hyperspectral imaging tool for molecular neuronavigation: a case study on cerebral gliomas (2025), Journal of Biomedical Optics
2. A Label-Free Hyperspectral Imaging Device for Ex Vivo Characterization and Grading of Meningioma Tissues (2025), Journal of Biophotonics
3. Photoacoustics for Direct Light-Guiding Inside Transparent and Scattering Media (2025), Advanced Photonics
4. Two-photon all-optical neurophysiology for the dissection of larval zebrafish brain functional and effective connectivity (2024), Communications Biology
5. Scan-less microscopy based on acousto-optic encoded illumination (2024), Nanophotonics
6. Expansion and Light-Sheet Microscopy for Nanoscale 3D Imaging (2024), Small Methods
7. Acousto-optic deflectors in experimental neuroscience: Overview of theory and applications (2024), Journal of Physics: Photonics
8. Rapid quantification of 3D ultrasound fields with wavefront sensing and Schlieren tomography (2023), Ultrasonics
9. Power-effective scanning with AODs for 3D optogenetic applications (2022), Journal of Biophotonics
10. Removing Striping Artifacts in Light-Sheet Fluorescence Microscopy: a Review (2022), Progress in Biophysics and Molecular Biology
11. Fast whole-brain imaging of seizures in zebrafish larvae by two-photon light- sheet microscopy (2022), Biomedical Optics Express
12. Fast multi-directional DSLM for confocal detection without striping artifacts (2020), Biomedical Optics Express
13. Effects of excitation light polarization on fluorescence emission in two-photon light- sheet microscopy (2020), Biomedical Optics Express
14. Dual-beam confocal light-sheet microscopy via flexible acousto-optic deflector (2019), Journal of Biomedical Optics

☑ CONFERENCE PAPERS

1. A Hyperspectral Imaging System for Meningioma Grade Discrimination, ECBO, 2025
2. Advancing Neuroscience Diagnostics: A Hyperspectral Imaging System for Real-Time Biochemical Insights into Brain Tissue, ECBO, 2025
3. Photoacoustically Generated Ultrasound for Light Guiding inside Transparent and Scattering Media, CLEO, 2025
4. HyperProbe consortium: transforming tumour neurosurgery with innovative hyperspectral imaging, SPIE BiOS, 2025
5. Towards the real-time measurement of ultrasound fields by combining schlieren tomography and wavefront sensing, Forum Acusticum, 2023
6. Fast multi-photon brain-wide volumetric imaging and photostimulation, SPIE BiOS, 2023
7. Two-photon high-speed light-sheet volumetric imaging of brain activity during sleep in zebrafish larvae, SPIE BiOS, 2020
8. Two-photon light-sheet microscopy for high-speed whole-brain functional imaging of zebrafish neuronal physiology and pathology, SPIE Photonics Europe, 2020

☑ PHD THESIS (DOCTOR EUROPAEUS)

Title: Reading and Writing the Neuronal Activity: Enhanced Light-Sheet Microscopy and AOD-based Volumetric Photostimulation for All-Optical Applications, 2022
Supervisor | Ext. Reviewers: Francesco Saverio Pavone (UNIFI) | Martí Duocastella, Ulrich Kubitscheck
Rating: Excellent

PAPERS (LAST 6 YRs)	CITATIONS (LAST 6 YRs)	H-INDEX (LAST 6 YRs)
14	202	8

☑ EVENTS AND CONFERENCES PARTICIPATION

1. ISOTT, International Society on Oxygen Transport to Tissue, Thessaloniki, August 2025
2. SPIE, ECBO, European Conference in Biomedical Optics, Munich, June 2025
3. fNIRS, Functional Near Infrared Spectroscopy, Birmingham, September 2024
4. Workshop on Advanced Investigation Methodologies, ATeN Center, Palermo, May 2024
5. SPIE, BiOS, Photonic West, San Francisco, February 2024
6. SPIE, ECBO, European Conference in Biomedical Optics, Munich, June 2023
7. SPIE, Photonics Europe, Strasbourg, April 2022
8. LSFM, The light sheet microscopy conference, Frankfurt, December 2019
9. ICOBSI, International Conference on Biosensing and Imaging, Florence, December 2018

