# MATTEO IOVINO

**Robotics & AI Research Scientist at ABB**

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## EXPERIENCE

Scientist
**ABB Research**
Jun 2023 – Present — Västerås, Sweden

- Project manager of the WASP Research Arena for Robotics, interacting with stakeholders from both academia and industry
- Enhancing collaborative robots with AI-ready skills
- Lab host: resource scheduling and responsible for the safety requirements of the setups

Industrial Ph.D.
**ABB Research**
Feb 2019 – Jun 2023 — Västerås, Sweden

- Automatic and intuitive generation of task level policies for robotic applications

Engineering Internship
**ABB Research**
Apr 2018 – Sep 2018 — Västerås, Sweden

- Simulating a mobile manipulation task in ROS/Gazebo

Engineering Internship
**Safran Nacelles**
Mar 2017 – Aug 2017 — Le Havre, France

- Set up of a simulation environment in AMESim for a thrust reverser test bench

## EDUCATION

Ph.D. in Computer Science
**KTH - Royal Institute of Technology**
Mar 2019 – Jun 2023 — Stockholm, Sweden

- Thesis title: *Learning Behavior Trees for Collaborative Robotics*
- Collaboration with *ABB Research*

Research Visit
**ETH Zürich D-MAVT**
Apr 2022 – Sep 2022 — Zürich, Switzerland

- Study period at the Autonomous Research Lab (ASL) led by Prof. Roland Siegwart

M.Sc. in Engineering
**École Centrale de Nantes**
2016 – 2018 — Nantes, France

- Major in Robotics. GPA: 3.82

M.Sc. in Control Engineering | 110/110 cum Laude
**Università degli Studi di Padova**
2015 – 2018 — Padova, Italy

B.Sc. in Information Engineering | 103/110
**Università degli Studi di Padova**
2012 – 2015 — Padova, Italy

## SKILLS

*Programming*
- Python ●●●●○
- C++ ●●○○○

*Operating Systems*
- Linux ●●●●○
- MacOS ●●●●○
- Windows ●●○○○

*Software & Tools*
- Git ●●●●○
- ROS ●●●●○
- LaTeX ●●●●○

## LANGUAGES

- English ●●●●○
- Swedish ●●●○○
- Italian ●●●●●
- Spanish ●●●○○
- French ●●●○○
- German ●○○○○

## PROJECTS

**WASP-CBSS-BT**
Setup of a tutorial about Behavior Trees in Robotics for the WASP Summer School

**WASP - Manipulation and Mobility**
Vision-based manipulation and mobility based on Behavior Trees and Linear Temporal Logic planning

**Dual Arm Manipulation**
Cooperative object carrying between a mobile manipulator and a human operator

## PUBLICATIONS

### Journal Articles

- **M. Iovino**, J. Förster, P. Falco, J. J. Chung, R. Siegwart, and C. Smith, "Comparison between behavior trees and finite state machines," *Under review at IEEE Transactions on Automation Science and Engineering*, 2024.
- **M. Iovino**, E. Scukins, J. Styrud, P. Ögren, and C. Smith, "A survey of Behavior Trees in robotics and AI," *Robotics and Autonomous Systems*, vol. 154, p. 104 096, Aug. 2022, ISSN: 0921-8890. DOI: 10.1016/j.robot.2022.104096.

### Conference Proceedings

- J. Styrud, **M. Iovino**, M. Norrlöf, M. Björkman, and C. Smith, "Automatic behavior tree expansion with llms for robotic manipulation," in *Under review at International Conference on Robotics and Automation (ICRA)*, 2025.
- M. Hallen, **M. Iovino**, S. Sander-Tavallaey, and C. Smith, "Behavior trees in industrial applications: A case study in underground explosive charging," in *2024 IEEE 19th International Conference on Automation Science and Engineering (CASE)*, Aug. 2024.
- **M. Iovino**, J. Förster, P. Falco, J. J. Chung, R. Siegwart, and C. Smith, "On the programming effort required to generate Behavior Trees and Finite State Machines for robotic applications," in *2023 IEEE International Conference on Robotics and Automation (ICRA)*, May 2023.
- **M. Iovino**, J. Styrud, P. Falco, and C. Smith, "A framework for learning behavior trees in collaborative robotic applications," in *2023 IEEE 19th International Conference on Automation Science and Engineering (CASE)*, Aug. 2023, pp. 1–8. DOI: 10.1109/CASE56687.2023.10260363.
- O. Gustavsson, **M. Iovino**, J. Styrud, and C. Smith, "Combining Context Awareness and Planning to Learn Behavior Trees from Demonstration," in *2022 31st IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, ©2022 IEEE. Reprinted, with permission., Aug. 2022, pp. 1153–1160. DOI: 10.1109/RO-MAN53752.2022.9900603.
- **M. Iovino**, F. I. Doğan, I. Leite, and C. Smith, "Interactive Disambiguation for Behavior Tree Execution," in *2022 IEEE-RAS 21st International Conference on Humanoid Robots (Humanoids)*, ©2022 IEEE. Reprinted, with permission., Nov. 2022, pp. 82–89. DOI: 10.1109/Humanoids53995.2022.10000088.
- **M. Iovino** and C. Smith, "Behavior Trees for Robust Task Level Control in Robotic Applications," in *Workshop paper at 2022 IEEE-RAS 21st International Conference on Humanoid Robots (Humanoids)*, 2022.
- J. Styrud, **M. Iovino**, M. Norrlöf, M. Björkman, and C. Smith, "Combining Planning and Learning of Behavior Trees for Robotic Assembly," in *2022 International Conference on Robotics and Automation (ICRA)*, May 2022, pp. 11 511–11 517. DOI: 10.1109/ICRA46639.2022.9812086.
- **M. Iovino**, J. Styrud, P. Falco, and C. Smith, "Learning Behavior Trees with Genetic Programming in Unpredictable Environments," in *2021 IEEE International Conference on Robotics and Automation (ICRA)*, ©2021 IEEE. Reprinted, with permission., May 2021, pp. 4591–4597. DOI: 10.1109/ICRA48506.2021.9562088.