



Mirko Usuelli

*Ph.D. Candidate in Agricultural Robotics,
Perception Engineer*

Engineer focused on autonomous agricultural systems, applying robotics, computer vision, and sensor fusion to field machinery, combining advanced technical skills with practical, on-farm experience.

 27th December 1998

 Milano, Italy

 mirko.usuelli@polimi.it



TECHNICAL SKILLS

- C/C++ (advanced knowledge)
- ROS/ROS 2 (advanced knowledge)
- Python/PyTorch (advanced knowledge)
- Docker (advanced knowledge)
- Rust (elementary knowledge)

RESEARCH SKILLS

- SLAM & Sensor Fusion
- Computer Vision & Image Processing
- Deep Learning & Machine Learning
- 3D Reconstruction
- Autonomous Navigation
- Path Planning

AWARDS

- Agricultural Technology Excellence Doctoral Prize 2024 (CLAAS-Stiftung)
- 1st place Field Robot Event 2025, Task 4
- 3rd place at the Grand Défi Robotique Agricole by Robagri, FIRA 2024
- 3rd place for Generative AI applied to Agriculture, GenHack, Paris 2023
- 3rd place Field Robot Event 2023, Task 3

LANGUAGES

- Italian (native knowledge)
- English (professional knowledge, IELTS C1)
- Spanish (elementary knowledge)
- German (beginner knowledge)

EDUCATION

High School Diploma in Computer Science 2012 – 2017

Guglielmo Marconi, Gorgonzola (Milan) - Italy

- Grade: 93/100
- Activities:
 - Erasmus+ in Kraków (Poland)
 - RoboCup Jr 2014/2015/2016 team leader

B.Sc. & M.Sc. in Computer Science and Engineering 2017 - 2023

Polytechnic of Milan - Italy

- Grade: 110/110 with Honors (cum Laude)
 - Major: Artificial Intelligence and Machine Learning
 - Minor: Robotics and Computer Vision
- Thesis: "The Lord of the Sensors: a Multi-Sensor Framework for SLAM"
 - Supervisors: Prof. Matteo Matteucci, Dr. Matteo Frosi, Dr. Simone Mentasti, Dr. Paolo Cudrano, Dr. Gianluca Bardaro

Ph.D. in Information Technology June 2023- May 2026

Polytechnic of Milan, AI and Robotics Lab - Italy

- Thesis: "Multimodal Spatio-Temporal and Semantic Perception for Agricultural Robotics"
 - Supervisor: Prof. Matteo Matteucci
- Funded by: NextGenerationEU Agritech Research Center

WORK EXPERIENCES

Embedded Software Developer Intern June 2015 - July 2015

Advanced Broadcasting Electronics S.r.l. - Caravaggio (BG), Italy

Optional one-month high school summer-internship in C/C++ for embedded devices.

Teaching Assistant September 2023 - February 2024

Polytechnic of Milan - Italy

Course: Data Analysis for Smart Agriculture - Prof. Matteo Matteucci, Prof. Filippo Maria Renga

Teaching Assistant August 2024 - September 2025

University of Genoa / University Sant'Anna of Pisa - Italy

Course: Computer Vision and Image Processing - Prof. Matteo Matteucci

Visiting Researcher February 2025 - July 2025

Wageningen University and Research - The Netherlands

Supervisor: Prof. Gert Kootstra - ABE Group

ACADEMIC PUBLICATIONS

- "AgriGS-SLAM: Orchard Mapping Across Seasons via Multi-View Gaussian Splatting SLAM." - IEEE RA-L 2026
- "Advancements in Radar Odometry." - IEEE/RSJ IROS 2024.
- "Enhancing Agricultural Environment Perception via Active Vision and Zero-Shot Learning." - IEEE ICRA 2025.
- "Deep Multimodal Fusion for 2D-3D Vineyard Scene Understanding." - ICIAP 2025.
- "RadarLCD: Learnable Radar-based Loop Closure Detection Pipeline." - IEEE WCCI 2024.
- "Rockerbot: Rover Kinematics for Maize Farming." - Agricultura Scientia 2024.
- "Detection and Mapping of Crop Weeds and Litter for Agricultural Robots." - IEEE AEIT 2022.