Francesco Vigni, Ph.D.

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EDUCATION

University of Naples Federico II   Naples, Italy
PhD in Information and Communication Technology for Health (ICTH)   *Dec 2021 − Feb 2025*
Final grade: Excellent; Affiliated with ICAROS; Additional label: Doctor Europeaus

University of Siena   Siena, Italy
M.Sc. Computer and Automation Engineering **Cum Laude**   *Oct 2015 − Oct 2018*
B.Sc. Management Engineering   *Sep 2011 − Oct 2015*

RESEARCH EXPERIENCE

Research Fellow   Naples, Italy
University of Naples Federico II - EU H2020 MSCA project PERSEO   *Dec 2021 − Feb 2025*
- Defined spontaneous interactions for Human-Robot Interactions (HRI)
- Investigated modular engagement metrics for HRI
- Supervised bachelor and master students

Visiting Researcher   Vienna, Austria
Vienna University of Technology (TUW)   *Oct 2023 − Feb 2024*
- Developed and conducted user studies for spontaneous HRIs
- Implemented autonomous bartending manipulation on a dual-arm TIAGo++ robot

Visiting Researcher   Eindhoven, The Netherlands
Noosware BV   *Jun 2023 − Aug 2023*
- Developed and conducted studies with Turtlebot4
- Investigated users' emotional response of various robot path planning strategies

Research and Teaching Assistant   Munich, Germany
Technical University of Munich (TUM)   *Apr 2019 − Apr 2020*
- 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"

Intern   Zurich, Switzerland
Disney Research Zurich   *Sep 2018*
- Designed, implemented and tested force controllers for Human-Robot Handshake with particular focus on the mutual exchange of force during the interaction

WORK EXPERIENCE

Robotic Engineer   Munich, Germany
Roboception GmbH   *May 2021 − Nov 2021*
- Designed and implemented core components of novel in-house products (ROS, C++, Python)
- Improved grasping strategies for backend component *rc_reason*

Autonomous system developer   Munich, Germany
Sttech GmbH   *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)

Technical Consultant   Mid-North Italy
Contractor   *Jan 2018 − Apr 2018*
- 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

Awards & Achievements

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

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

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, Portainer, 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

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

Registered Information Engineer *Feb 2025 – Present*
National Council of Italian Engineers (Forlì-Cesena Chapter), 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

Vigni, Francesco, et al. "Too Close to You? A Study on Emotion-Adapted Proxemics Behaviours." 2024 33rd IEEE International Conference on Robot and Human Interactive Communication (ROMAN). IEEE, 2024.

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

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