

# Andrea TESTA

## PERSONAL DETAILS

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CURRENT POSITION: Junior Assistant Professor (fixed-term)  
AFFILIATION: Department of Electrical, Electronic and Information Engineering,  
University of Bologna  
Viale del Risorgimento 2, Bologna (BO), Italy  
EMAIL: [a.testa@unibo.it](mailto:a.testa@unibo.it)

## EDUCATION

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| AUG. 2020    | Ph.D. in ENGINEERING OF COMPLEX SYSTEMS, Università del Salento, Lecce, Italy<br>Summa <i>cum Laude</i><br><i>Thesis:</i> “Distributed Submodular and Mixed-Integer Optimization with Application to Cooperative Robotics”<br><i>Advisor:</i> G. NOTARSTEFANO |
| APRIL 2016   | Master’s Degree in COMPUTER ENGINEERING (LM32), Università del Salento, Lecce, Italy<br>110/110 <i>cum Laude</i><br><i>Thesis:</i> “Mechanical modeling and control of tethered aerial robots”<br><i>Advisors:</i> G. NOTARSTEFANO, A. FRANCHI, M. TOGNON     |
| OCTOBER 2013 | Bachelor’s Degree in INFORMATION ENGINEERING (L8), Università del Salento, Lecce, Italy<br>106/110<br><i>Thesis:</i> “Observability analysis of a vehicle in the 3D space using range-only measurements”<br><i>Advisor:</i> G. INDIVERI, G. PARLANGELI        |

## VISITING EXPERIENCES

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| OCT 2018 - JUN 2019 | Visiting position at University of Bologna (Bologna, IT)<br>Research scholar under the supervision of professor G. NOTARSTEFANO continuing the development of my PhD research topics in the context of the European Research Project OPT4SMART |
| FEB 2016 - MAR 2016 | Exchange Period at LAAS-CNRS (Toulouse, FR)<br>Research scholar under the supervision of professor A. FRANCHI. I investigated optimal control of aerial robots and control of UAVs   |
| JUL 2015 - SEP 2015 | Exchange Period at LAAS-CNRS (Toulouse, FR)<br>Erasmus student under the supervision of professor A. FRANCHI. I investigated optimal control techniques for aerial robots  |

## RESEARCH PROJECTS PARTICIPATION

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	European research project - ERC Starting Grant
	<i>Project acronym:</i> OPT4SMART
	<i>Project title:</i> Distributed Optimization Methods for Smart Cyber-Physical Networks
	<i>Principal Investigator:</i> prof. G. NOTARSTEFANO
	<i>Position held:</i>
AUG. 2020 – JAN. 2022	Postdoctoral researcher
NOV. 2016 – AUG 2020	Ph.D. student
JULY 2016 – NOV. 2016	Postgraduate fellow

## AWARDS

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SEP. 2021	The paper “Distributed Mixed-Integer Linear Programming via Cut Generation and Constraint Exchange” is among the three finalists for the IEEE-CSS Italia Best Young Paper Awards.
JULY 2020	One of the ten winners of the “3 Anni in 3 Minuti” (Three years in Three Minutes) competition. The goal is to illustrate, in at most three minutes, the results obtained during the doctoral activities. Competition organized by Accademia Pugliese delle Scienze.

## TEACHING AND TUTORING EXPERIENCES

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A.Y. 2022/2023	Teaching in the <i>Methods and Technologies for Automation and Laboratory of Information Technology and Automation</i> classes, Bachelor Degree in Mechatronics, University of Bologna, 6 CFU
A.Y. 2021/2022	Teaching in the <i>Methods and Technologies for Automation</i> class, Bachelor Degree in Mechatronics Engineering, University of Bologna, 3 CFU
A.Y. 2020/2021	Teaching tutor for the <i>Distributed Control Systems</i> class by prof. G. NOTARSTEFANO, Master Degree in Mechatronics Engineering, University of Bologna, 30 hours

### *Master Theses*

A.Y. 2021/2022	Co-Advisor of R. Dizdari’s Master Thesis entitled <i>An Image Recognition Software for Identification of Vehicle Homologation Tags</i> , Advisor prof. G. NOTARSTEFANO, other Co-Advisor eng. F. ZANATA <i>Collaboration</i> with KPMG
A.Y. 2020/2021	Co-Advisor of N. Valeri’s Master Thesis entitled <i>Virtual Commissioning of a sorting system of an automatic machine for paper roll packaging</i> , Advisor prof. G. NOTARSTEFANO, other Co-Advisors eng. L. MALDINA, eng. M. RASI, eng. F. FIUSCO, dr. D. KUWORNU <i>Collaboration</i> with TMC - IMA GROUP and HOTMINDS  Co-Advisor of L. Sarti’s Master Thesis entitled <i>Deep Reinforcement Learning for Robot Navigation in Unstructured Environments</i> , Advisor prof. G. NOTARSTEFANO, other Co-Advisor eng. O. TREMATERRA <i>Collaboration</i> with THALES ALENIA SPACE

