

Piercarlo Dondi, PhD – Curriculum Vitae (Short Version)

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Personal Details

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Overview

Piercarlo Dondi is an **Assistant Professor** (RTD-B) at the Department of Electrical, Computer and Biomedical Engineering of the University of Pavia (Italy), where he carries out his research at the [Computer Vision and Multimedia Laboratory](#). His main research interests lie in the fields of **Computer Vision** and **Human-Computer Interaction (HCI)**, with a special focus on applications in **Digital Humanities**. His research activities are carried out in collaboration with national and international universities, research centers, cultural heritage institutions, and industrial partners.

Within Computer Vision, his work has primarily addressed *visual inspection and monitoring* problems, including methods for the identification and monitoring of surface alterations in historical musical instruments and artworks, automatic damage assessment of civil infrastructures affected by seismic events, and, currently, event recognition during airport turnaround operations. His research includes the development of image and video processing algorithms based on both classical and machine/deep learning techniques, the analysis of multispectral imagery (particularly UV fluorescence imaging), and the use of 3D models for synthetic data generation to support neural network training.

His research in Human-Computer Interaction initially focused on multimodal interaction systems based on gesture recognition and RGB-D sensors, before moving toward *gaze-based interaction* through eye tracking. In this area, he has contributed to the development of assistive technologies, calibration-free gaze typing systems, tools for interacting with digital content, and applications aimed at improving accessibility and museum experiences. Additional activities include studies on implicit gaze interaction for visual behavior analysis in different application domains, as well as gaze-based biometric identification and authentication.

His research in Digital Humanities is conducted in close collaboration with the [Arvedi Laboratory of Non-Invasive Diagnostics](#), and involves the application of Computer Vision and 3D scanning and modeling techniques to the study and documentation of cultural heritage, including the non-invasive diagnostics of historical musical instruments, the 3D digitization of museum artifacts, the development of visualization tools for scientific dissemination, and the development of automatic methods for fresco fragment clustering and digital reconstruction.

He supervises or co-supervises PhD students, international interns, and more than sixty bachelor's and master's theses to date.

He regularly serves as a reviewer for international journals and conferences and has been a member of the ETRA Technical Program Committee (TPC) since 2023. He was co-organizer of workshops held in conjunction with ICPR 2020, ICIAP 2021, and ICPR 2026, and Guest Editor of a Special Issue of *Pattern Recognition Letters*. Since 2022, he has been a Senior Member of IEEE.

He is the author or co-author of 60 scientific publications (22 journal articles and 38 conference papers), as well as 7 additional contributions including book chapters, encyclopedia entries, and outreach publications.

H-index: 15 (Scopus) | 16 (Google Scholar)

Academic Positions

- 2024 – Present: **Assistant Professor** (RTD-B), Department of Electrical, Computer and Biomedical Engineering, University of Pavia
- 2021 – 2024: **Assistant Professor** (RTD-A), Department of Electrical, Computer and Biomedical Engineering, University of Pavia
- 2019 – 2021: **Research Fellow** (Assegnista), Department of Electrical, Computer and Biomedical Engineering, University of Pavia
- 2017 – 2019: **Research Fellow** (Assegnista), Department of Civil Engineering and Architecture, University of Pavia
- 2014 – 2017: **Research Grant Holder** (Borsista), CISRiC (Centro Interdipartimentale di Studi e Ricerche per i Beni Culturali), University of Pavia
- 2012 – 2014: **Research Collaborator** (Contrattista/Borsista), Department of Electrical, Computer and Biomedical Engineering, University of Pavia, involved in research activities and projects funded by INAZ, SKY Italia, and the Google Foundation

Education

- 2008 – 2012: **PhD in Electronic, Computer and Electrical Engineering** at University of Pavia
- 2005 – 2008: **Master's Degree in Computer Engineering** at University of Pavia
- 2001 – 2005: **Bachelor's Degree in Computer Engineering** at University of Pavia

