

Robot learning researcher working on Vision-Language-Action (VLA) models and imitation/reinforcement learning for manipulation, with hands-on experience taking policies from simulation to real-world deployment on physical robots. Comfortable across the full stack: low-level control, teleoperation and data collection, model training, and deployment infrastructure.

Research Experience

Jun 2024 – **Robot Learning Researcher**, *Araya Inc., Tokyo, Japan.*

- Current
 - Develop imitation learning and reinforcement learning pipelines for robot manipulation built on VLA models.
 - Built end-to-end training infrastructure for IL and RL on custom datasets, improving manipulation success rate by iterating and fixing edges cases encountered during deployment.
 - Implemented low-level controllers (operational-space, CBF-based) and teleoperation interfaces enabling safe data collection and reliable real-world policy execution. (Related Publication: *Improving Low-Cost Teleoperation: Augmenting GELLO with Force*)
 - Built custom MuJoCo simulation environments and the deployment infrastructure that transfers trained policies to physical hardware

Dec 2023 – **Visiting Research Student**, *Tohoku University, Sendai, Japan.*

- Apr 2024
 - Developed compliant control methods for robotic assembly tasks and perception systems for lunar applications.
 - Built a dual-arm solar-panel assembly pipeline (MSc thesis project) that led to a peer-reviewed publication (SII 2025).

Publications

[†] Equal contribution.

- Under review S. Sujit[†], **L. Nunziante**[†], R.F.J. Dossa, M. Di Vincenzo, and K. Arulkumaran, When One Step Is Enough: An Empirical Study of Euler Integration in Flow-Matching Policies, Under review.
- 2026 H. Douglas[†], M. Di Vincenzo[†], R.F.J. Dossa[†], **L. Nunziante**[†], S. Sujit, and K. Arulkumaran, Levels of shared autonomy in brain-robot interfaces: enabling multi-robot multi-human collaboration for activities of daily living, *Frontiers in Human Neuroscience*, 19:1718713, 2026.
Project website: <https://coopopen.github.io/>
- 2026 S. Zhang, R.F.J. Dossa, **L. Nunziante**, M. Di Vincenzo, and K. Arulkumaran, An Augmented Reality Brain-Robot Interface for Generalist Robot Arm Manipulation, Accepted at IEEE RO-MAN 2026.
Project website [WIP]: <https://ar-bri-manip.github.io/>
- 2025 **L. Nunziante**, K. Uno, G.H. Diaz, S. Santra, A. De Luca, K. Yoshida, Assembling solar panels by dual robot arms towards full autonomous lunar base construction, *2025 IEEE/SICE International Symposium on System Integration*, pp. 1497–1502, Munich, GER.
Project video: <https://www.youtube.com/watch?v=ZQTdP5nwqpQ>

- 2025 S. Sujit[†], **L. Nunziante[†]**, D.O. Lillrank, R.F.J. Dossa, and K. Arulkumaran, Improving Low-Cost Teleoperation: Augmenting GELLO with Force, *2025 IEEE/SICE International Symposium on System Integration*, pp. 747–752, Munich, GER.
- 2024 G. Gravina[†], **L. Nunziante[†]**, A. De Luca, Energy-based Residual for Collision Detection Using a Velocity Observer, *6th Italian Conference on Robotics and Intelligent Machines, October 2024*, Rome, ITA.
Project video: <https://www.youtube.com/watch?v=v73nNGPyUYQ>

Research Projects

- Jan 2026 **VLA Latent Space Investigation.**
Following an existing paper, I set up a failure detection system for the VLA based on the VLA internal features. Then, I wondered if those features are only informative or can also be controlled in some way: I investigated some ways to intervene in the latent space to reduce the failure cases.
- Dec 2025 **Advantage Conditioned VLA Learning.**
After training a VLA, I collected rollouts and, following an existing work, I passed the frames to a pretrained VLM to predict value labels in a zero-shot manner. Then, I converted those Values in Advantages and retrained the VLM conditioning on those advantages. However, after inspection, the quality of the produced annotation was too poor and noisy to yield performance improvements.

Programming Knowledge

- Languages Python, C++, MATLAB, L^AT_EX.
- Libraries PyTorch, Mujoco, ROS, Eigen.
- Tools git, Isaac Gym, Gazebo.

Education

- 2021–2024 **MSc in Artificial Intelligence and Robotics**, *Sapienza University of Rome*, Rome, Italy, *110/110 cum laude*.
Thesis: “Autonomous Assembly of Solar Panels by Dual Robot Arms in the Remote Space” (Supervisors: Prof. A. De Luca, Prof. K. Yoshida).
- 2018–2021 **BSc in Electronic and Computer Engineering**, *University of Campania Luigi Vanvitelli*, Caserta, Italy, *110/110 cum laude*.
Thesis: “Object detection with Neural Networks for robotics applications: training methods compared” (Supervisor: Prof. C. Natale).

Languages

- Italian **Mother tongue**
- English **Professional working proficiency**
- Japanese **Conversational**