

# Francesco Vigni, Ph.D.

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## EDUCATION

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### University of Naples Federico II

*PhD in Information and Communication Technology for Health (ICTH)*

*Final grade: Excellent; Affiliated with ICAROS; Additional label: Doctor Europeus*

Naples, Italy

*Dec 2021 – Feb 2025*

### University of Siena

*M.Sc. Computer and Automation Engineering **Cum Laude***

*B.Sc. Management Engineering*

Siena, Italy

*Oct 2015 – Oct 2018*

*Sep 2011 – Oct 2015*

## RESEARCH EXPERIENCE

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### Research Fellow

*University of Naples Federico II - EU H2020 MSCA project PERSEO*

- Defined spontaneous interactions for Human-Robot Interactions (HRI)
- Investigated modular engagement metrics for HRI
- Supervised bachelor and master students

Naples, Italy

*Dec 2021 – Feb 2025*

### Visiting Researcher

*Vienna University of Technology (TUW)*

- Developed and conducted user studies for spontaneous HRIs
- Implemented autonomous bartending manipulation on a dual-arm TIAGo++ robot

Vienna, Austria

*Oct 2023 – Feb 2024*

### Visiting Researcher

*Noosware BV*

- Developed and conducted studies with Turtlebot4
- Investigated users' emotional response of various robot path planning strategies

Eindhoven, The Netherlands

*Jun 2023 – Aug 2023*

### Research and Teaching Assistant

*Technical University of Munich (TUM)*

- Investigated robotic hand designs, motion and control capabilities for achieving human like hands
- Developed and carried out tutorials and lecture material for the Bachelor Course “Fundamentals of Human-Centered Robotics”

Munich, Germany

*Apr 2019 – Apr 2020*

### Intern

*Disney Research Zurich*

- Designed, implemented and tested force controllers for Human-Robot Handshake with particular focus on the mutual exchange of force during the interaction

Zurich, Switzerland

*Sep 2018*

## WORK EXPERIENCE

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### Robotic Engineer

*Roboception GmbH*

- Designed and implemented core components of novel in-house products (ROS, C++, Python)
- Improved grasping strategies for backend component *rc\_reason*

Munich, Germany

*May 2021 – Nov 2021*

### Autonomous system developer

*Sttech GmbH*

- Tailored motion planning solutions for non-holonomic mobile robots (ROS, C++, Python, Rviz, bullet)
- Developed PoC for autonomous vehicles driving in unstructured scenarios (ROS, Carla simulator)
- Developed embedded vision system prototype capable of real-time object detection and classification (Jetson nano, yolo)

Munich, Germany

*Apr 2020 – May 2021*

### Technical Consultant

*Contractor*

- Trained sales and technical personnel of various Daimler's dealers on novel cloud services onboard vehicles
- Trained on vehicles ICT and their potentials for end-users

Mid-North Italy

*Jan 2018 – Apr 2018*

## AWARDS & ACHIEVEMENTS

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**Best Paper Award in HRI (Finalist)** Our work got nominated finalist for the award on Best HRI during ICRA 2019 Montreal, Canada

**Merit grant:** awarded for best Master Thesis by the financial institute La BCC ravennate, forlivese e imolese Soc. coop

**Merit grant:** awarded for research in HRI - University of Siena - EU grant no. 645599

## PROJECTS

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**Personalized Robotics as Service Oriented applications - PERSEO** | [link](#)

- Contributed to the definition of personalized social cues for robots as information-providing interfaces
- Member of the project's supervisory board as the students' representative

**Centers of Excellence Network for Trustworthy Robotics and Intelligent Systems - CENTRIS** | [link](#)

**Center for Tactile Internet with Human-in-the-Loop - CETI** | [link](#)

**Soft Manipulation - SOMA** | [link](#)

## SKILLS

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**Programming:** Python, C, C++, MATLAB, LaTeX, JavaScript, MySQL, Bash, R

**Data Analysis & Machine Learning:** Statistical Modeling, Bayesian Inference, Supervised and Unsupervised Learning, Feature Engineering, Data Preprocessing, Time Series Analysis, Optimization

**Human-Robot Interaction (HRI):** Experimental Design, User Studies, Social Robotics, Non-verbal Human-Robot Communication, Interaction Modeling, Likert-scale Analysis, Engagement Metrics

**Technologies & Tools:** Docker, ROS, Colab, Git, CI/CD, Simulink, Scikit-learn, TensorFlow, Pytorch, OpenCV, Pandas, NumPy, SciPy, Matplotlib, Seaborn, Plotly

**Languages:** Italian (Native), Spanish (Native), English (Professional), German (Conversational)

## ACADEMIC ACTIVITIES

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**Served as reviewer for:** RAL, IROS, ICRA, IJSR, HAI, ISRR, ROMAN

**Co-organised:** WARN@RoMAN2023, WARN@RoMAN2024

**Coursework:** Fundamentals of Human-Robot Interaction @ TUM 2019/2020

## ORGANIZATIONS

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**Registered Information Engineer** *Feb 2025 – Present*  
*Order of the Engineers of Forlì (Forlì-Cesena), Section A*

**Member of IEEE** *Dec 2019 – Present*  
*Institute of Electrical and Electronics Engineers*

**Executive Director in real estate SME** *Dec 2020 – Dec 2023*  
*Edilrevi srl - trading and leasing real estate*

**Radio speaker and web developer** *Set 2013 – May 2018*  
*uRadio - Webradio of University of Siena*

## SELECTED PUBLICATIONS

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Vigni, Francesco, et al. "The role of closed-loop hand control in handshaking interactions." IEEE Robotics and Automation Letters 4.2 (2019): 878-885

Vigni, Francesco, et al. "Sweet Robot O'Mine - How a Cheerful Robot Boosts Users' Performance in a Game Scenario" 2023 32nd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN). IEEE, 2023

Vigni, Francesco, et al. "A Rosbag Tool to Improve Dataset Reliability." HRI'24: Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction. USA, 2024.

Vigni, Francesco, and Silvia Rossi. "Exploring Non-verbal Strategies for Initiating an HRI." International Conference on Social Robotics. Cham: Springer Nature Switzerland, 2022