Teaching activities

University courses:

- A.Y. 2024/25 – Present (3 editions): **Course Instructor** (Docente Titolare) of “Digital Media” [6 ECTS | Scientific Area: IINF-05/A (ex ING-INF/05)], Bachelor's Degree in Comunicazione, Innovazione, Multimedialità, University of Pavia
- A.Y. 2021/22 – Present (6 editions): **Course Instructor** (Docente Titolare) of “Computer Programming, Algorithms and Data Structures” – Module 2 [6 ECTS | Scientific Area: IINF-01/A (ex INF/01)], Bachelor's Degree in Artificial Intelligence, University of Pavia, University of Milan and University of Milano-Bicocca
- A.Y. 2020/21: **Adjunct Professor** (Professore a Contratto) for the module “Informatica” [2 ECTS | Scientific Area: IINF-01/A (ex INF/01)] within the course “Fisica, Statistica ed Informatica”, Bachelor's Degree in Professioni Sanitarie della Riabilitazione (Classe 2), University of Pavia
- A.Y. 2009/10 – A.Y. 2019/20: **Teaching Assistant** (Assistente alla didattica) for various courses at University of Pavia:
 - “Computer Vision” [Scientific Area: IINF-05/A (ex ING-INF/05)]
 - “IT per il management della comunicazione” [Scientific Area: IINF-05/A (ex ING-INF/05)]
 - “Sistemi di elaborazione delle informazioni” [Scientific Area: IINF-05/A (ex ING-INF/05)]
 - “Tecnologie digitali per la comunicazione” [Scientific Area: IINF-05/A (ex ING-INF/05)]
 - “Web Design and Technologies” [Scientific Area: IINF-05/A (ex ING-INF/05)]

PhD Teaching (PhD School in Electronics, Computer Science and Electrical Engineering, University of Pavia):

- A.Y. 2023/24 - Present: **Course Instructor** (Docente Titolare) of “3D Computer Graphics” (3 ECTS)
- 2023: **Lecturer** and **Organizer** of the “Short Course on 3D Computer Graphics” (14 hours)
- 2018 – Present: **Lecturer** and **Organizer** of specialized lectures on AI, AR/VR, and Cultural Heritage:
 - International **guest lecturer** at Université Paris-Saclay (2022)
 - Organizer of industry-partnered seminars with **AWS Italy** and **Fastweb**

Selected Research Projects

- 2024 – Present: **AVIO** (Airport Virtual Infrastructure Operation), project funded by the Italian Ministry of Enterprises and Made in Italy (MIMIT) – Role: **Task Leader** – Partners: SACBO S.p.A., SORINT.lab and TXT E-Tech
- 2021 – 2025: **ARTEAK** (Collaborating Markov Point Processes and Neural Networks: Application to Fresco Reconstruction) project funded by the French National Research Agency (ANR) – Partner: Université Paris-Saclay
- 2021 – 2024: **TeamAware** (Team Awareness Enhanced with Artificial Intelligence and Augmented Reality), Horizon 2020 project – Partner: EUCENTRE Foundation
- 2020 – 2022: **MUSICOM** (MUSical Instrument Conservation with Optical Monitoring), Galileo project for the cooperation between Italy and France – Partner: Université Paris-Saclay
- 2019: **ProtoLab “Occhio all’Arte!”**, funded by Confindustria Pavia (Italy) – Role: **Co-Investigator and Lead Developer**

