

# DARIO PASQUALI

Post Doc @ Istituto Italiano di Tecnologia

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## ABOUT ME

Experienced Software Engineer specializing in creating end-to-end user interaction systems that integrate Deep Learning with low-level devices.

## WORK EXPERIENCE

Post Doc

**COgNiTive Architectures for Collaborative Technologies (CONTACT)**

📅 Jul 2022 – Now

📍 Istituto Italiano di Tecnologia

Actively working on National (**FAIR**) and European (**ARIEL**) research projects. Reference person in the laboratory for architectural and Software Engineering matters. Tutoring bachelor and master internship students, and mentoring PhD candidates.

Visiting Research

**Social and Intelligent Robotics Research Lab (SIRRL)**

📅 Jul 2021 – Nov 2021

📍 University of Waterloo

Development of a textual adventure to challenge players against Social Engineering threats. Real-time control of the humanoid robot Furhat. Multi-modal acquisition and processing of physiological data from an Eyelink 1000, a Tobii Pro Glasses 2 and a Shimmer3 GSR+, used to predict humans' compliance. Evaluation of different intervention strategies for a robot to prevent users' compliance.

Ph.D Candidate

**Robotics, Brains and Cognitive Sciences (RBCS) & ICT**

📅 Nov 2018 – Jul 2022

📍 Istituto Italiano di Tecnologia

Machine-learning based real-time evaluation of pupillometry, heart rate and electrodermal activity to predict the compliance with Social Engineering attacks, and detect human deception in human-robot interaction with Machine Learning models.

Big Data Architect

**Data Reply**

📅 Oct 2017 – Nov 2018

📍 Milan & Bologna, Italy

Design and development of architectures for the management and real-time processing of Big Data in the vehicle insurance field. Master's Degree dissertation project using DevOps principles and tools to fully automatise the development and deployment process of a movie recommendation service in a Big Data ecosystem.

## EDUCATION

Ph.D in Bioengineering and Robotics  
**Istituto Italiano di Tecnologia & University of Genova**

📅 2018 – 2022

International Doctorate, *Summa cum Laude*

BSc & MSc in Computer Engineering  
**University of Bologna**

📅 2012 – 2018

MSc: 110/110, *Summa cum Laude*

BSc: 101/110

## PROJECTS

**ARIEL (Assessing childRen manipulation and Exploration skills)**

- Develop the myCube, a multisensory Medical Device for the assessment and training of manipulation skills in children and adults.

**Embodied AI for Action and Perception (FAIR)**

- Develop an Artificial Cognition for iCub, enabling the robot to autonomously learn from unsupervised experiences, fostering its ability to adapt and interact dynamically in social and everyday scenarios.

**multipurpose robotics for mAniPulation of defoRmable materiaLs in manufacturing processes (APRIL)**

- Development of Deep Learning models to assess workers' ergonomic posture, detect falls, and predict collision with objects in real-time in a industrial human-robot collaboration setting.

**Lie Detection in Human-Robot Interaction**

- Machine Learning model to autonomously detect lies based on a real-time pupillometry-based cognitive load evaluation. Implemented on the humanoid robot iCub and tested both in a lab and in real-environments (Maker Faire Rome 2022) leveraging interactive online learning.

**Proactive Memory iN AI for Development (PROMEN-AID)**

- Enable the RB-KAIROS+ robot to adapt its behavior thanks to with a biological-inspired working memory, ensuring workers' safety in an industrial scenario.

## ORGANIZED EVENTS

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- Pasquali, Dario et al. (July 2024). **GROUND 2024 Workshop** - advancing GROup UNderstanding and robots' aDaptive behavior. Delft, Netherlands. DOI: <https://ground-hri.github.io/workshop/>.
- – (Aug. 2023). **GROUND 2023 Workshop** - advancing GROup UNderstanding and robots' aDaptive behavior. Busan, South Korea. DOI: <https://ground-hri.github.io/workshop/1stEditionROMAN2023>.

