Pietro Dardano

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PhD candidate in Embodied Ai for Robotics and Intelligent Vehicles

Experience

- **PhD. Candidate - BMW Group** *Munich | Mar. '25 - present*
  Tools: C++, Python, PyTorch, IsaacSim, IsaacLab, ROS, ROS2 | Supervisors: Prof. M. Kaboli and Prof. S. Stujik
  PhD Topic: Robust multimodal perception and learning in robotics and intelligent vehicles.
  Conducted at BMW Ai-Robotics Lab & RoboTac Lab, in collaboration with TU-Eindhoven.

- **Research Collaborator - University of Trento** *Trento | Jun. '24 - May. '25*
  Tools: Python, Pytorch, Nvidia IsaacLab | Supervisor: Prof. A. Del Prete [GH]
  Safe Reinforced Learning for Walk and Stop for quadruped robot, robust to harsh terrains and collisions.
  PPO, DDPG and TD3 (SKRL and SB3). Paper in submission.

- **Master Thesis Intern - TXT E-TECH** *Milan | Sept. '23 - Oct. '24*
  Tools: C++, Python, TensorFlow, UR_RTDE, ROS, ROS2, MoveIT2, | Supervisor: Prof. P. Rocco [PDF, PDF]
  Force and proprioception driven action validation for cobot in aeronautical environment, with eXplanable AI approach. Multi-classification with Hybrid_CNN. Achieved +96% F1-score, up to 99.2%.

- **Student Researcher - Politecnico di Milano** *Milan | Sept. '23 - present*
  Tools: C++, Python, Fusion360, Matlab, Simscape, Arduino | Supervisor: Prof. L.M. Fagiano [GH]
  Designed, assembled and controlled an actuated rig for safely testing stability algorithms of large autonomous drones and gliders, able to simulate wind and collision disturbances.

- **Head of Projects ('21), Vice & President ('22-'23), Arbitrator ('24) - AEA [🌐]** *Milan | Sept. '20 - present*
  Noting a lack of robotics projects and initiatives for students, I co-founded the Automation Engineering Association (AEA). Today it has over 550 members, with 8 projects engaging more than 110 students.
  Partnership with 8 companies and instituted AEA PoliBa with 150+ affiliated students.

Education

- **Doctor of Philosophy in Embodied Ai for Robotics** - ***TU Eindhoven*** *Eindhoven | Mar. '25 - present*
  PhD Topic: Robust multimodal perception and learning in robotics and intelligent vehicles.
  Conducted at BMW Ai-Robotics Lab & RoboTac Lab. Supervised by Prof. M. Kaboli and Prof. S. Stujik.

- **MSc. Automation and Control Engineering** - ***Politecnico di Milano*** *Milan | Sept. '21 - Oct. '24*
  GPA: 3.78/4.00 | Robotics, Ai, Autonom. Vehicles | Erasmus+ at Univ. Politecnica de Madrid (a.y. '22-'23).

- **BSc. Automation Engineering** - ***Politecnico di Milano*** *Milan | Sept. '18 - Sept. '21*
  GPA: 3.4/4.0 | Building the theorethical foundamentals for the MSc and PhD

Publications

C=Conference, J=Journal, P=Patent, S=In Submission, T=Thesis

[C.1] Dardano, et al. (2025). **Force-Driven Validation for Collaborative Robotics in Automated Avionics Testing**. In *Robotics and Autonomous Systems*, 19th International Conf. on Intelligent Autonomous Systems (IAS-19).

Selected Projects

- **Control of a Magnetic Levitation system with Time-of-Flight sensor** *Feb. '23 - Jun. '23*
  Tools: Fusion360, FEMM, Matlab, Simulink | Supervisor Prof. G. Cazzulani [PDF]
  Linear and Non-linear control strategies, Extended Kalman Filters for estimation, behaviour prediction.

- **Odometry and SLAM for omniwheeled mobile robot** *Apr. '22 - Jul. '22*
  Tools: C++, Python, ROS, GIT | Supervisor Prof. M. Matteucci [GH]
  ROS architecture | Odometry: sensorfusion, TF transform. | SLAM: **gmapping** and **amcl**.

- **IEEE VTS Challenge 2020 at Politecnico di Milano (PoliMi) [🌐]** *Feb. '21 - Jun. '21*
  Tools: Matlab, Simulink
  EV truck's control system: PID and switching-based EMS, 87% efficiency, 4th ranked.

Extra

- Lead The Future - Mentee : mentorship program for STEM student with acceptance rate below 13%.
- Competitive programming • Hackathon Finalist: MVA Driving Innovation '22; A2A All4Climate '21.