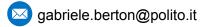
Gabriele Berton

PhD Candidate in Computer Vision

Google Scholar

GitHub

Personal Website



PROFILE

I'm currently a visiting PhD at Carnegie Mellon University under the supervision of Prof. Sebastian Scherer, and I'm about to finish my PhD at Polytechnic of Turin with Prof. Barbara Caputo.

I come up with innovative solutions to simultaneously solve real-world problems and publish at the world's top conferences. All my works are open source and reproducible.

EDUCATION & EMPLOYMENT

Visiting PhD Student | Carnegie Mellon University | Mar 2024 – Jul 2024

Working on RGB SLAM with 3D gaussian splats, with the goal of deploying the system on a drone.

PhD Student | Polytechnic of Turin | Nov 2021 - Nov 2024

- First author of EarthLoc (CVPR 2024), a model for Astronaut Photography Localization, currently in use by NASA. EarthLoc provides a 10x speed up and increases accuracy from 51% to 72% to NASA's previous model.
- First author of CosPlace (CVPR 2022), a Visual Place Recognition model that achieved SOTA with 8x smaller descriptor, 75% less VRAM, same training time and 1000x more scalability that previous SOTA.
- Developing a large-scale (over 10^9 images) retrieval software for Visual Place Recognition
- Co-supervised master students, including G. Trivigno, R. Mereu, E. Munafò, M. Gambino, J. Aragon, E. Chiavassa, E. Pinna, V. Gallo
- Teaching assistant of Machine learning and Deep learning (prof. B. Caputo) and Algorithms and Programming (prof. A. Savino)

Applied Scientist Intern | Amazon Berlin | May 2022 - Sep 2022

- Improving an existing action spotting pipeline in videos through multi-modal neural networks
- Analyzing video understanding and audio processing methods for a real-world application

Applied Scientist | Italian Institute of Technology & Polytechnic of Turin | Apr 2020 - Oct 2021

- Research and development of large-scale geo-localization software
- Publishing in top-tier conferences

Software Engineer | Consoft Sistemi | Dec 2017 – Dec 2018

- Full-stack software engineer, working in large (20+) and small teams
- Led a management software for the aerospace company Avio

INVITED TALKS (~1 HOUR) AND AWARDS

- Jan 2024 Talk on Applications and Challenges of Visual Geo-localization, Visual Recognition Group at the Czech Technical University, Czechia
- Jul 2023 Talk on Scalable Visual Geo-localization, Pattern Analysis and Computer Vision group at the Italian Institute of Technology, Italy
- Jun 2023 Talk on Recent Image Geo-localization Benchmark and Large-scale Real-world Scenarios,
 CVPR Tutorial on A Comprehensive Tour and Recent Advancements toward Real-world Visual Geo-Localization, Canada
- Jun 2023 Machine Learning Genoa Center, University of Genoa, Italy
- Jul 2023 Best Student Research Award in the Video&Poster Competition at EuroCon 2023

SELECTED PUBLICATIONS (FIRST AUTHOR AT TOP CONFERENCES)

- CVPR 2024 EarthLoc: Astronaut Photography Localization by Indexing Earth from Space
 G. Berton, A. Stoken, B. Caputo, C. Masone
- RAL/ICRA 2024 JIST: Joint Image and Sequence Training for Sequential Visual Place Recognition G. Berton*, G. Trivigno*, B. Caputo, C. Masone
- ICCV 2023 EigenPlaces: Training Viewpoint Robust Models for Visual Place Recognition G. Berton*, G. Trivigno*, C. Masone, Juan Aragon, B. Caputo
- ICCV 2023 Divide&Classify: Fine-Grained Classification for City-Wide Visual Geo-localization G. Trivigno*, G. Berton*, C. Masone, B. Caputo
- **CVPR 2022 (Oral)** Deep Visual Geo-localization Benchmark
 - G. Berton, R. Mereu, G. Trivigno, C. Masone, G. Csurka, T. Sattler, B. Caputo
- CVPR 2022 Rethinking Visual Geo-localization for Large-Scale Applications
 - G. Berton, C. Masone, B. Caputo
- ICCV 2021 Viewpoint Invariant Dense Matching for Visual Geolocalization
 - G. Berton, C. Masone, V. Paolicelli, B. Caputo

OTHER EXPERIENCES AND SKILLS

- I was part of RoboTo, a university team with which I take part at international robotics competitions, through which I've learn to integrate computer vision methods into robots.
- I'm a math-oriented person: in my youth I won numerous math competitions, and in high school I
 reached the finals of the Italian National Olympics of Mathematics both individually and with my high
 school team.
- I'm an avid traveler (been to 40+ countries): I spent one year of high school in China through AFS, after which I took a gap year, working **six months in Australian plantations** and then traveling from Thailand to Italy without flights. These adventures gave me confidence, curiosity and self-motivation.
- I played football for more than 15 years, and have been a football referee for three years, during which I've learned to autonomously take quick decisions under pressure.
- I managed the rental of a summer holiday home for three years in my hometown, on AirBnb and Booking. I have thus learned the basics of **entrepreneurship** and dealing with customers.
- During my last year of high school I was elected as one of four student government presidents. During this year, I had the chance to practice my **leadership** and **public speaking** skills.
- After volunteering as an English teacher at the Fantasy Camp in Belarus in 2016, I became their HR
 recruiter, and I was in charge of recruiting 60 international English teachers for the summer. I conducted
 hundreds of interviews, and I assisted the candidates with travel and visa requirements. This experience
 improved my organizational and scheduling skills.