Francesco Vigni, Ph.D.

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Professional Profile

Computer engineer with 3+ years of international experience in robotics and applied machine learning, and researcher with 3+ years of experience in Human–Robot Interaction (HRI). Proficient in analyzing complex systems, evaluating technical novelty, and synthesizing findings with clarity and precision. Demonstrated ability to assess inventive steps, ensure reproducibility, and apply structured reasoning to technical disclosures. Combine rigorous analytical thinking with broad ICT expertise. Experience in managing interdisciplinary research teams and effectively communicating complex technical concepts.

Technical Competencies

Core ICT Domains: Human–Robot Interaction (HRI), Embedded & Real-Time Systems, Computer Vision, Data Analysis & Statistical Modeling, Software Architecture & Optimization
Programming: Python, C/C++, TypeScript/JavaScript, SQL, Bash.
Frameworks & Tools ROS, Docker, TensorFlow, PyTorch, Scikit-learn, Git, GitLab CI/CD, Flask, FastAPI, React
Systems & Infrastructure: AWS, Containerization, Server Management, System Monitoring
Languages: Italian (Native), Spanish (Native), English (C2 Professional), German (A2 Conversational)

Professional Experience

Doctoral Research Fellow   **Naples, Italy**
University of Naples Federico II - EU H2020 MSCA Project PERSEO   *Dec 2021 – Feb 2025*

- Conducted analytical evaluation of interaction models and algorithms, assessing novelty, technical merit, and reproducibility; produced 7+ peer-reviewed papers
- Led investigations into personalization in robotics, coordinating interdisciplinary teams worldwide
- Supervised bachelor's and master's theses, mentoring students in structured research and scientific writing

Robotics Engineer   **Munich, Germany**
Roboception GmbH   *May 2021 – Nov 2021*

- Designed and validated perception modules for industrial robot–vision systems (ROS, C++, Python)
- Enhanced grasping algorithms via performance assessment and optimization, improving reliability by 9%

Autonomous Systems Developer   **Munich, Germany**
Sttech GmbH   *Apr 2020 – May 2021*

- Developed motion algorithms for autonomous mobile robot deployed in public environments (ROS, C++, Python, Coppeliasim)
- Designed and implemented a tailored algorithm for autonomous physical docking
- Prototyped embedded vision systems for real-time detection, balancing accuracy and computational cost (NVIDIA Jetson nano, YOLO, Python)

Research & Academic Contributions

Visiting Researcher   **Vienna, Austria**
Autonomous Systems Labs (ASL), TU Wien   *Oct 2023 – Feb 2024*

- Implemented autonomous and safe bartending manipulation on a dual-arm TIAGo++ robot (ROS, Python)

Visiting Researcher   **Eindhoven, Netherlands**
Noosware BV   *Jun 2023 – Aug 2023*

- Analyzed emotional responses to robot motion trajectories in controlled social environments (ROS, C++)

Research & Teaching Assistant   **Munich, Germany**
Munich Institute of Robotics and Machine Intelligence (TU Munich)   *Apr 2019 – Apr 2020*

- Developed bio-inspired control systems for robotic hands and evaluated performance under variable dynamics.
- Delivered teaching materials for "Fundamentals of Human-Centered Robotics," simplifying complex technical topics.

Master Internship   **Zurich, Switzerland**
Disney Research Zurich   *Sep 2018 – Oct 2018*

- Implemented software stack and conducted user study for Human-Robot Handshakes (ROS, Arduino)

Education

Ph.D. in Information and Communication Technology for Health   Naples, Italy
University of Naples Federico II   *Dec 2021 - Feb 2025*
M.Sc. in Computer and Automation Engineering (*Cum Laude*)   Siena, Italy
University of Siena   *Oct 2015 – Oct 2018*
B.Sc. in Management Engineering   Siena, Italy
University of Siena   *Sep 2011 – Oct 2015*

Selected Publications

Vigni, F., et al. "The Role of Closed-Loop Hand Control in Handshaking Interactions." *IEEE Robotics and Automation Letters*, 2019. [DOI]

Vigni, F., et al. "Sweet Robot O'Mine – How a Cheerful Robot Boosts Users' Performance." *IEEE RO-MAN*, 2023. [DOI]

Vigni, F., et al. "Too Close to You? Emotion-Adapted Proxemics Behaviours." *IEEE RO-MAN*, 2024. [DOI]

Additional Information

Marie Skłodowska-Curie Actions Fellowship, EU H2020 Project PERSEO, Dec. 2021.
Best Paper Award Finalist in HRI, IEEE ICRA, 2019.
Professional Affiliation: Registered Information Engineer, Section A, National Council of Italian Engineers (Ordine degli Ingegneri, Provincia di Forlì-Cesena, Registration No. 2988).
Peer Review: IEEE RA-L, IROS, ICRA, International Journal of Social Robotics, HAI, ISRR, RO-MAN.
Workshop Organization: WARN@RO-MAN 2023/24, BEAR@RO-MAN 2025.