# Dr. Alessio Xompero

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## RESEARCH EXPERIENCE

**Leadership and people management**

- Led the benchmarking and explainability of models for image privacy towards trustworthy AI
- Organised, coordinated and managed 6 international challenges for human-robot collaboration
- Mentored and advised 6 PhD and MSc students with outputs (publications, software, data) on Object Pose Estimation, Visual Affordance Segmentation, Safe Human-to-Robot Handovers, and Audio Classification
- Coordinating a team of 3 people to collaboratively design and develop a common framework to benchmark machine learning models for privacy protection and system genetics

**Computer vision, machine learning and deep learning, and datasets**

- Conceptualised, developed in C/C++, and evaluated novel methods and algorithms for compact low-level feature detection, description, and matching under scale difference (software: MORB), and a decentralised framework for cross-camera view-overlap recognition (software: XView)
- Designed and developed in Python an algorithm for multi-view object shape estimation (software: LoDE)
- Collaborated on the design of a method for adversarial training for image classification
- Published 4 articles at international journals, 12 papers at international conferences, and 1 book chapter
- Designed, collected, annotated, and curated 6 vision and multi-modal datasets for human-to-robot collaboration, collaborative spatial intelligence, and automatically synchronising multi-user event media
- Collaborated on the preparation of a synthetic image dataset for human-robot collaboration
- Designed and delivered 2 lectures on *Deep learning models for computer vision* to 30 students (2022)

**Technical skills**

- *Programming*: Python, C/C++, MATLAB, Bash, Object-oriented programming
- *Software and Libraries*: PyTorch, PyTorch Geometric, OpenCV, Git, ZeroMQ, Anaconda

## EMPLOYMENT

**Queen Mary University of London, United Kingdom**

*Postdoctoral Research Assistant* — Apr 2020 – present

*Research Assistant* — Oct 2019 – Mar 2020

*Student lab demonstrator for module on Introduction to Computer Vision* — Sep 2018 – Mar 2020

**University of Trento, Italy**

*Collaborator* (MMLab research group) — Apr – Sep 2015

**INRIA Grenoble Rhône-Alpes, France**

*Intern* (Perception Team) — Mar – Aug 2014

## EDUCATION

*Ph.D. in Electronic Engineering* — Sep 2020

Queen Mary University of London, United Kingdom

- Thesis: “Local features for view matching across independently moving cameras”
- Managed and carried out research project focused on Computer Vision and Image Processing

*Master’s degree in Telecommunications Engineering* — Mar 2015

University of Trento, Italy

Thesis: “ViProT: A visual probabilistic model for moving interest point clusters tracking”

*Bachelor’s degree in Electronics and Telecommunication Engineering* — Feb 2012

University of Trento, Italy

## SELECTED PUBLICATIONS

Full list of publications and related research outputs (software, data, models) available here

- **A. Xompero**, M. Bontonou, J. Arbona, E. Benetos, A. Cavallaro, "Explaining models relating objects and privacy", *3rd Explainable AI for Computer Vision Workshop, IEEE/CVF International Conference on Computer Vision and Pattern Recognition (CVPR),* 2024
  https://doi.org/10.48550/arXiv.2405.01646
- **A. Xompero**, A. Cavallaro, "Cross-Camera View-Overlap Recognition", *International Workshop on Smart Distributed Cameras at European Conference on Computer Vision (ECCV),* 2022
  https://doi.org/10.48550/arXiv.2208.11661
- **A. Xompero**, O. Lanz, A. Cavallaro, "A spatio-temporal multi-scale binary descriptor", *IEEE Transactions on Image Processing,* 2020
  https://doi.org/10.1109/TIP.2020.2965277
- T. Apicella, **A. Xompero**, E. Ragusa, R. Berta, A. Cavallaro, P. Gastaldo, "Affordance segmentation of hand-occluded containers from exocentric images", *International Workshop on Assistive Computer Vision and Robotics at International Conference on Computer Vision (ICCV),* 2023
  https://doi.org/10.48550/arXiv.2308.11233
- A. Modas, **A. Xompero**, R. Sanchez-Matilla, P. Frossard, A. Cavallaro, "Improving filling level classification with adversarial training", *IEEE International Conference on Image Processing (ICIP),* 2021
  https://doi.org/10.48550/arXiv.2102.04057

## OPEN SCIENCE ACTIVITIES

- 2022 CHIST-ERA Open Science Success Story for the project CORSMAL: Coordinated the release of data, software, and machine learning models under Open Science practices
- Built and supported a community of people contributing algorithms, software, data, and vision models around the organised challenges (11 teams, 50 people)

## REVIEWING ACTIVITIES

- Reviewer for 6 international journals and 9 international conferences, 2018-2024
- **Awards**: *Outstanding reviewer* for high-quality reviews and constructive feedback at
  - IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024
  - IEEE International Conference on Acoustic, Speech, and Signal Processing (ICASSP), 2023
  - IEEE International Conference on Acoustic, Speech, and Signal Processing (ICASSP), 2022
  - IEEE International Conference on Image Processing (ICIP), 2020
- Designed and presented a tutorial on the reviewing process and guidelines for high-quality reviews to 9 people; designed content and reviewing activity, assessed and provided personalised feedback

## LANGUAGES

*Italian*: mother tongue  *English*: professional proficiency  *Spanish*: intermediate  *French*: beginner