Editorial and Scientific Service

- Editorial Activity:
 - **Guest Editor**, Pattern Recognition Letters (Elsevier) – Special Issue on "Computer Vision Solutions for Part-based Image Analysis and Classification"
 - **Guest Editor**, Sensors (MDPI) – Special Issues on "Sensors and Data Processing Techniques for Cultural Heritage" and "Eye Tracking Techniques, Applications and Challenges"
- Conference Organization & Program Committees:
 - **Co-Chair**, ETTAC 2020 & ETTAC 2026 (in conjunction with ICPR)
 - **Co-Chair**, PART 2021 (in conjunction with ICIAP 2021)
 - **Technical Program Committee (TPC) Member** for ACM ETRA (2019, 2023–2026), CSCS24
- Reviewer Activity:
 - Peer reviewer for several journals published by Elsevier, IEEE and Springer
 - Reviewer for international conferences, including ICPR (2020, 2022), ACM ETRA (2018–2026), IEEE EFTA (2019, 2020), IEEE SMC (2025), and ECCV workshops (2024)

Supervision Activities

- 2023 – Present: **Supervisor/Co-supervisor** of two PhD students at the PhD school in Electronics, Computer Science and Electrical Engineering, University of Pavia
- 2022 – Present: **Supervisor** of ten internship students from Université Paris Saclay
- 2011 – Present: **Supervisor/Co-supervisor** of more than 60 bachelor's and master's theses at University of Pavia

Selected Publications

For a complete and updated list of publications, see [Scopus](#), [Google Scholar](#) and [ResearchGate](#)

- [1] **Dondi P.**, Gullotti A., Inchingolo M., Casarotti C., Senaldi I., Lombardi L., Piastra M. (2025) “Post-Earthquake Structural Damage Detection with Tunable Semi-Synthetic Image Generation”, Engineering Applications of Artificial Intelligence, Vol 147, No 110302, pp. 1-15, DOI: 10.1016/j.engappai.2025.110302
- [2] **Dondi P.**, Gullotti A., Inchingolo M., Casarotti C., Senaldi I., Lombardi L., Piastra M. (2025) “Improving Post-Earthquake Crack Detection using Semi-Synthetic Generated Images”, ECCV 2024 Workshops, Lecture Notes in Computer Science, vol 15642, Springer, Cham, pp. 19–35, DOI: 10.1007/978-3-031-91907-7_2

- [3] **Dondi P.**, Sapuppo S., Porta M. (2024) "Leyenes: A gaze-based text entry method using linear smooth pursuit and target speed", *International Journal of Human Computer Studies*, vol. 184, article 103204, DOI: 10.1016/j.ijhcs.2023.103204
- [4] Porta M., **Dondi P.**, Pianetta A., Cantoni V. (2022) "SPEye: A Calibration-Free Gaze-Driven Text Entry Technique Based on Smooth Pursuit", *IEEE Transactions on Human-Machine Systems*, Vol. 52, Issue 2, pp. 312-323 DOI: 10.1109/THMS.2021.3123202
- [5] Porta M., **Dondi P.**, Zangrandi N., Lombardi L. (2022) "Gaze-based biometrics from free observation of moving objects", *IEEE Transactions on Biometrics, Behavior, and Identity Science*, Vol. 4, Issue 1, pp. 85-96, DOI: 10.1109/TBIOM.2021.3130798
- [6] Rezaei A., Le Hégarat-Masclé S., Aldea E., **Dondi P.**, Malagodi M. (2022) "A-contrario framework for detection of alterations in varnished surfaces", *Journal of Visual Communication and Image Representation*, Vol. 83, article 103357, pp.1-11, DOI: 10.1016/j.jvcir.2021.103357
- [7] **Dondi P.**, Lombardi L., Setti A. (2020) "DAFNE: a dataset of fresco fragments for digital anastylosis" in *Pattern Recognition Letters*, Vol. 138, pp. 631-637, DOI: 10.1016/j.patrec.2020.09.015
- [8] **Dondi P.**, Lombardi L., Invernizzi C., Rovetta T., Malagodi M., Licchelli M. (2017) "Automatic analysis of UV induced fluorescence imagery of historical violins", in *ACM Journal on Computing and Cultural Heritage*, Vol. 10, Issue 2, pp. 12:1-12:13, DOI: 10.1145/3051472