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

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 indurstrial 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.

S+T+ARTS Project - Soft Collision (VOJEXT)

- Integration of the RB-KAIROS+ and UR5e robots, Flex-TS sensitive skin, iCube, and inflatable skin to allow artist to collaboratively paint walls with a robot in safe conditions.

ORGANIZED EVENTS

- 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 Corea. DOI: https://ground-hri.github.io/workshop/1stEditionROMAN2023.

PUBLICATIONS

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.

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*.