

Cesare Tonola

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Google scholar: <https://scholar.google.it/citations?user=GjDfgLUAAAAJ>

Current position

Postdoc at the University of Brescia, Department of Mechanical and Industrial Engineering.

Education

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| 2018 | B.Sc. cum laude in Industrial Automation Engineering, University of Brescia, Italy.
Thesis: Feasibility study of a device for the stabilization of a weapon during the aiming phase.
Supervisor: Prof. Antonio Visioli. |
| 2020 | M.Sc. cum laude in Industrial Automation Engineering, University of Brescia, Italy.
Thesis: Informed online path replanning algorithm for robots in changing environments. Supervisors: Prof. Antonio Visioli and Prof. Manuel Beschi. |
| 2020-2024 | Ph.D. in Industrial Automation Engineering, University of Brescia, Italy.
Research: Reactive Motion Replanning For Human-Robot Collaboration.
Supervisor: Prof. Manuel Beschi. |

Research activities

My research focuses on robot motion planning, human-robot collaboration, and control. During my Ph.D., I developed a dynamic multi-path replanning algorithm that enhances human-robot cooperation by integrating a safety-aware cost function, optimizing robot trajectories in real-time, and ensuring minimal disruption in shared workspaces.

ABROAD EXPERIENCE

In the final year of my Ph.D., I spent six months at the Munich Institute of Robotics and Machine Intelligence (MIRMI), Technical University of Munich, where I advanced my replanning algorithm to prioritize safety and efficiency in human-robot interactions.

RESEARCH PROJECTS

- IMOCO 4.E (Grant Agreement ID: 101007311).
- Sharework (Grant Agreement ID: 820807).

Awards

- First place at Robothon Grand Challenge 2022, organized by Automatica Fair 2022. (<https://robothon-grand-challenge.com/award-ceremony/>). Member of team *CARI*.

- Runner up at Robothon Grand Challenge 2021, organized by Automatica Fair 2021. (<https://robothon-grand-challenge.com/2022/02/03/results-and-award-ceremony/>). Member of team *EWAS*.
- UCIMU 2021 Award for Master's Degree Thesis.
- Finalist at Innoday Open Challenge, organized by Gefran and Regione Lombardia, 2020. (<https://www.gefran.com/it/news/201-gefran-presenta-innoday>). Team member.
- Excellence award *Roberto Rocca* 2019 from Tenaris Dalmine Spa.
- Student merit grant in 2019 from Rotary Club Italy, Streparava family, and IMA Spa.

Teaching activity

2020/2022	Teaching Assistant for the Fundamentals of Automatic Control course, Industrial Automation Engineering degree, University of Brescia.
2021/2022	Teacher of Automatic Electronic Systems, IIS Benedetto Castelli, Brescia.

Publications

- Cesare Tonola, Marco Faroni, Manuel Beschi, and Nicola Pedrocchi. Anytime informed multi-path replanning strategy for complex environments. *IEEE Access*, 11:4105–4116, 2023. Available at <https://ieeexplore.ieee.org/abstract/document/10013661>.
- Cesare Tonola, Manuel Beschi, Marco Faroni, and Nicola Pedrocchi. Openmore: an open-source tool for sampling-based path replanning in ros. In *2023 IEEE 28th International Conference on Emerging Technologies and Factory Automation (ETFA)*, pages 1–4, 2023. Available at <https://ieeexplore.ieee.org/abstract/document/10275365>. **Winner of Best WiP Paper Award.**
- Cesare Tonola, Marco Faroni, Nicola Pedrocchi, and Manuel Beschi. Anytime informed path re-planning and optimization for robots in changing environments, 2021. Available at <https://arxiv.org/abs/2103.13245>.
- Cesare Tonola, Marco Faroni, Nicola Pedrocchi, and Manuel Beschi. Anytime informed path re-planning and optimization for human-robot collaboration. In *Proceedings of the IEEE International Conference on Robot and Human Interactive Communication*, Vancouver (Canada), 2021. Available at <https://ieeexplore.ieee.org/document/9515422>.
- Riccardo Adamini, Nicholas Antonini, Alberto Borboni, Simone Medici, Cristina Nuzzi, Roberto Pagani, Alberto Pezzaioli, and Cesare Tonola. User-friendly human-robot interaction based on voice commands and visual systems. In *2021 24th International Conference on Mechatronics Technology (ICMT)*, pages 1–5, 2021. Available at <https://ieeexplore.ieee.org/document/9687192>.

- Manuel Beschi, Cesare Tonola, and Antonio Visioli. Teaching control courses online during the covid-19 pandemic: some experiences at the university of brescia. *IFAC-PapersOnLine*, 55(17):103–108, 2022. 13th IFAC Symposium on Advances in Control Education ACE 2022. Available at <https://www.sciencedirect.com/science/article/pii/S2405896322014574>.
- Cesare Tonola, Marco Faroni, Nicola Pedrocchi, and Manuel Beschi. Anytime informed path re-planning and optimization for human-robot collaboration. In *Conferenza dell’Istituto di Robotica e Macchine Intelligenti*, Rome (Italy), 2021.
- Cesare Tonola, Marco Faroni, Nicola Pedrocchi, and Manuel Beschi. Anytime informed path re-planning and optimization for human-robot collaboration. In *Convegno nazionale SIDRA Automatica.it 2021*, Catania (Italy), 2021.

LAST UPDATE:

19/06/2024