A.Y. 2019/2020	<p>Co-Advisor of L. Pichierri's Master Thesis entitled <i>Formation Control of Drone Swarms via Leader-Follower Maneuver Regulation</i> Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of M. Colonna's Master Thesis entitled <i>Learning of Feed-forward Torque for a Servomechanism: Empirical and Model-based Approaches</i>, Advisor prof. G. NOTARSTEFANO, other Co-Advisors prof. A. TILLI, eng. M. RASI, eng. G. LOPERFIDO <i>Collaboration with TMC - IMA GROUP</i></p> <p>Co-Advisor of L. Bertocchi's Master Thesis entitled <i>Estimation and compensation of drag for nano-quadrotors</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of M. Borghesi's Master Thesis entitled <i>Maneuver Regulation of a Car Vehicle via Transverse Dynamics Control</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of L. Selvatici's Master Thesis entitled <i>Distributed cooperative MPC for aerial robots: a ROS 2 implementation</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of M. Bertoletti's Master Thesis entitled <i>Appearance-based visual localization for indoor navigation of quadrotors</i>, Advisor prof. G. NOTARSTEFANO, other Co-Advisor prof. P. R. GIORDANO (INRIA)</p>
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### Bachelor Theses

A.Y. 2021/2022	<p>Co-Advisor of L. De Dominicis's Bachelor Thesis entitled <i>Implementazione nel simulatore unity di un sistema multi-veicolo in ambiente urbano</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of A. Berti's Bachelor Thesis entitled <i>Integrazione Unity - ROS 2 per la simulazione di robot mobili</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of A. Sarchione's Bachelor Thesis entitled <i>Implementazione di un simulatore PX4 - ROS 2 per un quadrotore</i>, Advisor prof. G. NOTARSTEFANO</p>
A.Y. 2020/2021	<p>Co-Advisor of L. Medici's Bachelor Thesis entitled <i>Simulazione e analisi numerica delle traiettorie di equilibrio per un modello di automobile con trasferimento di carico longitudinale</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of F. Minarelli's Bachelor Thesis entitled <i>Implementazione in ROS 2 di un sistema di prevenzione delle collisioni per punti materiali</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of F. Lenzi's Bachelor Thesis entitled <i>Sviluppo mediante il toolbox ChoiRbot di un algoritmo "market-based" per l'allocazione di task in squadre di robot cooperanti</i>, Advisor prof. G. NOTARSTEFANO</p>
A.Y. 2019/2020	<p>Co-Advisor of G. Bicchi's Bachelor Thesis entitled <i>Implementazione in ROS 2 di uno schema di prevenzione delle collisioni per sistemi multi-robot</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of C. Urbinati's Bachelor Thesis entitled <i>Simulazione tramite ROS di una squadra di robot mobili terrestri cooperanti</i>, Advisor prof. G. NOTARSTEFANO</p> <p>Co-Advisor of E. Andrini's Bachelor Thesis entitled <i>Simulazione e controllo mediante ROS2 di un robot mobile terrestre</i>, Advisor prof. G. NOTARSTEFANO</p>

A.Y. 2016/2017 | Co-Advisor of F. Vergallo's Bachelor Thesis entitled *Sviluppo di un'architettura software per il controllo di robot cooperativi mobili*, Advisor prof. G. NOTARSTEFANO

## PUBLICATIONS

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### *International Journal Articles*

- [1] A. Testa, and G. Notarstefano, "Generalized Assignment for Multi-Robot Systems via Distributed Branch-And-Price", *IEEE Transactions on Robotics*, pp. 1–12, 2021
- [2] A. Testa, A. Camisa and G. Notarstefano, "ChoiRbot: A ROS 2 Toolbox for Cooperative Robotics", *IEEE Robotics and Automation Letters*, Vol. 6, no. 2, pp. 2714–2720, 2021
- [3] A. Testa, A. Rucco and G. Notarstefano, "Distributed Mixed-Integer Linear Programming via Cut Generation and Constraint Exchange", *IEEE Transactions on Automatic Control*, Vol. 65, no. 4, pp. 1456–1467, 2020
- [4] A. Camisa, A. Testa and G. Notarstefano, "Multi-Robot Pickup and Delivery via Distributed Resource Allocation", submitted as regular paper to IEEE Transactions on Robotics (2nd round), 2021
- [5] N. Mimmo, G. Carnevale, A. Testa and G. Notarstefano, "Extremum Seeking Tracking for Derivative-free Distributed Optimization", submitted to journal, 2021