☑ DIGITAL FORUM

1. Focus On Microscopy, Porto, April 2022
2. Photonics Europe, Strasbourg, April 2020

☑ RESEARCH PROJECT PARTICIPATIONS

1. Transforming brain surgery by advancing functional-guided neuronavigational imaging – HYPERPROBE - HORIZON-EIC-2021-PATHFINDERCHALLENGES-01-02 - Grant agreement No. 101071040.
2. Ultrasonic Endoscopes for DEEP Light Focusing - EXCELLENT SCIENCE – European Research Council (ERC) - Grant agreement No. 101002460
3. RAPTOGEN - 3D random access 2-Photon optogenetics - ATTRACT - European Union's HORIZON 2020 - Grant agreement No. 777222
4. BrainBIT - European Union's HORIZON 2020 Research and Innovation program – Grant agreement No. 692943
5. DAPTOMIC - European Union's HORIZON 2020 Research and Innovation program – Grant agreement No. 966623

☑ INVITED SPEAKER

1. March 2022, invited by Prof. Martí Duocastella at the University of Barcelona, Department of Applied Physics, to hold a seminar entitled: "All-optical control of neural clusters with simultaneous whole-brain monitoring in zebrafish larvae"
2. May 2024, invited by Dr. Giuseppe Sancataldo to participate in a Workshop on Advanced Investigation Methodologies, organized by the University of Palermo, to hold a seminar entitled: "Acousto-optic-based frequency encoding for scanless FLIM"

☑ PROJECT COORDINATION

Since September 2024, I held the role of scientific co-coordinator of the HyperProbe research project, being actively involved in the strategic planning, technical and scientific coordination, and supervision of the project's research activities, representing the University of Florence within the consortium.

☑ VISITING RESEARCHER

1. 9-27th September 2024 - University College of London, UK. In the context of HyperProbe project
2. 28–29th April 2025 - Denzlingen, Germany. Meeting with Sholly company regarding the technological exploitation of project deliverables

☑ SUPERVISING

1. PhD students of the Atomic and Molecular Photonics PhD program at LENS

2. PhD student at the University of Barcelona, Department of Applied Physics
3. Bachelor's degrees students at the University of Florence, Department of Physics and Astronomy

☑ MEMBERSHIPS

1. European Laboratory for Non-Linear Spectroscopy (LENS)
2. Institute of Nanoscience and Nanotechnology of the University of Barcelona (IN2UB)

☑ PROJECT PROPOSAL

1. May 2024. Multidisciplinary Research Grants offered by the IN2UB, Ajut a la Recerca Transversal (Call ART2024). I applied as PI candidate with the project "Integrating optics and photoacoustics for enhanced light transmission and particle photoactivation for pharmaceutical applications".
2. March 2025. Research Grant offered by the European Academy of Dermatology and Venereology (EADV). I applied with the project "Non-Invasive Multimodal Spectroscopy and Hyperspectral Imaging Diagnostics for Melanoma Detection".

READ MORE:

- ☑ **LANGUAGES:** Italian (Native Language), English (C1), Spanish (B1)
- ☑ **DIGITAL:** Software: Origin, Matlab, COMSOL Multiphysics, Labview, Zemax, ImageJ, Office, Latex, Adobe illustrator, Inkscape. Certifications: European Computer Driving License (ECDL)
- ☑ **CROSS SKILLS:** Work autonomy, problem solving, communication and leadership, teamwork
- ☑ **DRIVING LICENSE:** Type B, released on 14/12/2011
- ☑ **HOBBIES:** Travels, running, cooking, cinema
- ☑ **SOFT SKILLS:** Science Communication (Presentations)
- ☑ **EDUCATION:** SCIENZESTATE 2019, Private lessons, Summer School: BRANDY, OpenLab 2025
- ☑ **COURSES:** Pedagogy, Psychology, Anthropology, Didactic methodologies, COME SCRIVERE UNA PROPOSTA ERC STARTING GRANT

DATA TRANSFER AND STATEMENTS:

In compliance with the Italian Legislative Decree no. 196 dated 30/06/2003 and the EU General Data Protection Regulation (regulation n.2016/679) I hereby authorize the recipient of this document to use and process my personal details for the purpose of recruiting and selecting staff and I confirm to be informed of my rights. In accordance with Articles 46 and 47 of DPR 445/2000, I certify that the information contained in my CV is true, being aware of the possible application of Article 76 of the same decree in case of false statements.

Florence, Italy, 14/10/2025