Lorenzo Landolfi

Curriculum Vitae

Education

2016–2019 **Ph.D. in Emerging Digital Technologies**, *curriculum: perceptual robotics*, *with honors*, Scuola Superiore Sant'Anna, Pisa, Italy.

- **Ph.D. Thesis:** "*Vision Based Intelligent Systems to Monitor People's Behaviour and Perception*," supervised by Prof. Carlo Alberto Avizzano/ Dr. Paolo Tripicchio

2011–2015 **M.Sc. in Computer Science and Networking**, 107/110, University of Pisa and Scuola Superiore Snat'Anna, Pisa, Italy.

- **M.Sc. Thesis:** "*Compressing Dictionaries of Strings*", supervised by Prof. Rossano Venturini

2007–2011 **B.Sc. in Computer Science**, 107/110, University of Florence, Florence, Italy.

- **B.Sc. Thesis:** "*Analisi e sperimentazione di schemi di interpolazione 3D di Hermite basati su quintiche Pythagorean Hodograph*", supervised by Prof. Alessandra Sestini

Research Experiences

2023– **Post-doctoral Fellowship**, U-VIP team, Italian Institute of Technology, Genova, supervised by Prof. Monica Gori.

2022–2023 **Post-doctoral Fellowship**, CONTACT team, Italian Institute of Technology, Genova, supervised by Dr. Francesco Rea and Prof. Alessandra Sciutti.

2020–2022 **Post-doctoral Fellowship**, Laboratoire des systèmes perceptifs, Departement des études Cognitives, Ecole Normale Supérieure-PSL, supervised by Dr. Peter Neri and Dr. Srdjan Ostojic.

2019–2020 **Research Fellowship**, Scuola Superiore Sant'Anna, TeCIP Institute, PERCRO lab, supervised by Dr. Paolo Tripicchio.

2015–2016 **Pre-doctoral Fellowship** , Scuola Superiore Sant'Anna, TeCIP Institute, PERCRO lab, supervised by Prof. Emanuele Ruffaldi.

Publications

- Alessandra Sestini, Lorenzo Landolfi, and Carla Manni. On the approximation order of a space data-dependent ph quintic hermite interpolation scheme. *Computer Aided Geometric Design*, 30(1):148–158, 2013
- Emanuele Ruffaldi, Giacomo Dabisias, Lorenzo Landolfi, and Daniel Spikol. Data collection and processing for a multimodal learning analytic system. In *2016 sai computing conference (sai)*, pages 858–863. IEEE, 2016
- Daniel Spikol, Emanuele Ruffaldi, Lorenzo Landolfi, and Mutlu Cukurova. Estimation of success in collaborative learning based on multimodal learning analytics features. In *2017 IEEE 17th International Conference on Advanced Learning Technologies (ICALT)*, pages 269–273. IEEE, 2017
- Alessandro Filippeschi, Filippo Brizzi, Emanuele Ruffaldi, Juan Manuel Jacinto Villegas, Lorenzo Landolfi, and Carlo Alberto Avizzano. Evaluation of diagnostician

data enough? In *Proceedings of the Tenth International Conference on Learning Analytics & Knowledge*, pages 270–275, 2020

- Lorenzo Landolfi, Paolo Tripicchio, Alessandro Filippeschi, and Carlo Alberto Avizzano. Fast and fluid human pose tracking. In *2019 IEEE International Conference on Real-time Computing and Robotics (RCAR)*, pages 24–29. IEEE, 2019
- Paolo Tripicchio, Salvatore D'Avella, Gerardo Camacho-Gonzalez, Lorenzo Landolfi, Gabriele Baris, Carlo Alberto Avizzano, and Alessandro Filippeschi. Multi-camera extrinsic calibration for real-time tracking in large outdoor environments. *Journal of Sensor and Actuator Networks*, 11(3), 2022
- Alice Nardelli, Dario Pasquali, Lorenzo Landolfi, Jasmin Bernotat, and Francesco Rea. Application of working memory adapted navigation for human robot interaction in an industrial context. In *7-th HBP Student Conference*, 2023
- Lorenzo Landolfi, Dario Pasquali, Alice Nardelli, Jasmin Bernotat, and Francesco Rea. Working memory-based architecture for human-aware navigation in industrial settings. In *2023 32nd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, pages 1878–1885, 2023
- Jasmin Bernotat, Lorenzo Landolfi, Dario Pasquali, Alice Nardelli, and Francesco Rea. Remember me - user-centered implementation of working memory architectures on an industrial robot. *Frontiers in Robotics and AI*, 10, 2023