## PUBLICATIONS

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### Journal

- Jasmin, Bernotat et al. (July 2023). "Remember me - User-Centered Implementation and Training of Robot Working Memory for HRI in Industrial Settings". In: *Frontiers in Robotics and AI*. DOI: 10.3389/frobt.2023.1257690.
- Alexander, Aroyo M. et al. (July 2021). "Expectations Vs. Reality: Unreliability and Transparency in a Treasure Hunt Game with iCub". In: *IEEE Robot. Autom. Lett.* 6.3, pp. 5681–5688. ISSN: 23773766. DOI: 10.1109/LRA.2021.3083465.
- **Pasquali Dario**, Gonzalez-Billandon Jonas, Aroyo Mois Alexander, et al. (Nov. 2021). "Detecting Lies is a Child (Robot)'s Play: Gaze-Based Lie Detection in HRI". in: *Int. J. Soc. Robot.* 2021, pp. 1–16. ISSN: 1875-4805. DOI: 10.1007/S12369-021-00822-5.
- Jonas, Gonzalez-Billandon et al. (July 2019). "Can a Robot Catch You Lying? A Machine Learning System to Detect Lies During Interactions". In: *Frontiers in Robotics and AI* 6, p. 64. ISSN: 2296-9144. DOI: 10.3389/frobt.2019.00064.

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### Conference Proceedings

- **Pasquali Dario**, Kothig Austin, et al. (Dec. 2023). "That's not a Good Idea: A Robot Changes Your Behavior Against Social Engineering". In: *ACM Int. Conf. Human-Agent Interaction (HAI 2023)*. DOI: 10.1145/3623809.362387.
- **Pasquali Dario**, Landolfi Lorenzo, et al. (Aug. 2023). "Working Memory-Based Architecture for Human-Aware Navigation in Industrial Settings". In: *ACM/IEEE Int. Conf. Robot and Human Interactive Communication (RO-MAN 2023)*. DOI: 10.1109/RO-MAN57019.2023.10309344.
- **Pasquali Dario**, Rea Francesco, and Sciutti Alessandra (Nov. 2022). "Detecting Lies in the Wild: Creativity and Learning @ the Maker Faire Rome". In: *AI\*IA 2022 - 1st Workshop on Artificial Intelligence and Creativity (CREAI2022)*. CEUR-WS. DOI: <https://ceur-ws.org/Vol-3278/paper1.pdf>.
- **Pasquali Dario**, Gaggero Davide, et al. (Nov. 2021). "Human vs Robot Lie Detector: Better Working as a Team?" In: *ACM/IEEE Int. Conf. on Social Robotics (ICSR)*. Springer, Cham. DOI: 10.1007/978-3-030-90525-5\_14.
- **Pasquali Dario**, Gonzalez-Billandon Jonas, Rea Francesco, et al. (Mar. 2021). "Magic iCub: A humanoid robot autonomously catching your lies in a card game". In: *ACM/IEEE Int. Conf. Human-Robot Interact.* IEEE Computer Society, pp. 293–302. ISBN: 9781450382892. DOI: 10.1145/3434073.3444682.
- Alexander, Aroyo M. et al. (2020). "Perceived differences between on-line and real robotic failures". In: *RO-MAN 2020 - Trust. Accept. Soc. Cues Human-Robot Interact. - SCRITA*.
- **Pasquali Dario**, Aroyo Mois Alexander, et al. (Mar. 2020). "Your eyes never lie: A robot magician can tell if you are lying". In: *ACM/IEEE Int. Conf. Human-Robot Interact. - Late Breaking Reports - LBR*. IEEE Computer Society, pp. 392–394. ISBN: 9781450370578. DOI: 10.1145/3371382.3378253.
- **Pasquali Dario**, M. Aroyo Alexander, et al. (Mar. 2020). "Do You See the Magic? An Autonomous Robot Magician Can Read Your Mind". In: *ACM/IEEE Int. Conf. Human-Robot Interact. Workshop on Creative Content on Social Robotics*.