MATTIA RACCA

Research Scientist – Human-Robot Interaction

@ mattia.racca@naverlabs.com +33 476614115
mattiaracca.github.io github.com/mattiaracca

CURRENT POSITION

Research Scientist

NAVER LABS Europe

September 2022 – ongoing Grenoble, FRANCE

Social Robot Navigation, within the Human-Robot Interaction team.

PAST POSITIONS

Postdoctoral Researcher

Idiap Research Institute

October 2020 – June 2022 Martigny, SWITZERLAND

Supervisors: Dr. Sylvain Calinon and Dr. Jean-Marc Odobez

End-User Programming as front-end for Robot Optimal Control.

Doctoral Studies

Aalto University, Intelligent Robotics Group

January 2016 – September 2020 Helsinki, FINLAND

- **Doctoral candidate** on the topic of Robot Learning and Human-Robot Interaction, supervised by Professor Ville Kyrki.
- **Teaching assistant** for the Robotic Vision course (2016-18), taught by Professor Ville Kyrki.
- **Master's thesis advisor** on the following topics:
  - From Demonstrations to End-User Programming
  - Robot Policy Situated Generation of Explanations
  - 3D Object Reconstruction via Robot Hand-held Camera
  - Human Gaze-driven Attention Maps on RGB-D Cameras
- **Visiting Researcher** at **University of Washington**

  February 2019 – June 2019 Seattle (WA), USA

  Research visit under the supervision of Professor Maya Cakmak, working at the intersection of Active Learning and End-User Robot Programming.
- **Intern** at **Fraunhofer IPA, Care-O-bot Lab**

  June 2017 – July 2017 Stuttgart, GERMANY

  Training as robot administrator for Aalto University's Care-O-bot 4, with a focus on ROS Open Source Software Development.

EDUCATION

Doctor of Science (Technology)

Aalto University

2016 – 2020 Helsinki, FINLAND

Dissertation's title: Teacher-Learner Interaction for Robot Active Learning

Supervisor: Professor Ville Kyrki

Opponent: Professor Tony Belpaeme

M.Sc. in Computer Engineering

Politecnico di Torino

2013 – 2015 Turin, ITALY

Major: Automation and Control

Final grade: 110 / 110 *cum laude*

B.Sc. in Computer Engineering

Politecnico di Torino

2010 – 2013 Turin, ITALY

Final grade: 109 / 110

TECHNICAL SKILLS

OS: Linux, Windows

Programming: Python, git, Docker, bash, C++, PyQt

Robotics: ROS 2, NAV2 stack, Traditional Computer Vision

Machine Learning: Active Learning, Mixture Models, Markov Models

Human-Robot Interaction: User Study, Statistical Analysis, Experiment Design

Writing and Editing: LaTeX, TikZ, Notion, Inkscape, GIMP

SELECTED PUBLICATIONS

- J. Jankowski, **M. Racca**, and S. Calinon (2022). "From Key Positions to Optimal Basis Functions for Probabilistic Adaptive Control". In: *Robotics and Automation Letters (RA-L) and ICRA 2022*.
- M. Axelsson, R. Oliveira, et al. (Oct. 2021). "Social Robot Co-Design Canvases: A Participatory Design Framework". In: *J. Human-Robot Interaction* 11.1.
- **M. Racca**, V. Kyrki, and M. Cakmak (2020). "Interactive Tuning of Robot Program Parameters via Expected Divergence Maximization". In: *2020 ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. ACM.
- **M. Racca**, A. Oulasvirta, and V. Kyrki (2019). "Teacher-Aware Active Robot Learning". In: *2019 ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. IEEE.
- **M. Racca** and V. Kyrki (2018). "Active Robot Learning for Temporal Task Models". In: *2018 ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. ACM.
- **M. Racca**, J. Pajarinen, et al. (2016). "Learning in-contact control strategies from demonstration". In: *2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE.

Complete list and preprints available at mattiaracca.github.io/publications/.

COMMUNITY DUTIES

2024 Organizer of the 2nd International HRI Symposium, hosted by NAVER LABS Europe.
2024 Program Committee member for the 27th European Conference on Artificial Intelligence (ECAI).
2024 Main organizer of the 3rd Human Interactive Robot Learning Workshop, held at HRI 2024.

ROBOTIC FRIENDS

Rookie — *from NAVER LABS*
NAVER LABS Autonomous Service Robot, the platform of choice for our social navigation research.

FRANKA RESEARCH *aka* Panda — *from FRANKA Robotics*
I implemented an end-user programming framework in ROS, C++, and Python (similar to the Desk environment) to showcase our active parameter tuning approach.

Care-O-bot 4 — *from Fraunhofer IPA & 4am Robotics*
I was the administrator of Aalto University's *Rosie*, maintaining an internal manual, instructing new users, and performing routine check-ups.

NAO — *from Softbank Robotics*
Aalto University's *Nemo* was the learning agent in two of my user studies about Human-Robot Active Learning.

GRANTS & AWARDS

Nomination "Best Doctoral Dissertation in the Field of Technology" in Finland in 2020
January 2021 — TEK & TFiF

Travel Grant from Ernst Wirtzen's fund
December 2018 — Ernst Wirtzen's fund
Funds (4000 €) for the research visit at the University of Washington.

Aalto ELEC Doctoral School scholarship
May 2017 — Aalto University
Funds covering my salary for 2 years and 9 months of my doctoral studies.

LANGUAGE SKILLS

Italian ●●●●● **English** ●●●●●
French ●●●○○ **German** ●○○○○

HOBBIES & INTERESTS

Hiking · Climbing · History · Board/Card/Video games

REFERENCES

Professor Ville Kyrki – PhD supervisor
Aalto University
ville.kyrki@aalto.fi

Danilo Gallo - Team Leader
NAVER LABS Europe
danilo.gallo@naverlabs.com

More references available upon request.

Updated on 26/11/2024