Luca **Zanella**

PhD Student at University of Trento

luca.zanella1995@gmail.com | lucazanella | Luca Zanella

Summary

I am a PhD student at the University of Trento, Italy, where I also obtained an MSc in computer science. Before my doctoral studies, I worked as a research assistant at Fondazione Bruno Kessler, where I led technological development for video understanding and analysis in the European projects MARVEL and PROTECTOR. My current research focuses on multi-modal learning for analyzing and understanding complex video scenes.

Education

Department of Information Engineering and Computer Science, University of Trento — *Trento, Italy*

Doctoral Programme in Artificial Intelligence — *Nov. 2022 - Current*

Department of Information Engineering and Computer Science, University of Trento — *Trento, Italy*

Master of Science in Computer Science, 110/110 Cum laude — *Sep. 2018 - Mar. 2021*

Department of Information Engineering and Computer Science, University of Trento — *Trento, Italy*

Bachelor of Science in Computer Science, 110/110 — *Sep. 2015 - Oct. 2018*

Publications

Delving into CLIP latent space for Video Anomaly Recognition
Luca Zanella, Benedetta Liberatori, Willi Menapace, Fabio Poiesi, Yiming Wang, Elisa Ricci
Computer Vision and Image Understanding (under review)

Harnessing Large Language Models for Training-free Video Anomaly Detection
Luca Zanella, Willi Menapace, Massimiliano Mancini, Yiming Wang, Elisa Ricci
Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2024

ConfMix: Unsupervised Domain Adaptation for Object Detection via Confidence-based Mixing
Giulio Mattolin, Luca Zanella, Elisa Ricci, Yiming Wang
Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision, 2023

Graph-based generative face anonymisation with pose preservation
Nicola Dall'Asen, Yiming Wang, Hao Tang, Luca Zanella, Elisa Ricci
International Conference on Image Analysis and Processing, 2022

Responsible AI at the edge: towards privacy-preserving smart cities
Luca Zanella, Yiming Wang, Nicola Dall'Asen, Alberto Ancilotto, Francesco Paissan, Elisa Ricci, Elisabetta Farella, Alessio Brutti, Marco Pistore
Ital-IA 2022, Secondo Convegno del Laboratorio nazionale CINI-AIIS, 2022

Work Experience

University of Trento — *Trento, Italy*

Teaching Assistant, Introduction to Machine Learning — *Feb. 2024 - Jun. 2024*

Fondazione Bruno Kessler — *Trento, Italy*

Research assistant — *Apr. 2021 - Nov. 2022*

- Design, development, and experimental validation of software tools and platforms implementing deep learning algorithms for the automatic analysis of video surveillance streams produced by multiple cameras using PyTorch.

Huawei Technologies Duesseldorf GmbH — *Munich, Germany*

Master's Student Intern — *Mar. 2020 - Sep. 2020*

- Definition, implementation, and experimental validation of deep learning algorithms utilizing satellite imagery to automatically correct road networks for microscopic traffic simulation using TensorFlow and Detectron2.
- Development of a dashboard to visualize and track traffic optimization experiments using ELK Stack.

CBA Group *Rovereto, Italy*

Bachelor's Student Intern *Feb. 2018 - Jul. 2018*

- Development of a client-server system to ingest data from distributed databases (electronic health records) to a centralized application for data quality monitoring using Spring Framework and PostgreSQL.

Academic Service

Reviewer

2024 **Reviewer**, CVPR
2023 **Reviewer**, TPAMI
2022 **Reviewer**, EUSIPCO
2021 **Reviewer**, BMVC, ICIAP

Projects

Collaboration with Evolutionary Robotics and Artificial Life Lab (University of Trieste, Italy) for the implementation of:

- Covariance Matrix Adaptation Evolution Strategy in Java General Evolutionary Algorithm (jgea) for experimenting with Evolutionary Computation.
- Lidar sensor and terrain with obstacles in 2D-VSR-Sim for experimenting with a 2D version of voxel-based soft robots.

Personal projects (see my GitHub):

- Atari 2600 RL agents, an autonomous agent trained to play Ms-Pacman, Atlantis and Demon Attack with human or super-human skill level using Reinforcement Learning techniques.
- NYC Taxi Data, a detailed analysis using a Spark cluster of 300GB of data released by the NYC taxi and limousine commission.
- Pedestrian Tracking, a detection-based algorithm for tracking pedestrians in a video taken from the MOT Challenge.
- Soft Robots Evolution, a group of techniques for evolving voxel-based soft robots using evolutionary algorithms.

Honors & Awards

2023 **Best Project Award**, ELLIS Summer School on Large-Scale AI *Modena, Italy*