Research Projects

- **PELARS** (2016 - 2017)
  Practice-based **E**xperiential **L**earning **A**nalytics **R**esearch **S**upport.
  An European project involving academic and industrial partners. Namely: Malmö University, Copenhagen Institute of Interaction Design, University of Craiova, Arduino, National College of Art and Design (Dublin), University of Bremen, European Network of Living Labs (London), Citilab (Barcelona), Perch Dynamic Solutions (Ireland) and Scuola Superiore Sant'Anna of Pisa (Italy).
  This project lead to the development of sensor and analytic technologies with the purpose of fostering teachers and learners understanding of the learning process, particularly concerning Science, Technology, Engineering and Math (STEM). Concretely, the PELARS project lead to the realization of tools, processes and furniture to be deployed in actual practice-based STEM learning environments. My role was to develop the client server application needed to collect data from learners observations and the software infrastructure to extrapolate relevant high level information from those.
- **SAILPORT** (2018 - 2019)
  Research project in collaboration with the National Institute for Insurance against Accidents at Work (INAIL), Scuola Superiore Sant'Anna and the Local Health Authorities (ASLs).
  This project explored the possibility to use computer vision as a mean to provide safety in port areas. My main contribution was the prototyping of a distributed HW/SW computer vision system for retrieving three dimensional positions of people and vehicles from multiple cameras. A custom calibration procedure was developed to ease system setup. A tracking algorithm was developed to improve processing speed and accuracy.

- **PROMEN-AID** (2022 - 2023)
  PROMEN-AID is a partnering project acting as a demonstrator of the Human Brain Project methodologies. The Human Brain Project aims to put in place a cutting-edge research infrastructure that will allow scientific and industrial researchers to advance the knowledge in the fields of neuroscience, computing, and brain-related medicine. PROMEN-AID, in particular, aims at introducing cognitive-inspired functional architecture of short-term and long-term memory finalised to enable safe human-machine interaction in robotics settings (cobots). My role was to develop a memory based, context aware robotic cognitive architecture for autonomous navigation and to assess how it could affect human collaborators.
- **APRIL** (2023)
  multipurpose robotics for m**A**ni**P**ulation of defo**R**mable mater**I**a**L**s in manufacturing processes.
  The APRIL project aims to create autonomous, dexterous and market-oriented robot prototypes that will provide new ways of automating the manufacturing and processing of flexible and deformable materials. This will enable new ways of automation (semi- or fully-automated tasks) in manufacturing lines that produce, assemble or handle different types of flexible or deformable materials—from pillows to delicate food products. My role was to contribute to the design and development of the ROS software infrastructure for human behaviour analysis and collision prevention mainly using event driven video streams.
- **RAISE** (2023 - 2025)
  Robotics and **AI** for **S**ocio-economic **E**mpowerment.
  RAISE aims to develop and market technological solutions based on robotic systems and artificial intelligence that address the real production and social needs of the Ligurian territory. The project aims to enhance research and development in these technologies for various areas of interest, including healthcare, environmental sustainability, intelligent ports, and accessible and inclusive smart cities. RAISE's approach places the needs of individuals and the territory at the forefront, promoting the transfer of innovative technologies from research to the market. It provides resources, knowledge, and support to generate sustainable, inclusive, and resilient innovation.

Skills

- **Programming Languages**
  Python, **C++**, **Java**, C, JavaScript, Bash, MySQL
- **Libraries**
  Pytorch, **Scikit-learn**, Keras, **Psychopy**, **OpenCV**, Hibernate, Apache Tomcat, Gstreamer, MPI, TBB, Pthreads, **jQuery**, JsPsych, **ROS**, Matplotlib, **Scipy**, **Pandas**, Flask.
- **Theoretical skills**
  Parallel computing, **Deep learning**, **Machine Learning**, Computer vision, Human Vision, **Reverse correlation**, Psychophysics, Design of behavioral experiments, Design of client-server applications, **Data analysis of behavioral data**, Autonomous navigation, Web development.

Languages

- **Italian:** Native
- **English:** C1

- **French:** B2

References

- **Peter Neri**
  Laboratoire des Systemes Perceptifs
  Departement des Etudes Cognitives
  ENS-PSL
  Paris, France
  neri.peter@googlemail.com

- **Monica Gori**
  UVIP unit
  Italian Institute of Technology
  Genova, Italy
  monica.gori@iit.it