

# Francesco Vigni

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## EDUCATION

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### Università degli studi di Napoli “Federico II”

Napoli, Italia

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

*Dec 2021 – Feb 2025 (Expected)*

*Affiliated with Interdepartmental Center for Advances in Robotic Surgery (ICAROS)*

### Politecnico di Torino

Torino, Italia

*Professional Engineering exam - sector A - Directive 2005/36/EC*

*Dec 2020*

### Università degli studi di Siena

Siena, Italia

*M.Sc. Computer and Automation Engineering 110 cum laude / 110*

*Oct 2015 – Oct 2018*

*B.Sc. Management Engineering*

*Sep 2011 – Oct 2015*

## RESEARCH EXPERIENCE

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### Università degli studi di Napoli “Federico II”

Napoli, Italia

*Research Fellow in EU H2020 - MSCA project perseo*

*Dec 2021 – Present*

- Investigated modular methods for engagement detection in real-time for social Human-Robot Interactions
- Investigated how robots can convey social cues and to which extent can be used to persuade humans
- Supervised bachelor and master students

### Technische Universität Wien

Vienna, Austria

*Visiting Researcher*

*Oct 2023 – Feb 2024*

- Developed and tested engagement model in spontaneous human-robot interactions

### Noosware BV

Eindhoven, The Netherlands

*Visiting Researcher*

*Jun 2023 – Aug 2023*

- Developed and conducted an experiment on the emotional response of path planning with non-humanoid robots

### Technische Universität München

München, Deutschland

*Research Assistant*

*Apr 2019 – Apr 2020*

- Investigated paradigm for robotic hand design, motion and control capabilities. Towards the generalisation of human-like manipulation abilities. DFG project “Centre for Tactile Internet with Human-in-the-Loop (CeTI)”
- Developed and carried out tutorials and lecture material for the Bachelor Course “Fundamentals of Human-Centered Robotics”

### Disney Research Zürich

Zürich, Switzerland

*Intern*

*Sep 2018*

- Designed, implemented and tested force controllers for Human-Robot handshake with particular focus on the mutual exchange of force during the interaction
- Run user-study to test the goodness of designed controllers and reported the results in my Master Thesis as well as in the paper “The Role of Closed-Loop Hand Control in Handshaking Interactions”

## WORK EXPERIENCE

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### Roboception GmbH

München, Deutschland

*Robotic Engineer*

*May 2021 – Nov 2021*

- Designed and implemented core components of products *rc\_visard* and *rc\_cube*
- Improved grasping strategies for backend component *rc\_reason*

### Sttech GmbH

München, Deutschland

*Autonomous system developer*

*Apr 2020 – May 2021*

- 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)

## AWARDS & ACHIEVEMENTS

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**Best Paper Award in HRI (Finalist)** The work Vigni et. al. "The Role of Closed-Loop Hand Control in Handshaking Interactions" is a finalist nominated for the award on Best Human-Robot Interaction 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 Human-Robot Interaction - Human-Robot handshake Universita' degli studi di Siena - EU grant no. 645599

**Merit grant:** awarded for abroad exchange semester Universita' degli studi di Siena - Technische Universität München

## 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](#)

- Contributed to the definition of the ICT-48 European research proposal

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

- Contributed to the German Research Foundation (DFG) Project with my research on novel design, motion and control for robot hands

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

- Contributed with my work on human-robot handshaking with Disney Research Zürich

## SKILLS

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**Programming:** LaTeX, C, C++, Python, MATLAB, Javascript, MySQL

**Technologies:** Git, Arduino, ROS, Simulink, LabView

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

## ACADEMIC ACTIVITIES

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

**Main Organizer:** WARN - Weighting the benefits of Autonomous Robot personalization @ RoMAN 2023

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

## ORGANIZATIONS

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**Institute of Electrical and Electronics Engineers (IEEE)**

*Student Member*

*Dec 2019 – Present*

**Webradio of students @ Università di Siena (uradio)**

*Radio speaker and web developer for the non-profit organization*

*Set 2013 – May 2018*

**Managing Director of Edilrevi srl**

*Family-cored business focused on real estate trading and lease*

*Dec 2020 – Dec 2023*

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

Angelopoulos\* Georgios, Vigni\* Francesco et al. "Familiar Acoustic Cues for Legible Service Robots." 2022 31st IEEE International Conference on Robot and Human Interactive Communication (RO-MAN). IEEE, 2022