

Piercarlo Dondi, PhD – Curriculum Vitae (short version)

Personal details

Email: piercarlo.dondi@unipv.it

Tel. (office): +39 0382 985486

Languages: Italian (mother tongue), English

Research activity

Main research topics: image processing, Human-Computer interaction (HCI), 3D modeling, machine learning, digital humanities

Piercarlo Dondi is an Assistant Professor (RTDA) at the Department of Electrical, Computer and Biomedical Engineering of the University of Pavia (Italy). He carries out his research activity at the “[Computer Vision and Multimedia Laboratory](#)”

During his PhD he focused on the integration of multi-channel video streams (using RGB and Time-of-Flight cameras) for the creation of multimodal applications, such as gestural interaction and augmented reality. For this goal, he developed algorithms for human segmentation and tracking, as well as various GPGPU optimizations (on CUDA) for guaranteeing the real-time execution.

In 2013 He worked as *Google Trusted Tester* for the Google Earth Engine platform as part of a university project financed by the Google Foundation for the analysis of satellite images of urban areas.

Since 2014 he started focusing on Digital Humanities, in collaboration with the “[Arvedi Laboratory of Non-Invasive Diagnostics](#)”. He ideated and developed various image processing and machine learning algorithms for the analysis of historical musical instruments, as well as interactive applications for the visualization of the obtained data (both for helping experts in their work and for scientific dissemination in museums).

Since 2019, he collaborates with the SATIE Lab of the Université Paris-Saclay for developing new methods for early detection of superficial alterations in violins. The collaboration recently extended to a new topic, namely the study of algorithms for the reconstruction of destroyed frescoes.

Regarding 3D modeling, he participated in the definition of a protocol for the 3D scanning of historical musical instruments, and then he digitalized numerous instruments and relics held in the “Museo del Violino” of Cremona (Italy) and in other important Italian museums. He also co-supervised the creation of large 3D models (e.g., the reconstruction of the city of [Pavia in the Renaissance period](#)), made by students of master’s degree in computer engineering of University of Pavia.

Recent HCI activities involved gaze-based interaction, both for improving accessibility in museums (especially for people with motor disabilities) as well as for general-purpose applications, such as writing and web browsing.

His most recent project activity, in collaboration with [EUCENTRE](#), regards the use of 3D modeling and deep learning techniques for the identification of damages in buildings and civil structures after earthquakes.

Education

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

Academic positions

- 2021 – Now: **Assistant Professor (RTD-A)** at Department of Electrical, Computer and Biomedical Engineering, University of Pavia
- 2019 – 2021: **Postdoctoral researcher** at Department of Electrical, Computer and Biomedical Engineering, University of Pavia
- 2014 – 2019: **Postdoctoral researcher** at CISRiC (Centro Interdipartimentale di Studi e Ricerche per i Beni Culturali), University of Pavia

- 2013 – 2014: **Postdoctoral researcher** at Department of Electrical, Computer and Biomedical Engineering, University of Pavia

Teaching activity

- A.Y. 2021/22: **Professor** for the module 2 of the course “*Computer Programming, Algorithms and Data Structures*” (SSD: INF/01, 6 CFU) for the bachelor’s degree in “Artificial Intelligence”, University of Pavia, University of Milano, University of Milano-Bicocca
- A.Y. 2020/21: **Professor** for the module “*Informatica*” of the course “*Fisica, Statistica ed Informatica*” (SSD: INF/01, 2 CFU), bachelor’s degree in “Professioni Sanitarie della Riabilitazione – Classe 2”, University of Pavia
- A.Y. 2017/18 – A.Y. 2020/21: **Lecturer** and **organizer** of various seminars for the PhD School in in Electronics, Computer Science and Electrical Engineering of University of Pavia
- A.Y. 2009/10 – A.Y. 2019/20: **Teaching assistant** for various courses at University of Pavia:
 - “*Sistemi di elaborazione delle informazioni*” (SSD: ING-INF/05)
 - “*Tecnologie digitali per la comunicazione*” (SSD: ING-INF/05)
 - “*IT per il management della comunicazione*” (SSD: ING-INF/05)
 - “*Web Design and Technologies*” (SSD: ING-INF/05)
 - “*Computer Vision*” (SSD: ING-INF/05)

Editor and reviewer activity

- **Co-Chair** for the international workshop [PART2021](#) (1st International Workshop “PARTs can worth like The whole”) held in conjunction with [ICIAP2021](#)
- **Co-Chair** for the international workshop [ETTAC 2020](#) (1st Workshop on Eye Tracking Techniques, Applications and Challenges) held in conjunction with [ICPR2020](#)
- **Guest editor** for 2 special issues on MDPI Sensors (“[Eye Tracking Techniques, Applications and Challenges](#)” and “[Sensors and Data Processing Techniques for Cultural Heritage](#)”)
- **Reviewer** for various international journals and conferences

Project involvement (selection)

- 2021 – now: **TeamAware** (Team Awareness Enhanced with Artificial Intelligence and Augmented Reality) – Horizon 2020 project, collaboration with EUCENTRE
- 2021 – now: **ARTEAK** (Collaborating Markov Point Processes and Neural Networks: Application to Fresco Reconstruction) – ANR project, collaboration with Université Paris-Saclay
- 2020 – now: **MUSICOM** (MUSical Instrument Conservation with Optical Monitoring) – Galileo project for the cooperation between Italy and France
- 2019: **ProtoLab “Occhio all’Arte!”** – project funded by Confindustria Pavia (Italy), as **Lead Developer**
- 2018 – 2019: **STO164090 SAMIC** (Sound Archives & Musical Instruments Collections) – project financed by Fondazione Compagnia di San Paolo
- 2015 – 2016: **VIVA MUSICA** (Il Violino e la sua VAlorizzazione MUSeale: la fruizione Integrata multimediale e il CAtalogo digitale) – project funded by Regione Lombardia
- 2014 – 2015: “**Opificio del Suono**”, project funded by Fondazione Cariplo
- 2013 – 2014: “**Automatic multitemporal mapping of urban areas for risk-related exposure analysis**” – project financed by Google Foundation (Google Earth Engine Award)

Publications

Author/co-author of more than 40 articles on international journals, conference proceedings, and book chapters. **H-index: 8**

Selection of recent publications:

- Porta M., **Dondi P.**, Zangrandi N., Lombardi L. (IN PRESS) “Gaze-based biometrics from free observation of moving objects”, IEEE Transactions on Biometrics, Behavior, and Identity Science, DOI: 10.1109/TBIOM.2021.3130798
- Porta M., **Dondi P.**, Pianetta A., Cantoni V. (IN PRESS) “SPEye: A Calibration-Free Gaze-Driven Text Entry Technique Based on Smooth Pursuit”, IEEE Transactions on Human-Machine Systems, DOI: 10.1109/THMS.2021.3123202
- **Dondi P.**, Porta M., Volpe G., DonVito A. (2022) “A gaze-based interactive system to explore artwork imagery”, Journal of Multimodal User Interfaces, Vol 16, Issue 1, pp. 55-67, DOI: 10.1007/s12193-021-00373-z
- 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
- **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

Complete list available at: [Scopus](#), [Google Scholar](#), [Research Gate](#)