### *International Conference Proceedings*

- [1] A. Testa, F. Farina and G. Notarstefano, "Distributed Submodular Minimization via Block-Wise Updates and Communications", in *21st IFAC World Congress*, (Virtual), pp. 2678–2683, July 2020.
- [2] F. Farina, A. Camisa, A. Testa, I. Notarnicola and G. Notarstefano, "DISROPT: a Python Framework for Distributed Optimization", in *21st IFAC World Congress*, (Virtual), pp. 2666–2671, July 2020.
- [3] A. Testa, I. Notarnicola and G. Notarstefano, "Distributed Submodular Minimization over Networks: a Greedy Column Generation Approach", in *IEEE 57th Conf. on Decision and Control*, (Miami Beach, Florida), pp. 4945–4950, Dec 2018.
- [4] A. Testa, A. Rucco and G. Notarstefano, "A Finite-Time Cutting Plane Algorithm for Distributed Mixed Integer Linear Programming", in *IEEE 56th Conf. on Decision and Control*, (Melbourne, Australia), pp. 3847–3852, Dec 2017.
- [5] M. Tognon, A. Testa, E. Rossi and A. Franchi, "Takeoff and landing on slopes via inclined hovering with a tethered aerial robot", in *International Conf. on Intelligent Robots and Systems (IROS), 2016 IEEE/RSJ*, (Deajeon, South Korea), pp. 1702–1707, Oct 2016.
- [6] P. Carcagnì, M. Del Coco, P. Mazzeo, A. Testa, C. Distante, "Features descriptors for demographic estimation: a comparative study", in *International Workshop on Video Analytics for Audience Measurement in Retail and Digital Signage*, (Stockholm, Sweden), pp. 66–85, Aug 2014.

## TALKS

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### *International Conferences*

ICRA 21	June 2021, “ChoiRbot: A ROS 2 Toolbox for Cooperative Robotics”, Virtual
IFAC WC 20	July 2020, “Distributed Submodular Minimization via Block-Wise Updates and Communications”, Virtual
CDC 18	December 2018, “Distributed Submodular Minimization over Networks: a Greedy Column Generation Approach”, Miami Beach, FL, USA

### *Italian Conferences*

I-RIM 21	October 2021, “ChoiRbot: New Toolkits for Cooperative Robotics in the ROS 2 Framework”, Poster Presentation, Rome
Automatica.it 20	September 2020, “Distributed Mixed-Integer Linear Programming for Task Assignment in Robotic Networks”, Virtual
Automatica.it 18	September 2018, “Distributed Mixed-Integer Linear Programming via Cut Generation and Constraint Exchange”, Florence

### OTHER DISSEMINATION ACTIVITIES

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OCT. 2021	Representative for the OPT4SMART project at the “Maker Faire Rome - The European Edition” edition. I presented the main projects and activities of the research group.
DEC. 2020	
OCT. 2019	
SEP. 2016	C++/ROS implementation and presentation of a multi-quadrotor platform at Night of Researchers 2016, Lecce, Italy

### EDITORIAL ROLES AND REVIEWER ACTIVITIES

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JULY 2022-Ongoing	Reviewer Editor <i>Journal:</i> Frontiers in Robotics and AI <i>Section:</i> Multi-Robot Systems
Journals	IEEE Transactions on Automatic Control, IEEE Transactions on Control Systems Technology, IEEE Transactions on Automation Science and Engineering, IEEE Transactions on Systems, Man and Cybernetics, IEEE Transactions on Neural Networks and Learning Systems, IEEE Control Systems Letters, IEEE Robotics and Automation Letters, International Journal of Robust and Nonlinear Control, Robotics and Autonomous Systems
Conferences	IEEE Conference on Decision and Control, American Control Conference, International Conference on Robotics and Automation, International Conference on Intelligent Robots and Systems, International Conference on Automation Science and Engineering, International Symposium on Distributed Autonomous Robotic Systems, IFAC World Congress
Workshops	International Workshop on Small-Drone Surveillance, Detection and Counteraction Techniques, International Workshop on Metrology for Agriculture and Forestry, Workshop on Aerospace Control Education

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*and selecting staff and I confirm to be informed of my rights in accordance to art. 7 of the above mentioned decree.*

July 25, 2022 |

*Andrea Testa*