

GENNARO NOTOMISTA

PERSONAL INFORMATION

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EDUCATION

AUG 2016 – AUG 2020	Ph.D. in Robotics Georgia Institute of Technology, Atlanta, GA, USA
MAY 2019 – DEC 2019	M.S. in Mathematics Georgia Institute of Technology, Atlanta, GA, USA
MAR 2015 – JAN 2016	M.S. in Mechanical Engineering Università degli Studi di Napoli “Federico II”, Napoli, Italy THESIS SUPERVISOR: Dr. Bruno Siciliano THESIS TITLE: Validation of Model-Based Criticality Estimates in Vehicle Safety Using a Multi Camera Reference System
OCT 2013 – MAR 2015	M.Eng. in Automotive Engineering Technische Hochschule Ingolstadt, Ingolstadt, Germany THESIS SUPERVISOR: Dr. Michael Botsch THESIS TITLE: Parking Maneuver Planning Based on Machine Learning
OCT 2009 – SEP 2012	B.S. in Mechanical Engineering Università degli Studi di Napoli “Federico II”, Napoli, Italy THESIS SUPERVISOR: Dr. Luciano Rosati THESIS TITLE: Polar Decomposition of the Deformation Gradient

RESEARCH INTERESTS

- Energy-aware robotics for long-duration autonomy
- Safe robot learning and control
- Control-theoretic human-robot interaction
- Mechanical design of robotic platforms

RESEARCH AND PROFESSIONAL EXPERIENCES

NOV 2020 – PRESENT	Researcher CNRS, Rennes, France <ul style="list-style-type: none"> • Human-multi robot interaction
JAN 2017 – AUG 2020	Member of the Robotarium Team Georgia Institute of Technology, Atlanta, GA, USA <ul style="list-style-type: none"> • Mechanical design of components of differential drive robots • Mechanical design of components of the Robotarium testbed • Design and implementation of visual tracking algorithms
JUL 2019 – AUG 2019	Visiting Scholar Stanford University, Stanford, CA, USA <ul style="list-style-type: none"> • Autonomous car racing • Robust safety • Adaptive reinforcement learning
JAN 2016 – JUN 2016	Internship Position Istituto Italiano di Tecnologia, Genova, Italy <ul style="list-style-type: none"> • Stereo vision for objects pose estimation • Grasping and mobile manipulation • Vision-aided teleoperated control of robot manipulators
JUL 2015 – DEC 2015	Research Assistant Position Technische Hochschule Ingolstadt, Ingolstadt, Germany <ul style="list-style-type: none"> • Cooperative driving • Stereo vision tracking algorithms and applications • Embedded systems design
JUL 2015 – DEC 2015	Internship Position Audi AG, Ingolstadt, Germany <ul style="list-style-type: none"> • Automotive active safety • Criticality estimation • Stereo vision system design
DEC 2014 – MAR 2015	Software Developer BFFT, Ingolstadt, Germany <ul style="list-style-type: none"> • Vehicle simulation software development • CAN databases for automotive applications

SKILLS

PROGRAMMING SKILLS	<ul style="list-style-type: none"> • Applications: C/C++, Python, Java • Simulation: Matlab/Simulink • Robotics: ROS • CAD/FEA: Solidworks, Creo Elements/Pro, Catia, Ansys • Software version control: Git • Scientific writing: L^AT_EX • OS: Linux, Windows
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LANGUAGES	Italian: native proficiency
	English: full working proficiency
	German: limited working proficiency

GRANTS, SCHOLARSHIPS, AWARDS, AND CERTIFICATES

GRANTS	Alumni Small Grant Program 2020 “What can robots teach us about the Covid-19 pandemic” <i>2020 - 2021</i>
	Fulbright scholarship to pursue doctoral studies in USA <i>September 2016 - June 2017</i>
SCHOLARSHIPS	DAAD scholarship B1 to conduct research in Germany <i>July 2015 - December 2015</i>
	DAAD scholarship A1 to pursue graduate studies in Germany <i>October 2013 - March 2015</i>
AWARDS	Best Paper Award Finalist at International Symposium on Multi-Robot and Multi-Agent Systems <i>New Brunswick, NJ, USA, August 2019</i>
	Study award “Roberto Rocca Educational Program” <i>Napoli, Italy, July 2015</i>
	Study award “Roberto Rocca Educational Program” <i>Napoli, Italy, July 2013</i>
	3rd place in the national Mathematics competition “MeravigliosaMenteMatematica” <i>Capua, Italy, April 2009</i>
	Rotary International “Premiazioni alunni meritevoli” <i>Castellammare di Stabia, Italy, November 2008</i>
CERTIFICATES	Deutschkurs Teilnahmezertifikat, Stufe B1.2 <i>Volkshochschule Ingolstadt, Ingolstadt, Germany, February 2015</i>
	PRO/Engineering CAD Operator <i>Protom Group S.p.A, Napoli, Italy, April 2012</i>
	Solfège exam certificate <i>Conservatorio Musicale di Salerno “Giuseppe Martucci”, Salerno, Italy, June 2005</i>

PUBLICATIONS

Journal Articles

- A16.** Y. Emam, P. Glotfelter, S. Wilson, G. Notomista, and M. Egerstedt, “Data-Driven Robust Barrier Functions for Safe, Long-Term Operation”, *IEEE Transactions on Robotics* (*submitted*)
- A15.** G. Notomista, S. Mayya, Y. Emam, C. Kroninger, A. Bohannon, S. Hutchinson and M. Egerstedt, “A Resilient and Energy-Aware Task Allocation Framework for Heterogeneous Multi-Robot Systems”,

A14. G. Notomista and M. Saveriano, “Safety of Dynamical Systems with Multiple Non-Convex Unsafe Sets Using Control Barrier Functions”, *IEEE Control Systems Letters (to appear)*

A13. S. Wilson, P. Glotfelter, S. Mayya, G. Notomista, Y. Emam, X. Cai, and M. Egerstedt, “The Rob-otarium: Automation of a Remotely Accessible, Multi-Robot Testbed”, *IEEE Robotics and Automation Letters*, Vol. 6, no. 2, pp. 2922-2929, 2021

A12. M. Ohnishi, G. Notomista, M. Sugiyama, and M. Egerstedt, “Constraint learning for control tasks with limited duration barrier functions”, *Automatica*, Vol. 127, 2021

A11. G. Notomista and M. Egerstedt, “Persistification of robotic tasks”, *IEEE Transactions on Control Systems Technology*, vol. 29, no. 2, pp. 756-767, 2021

A10. M. Santos, G. Notomista, S. Mayya, and M. Egerstedt, “Interactive Multi-Robot Painting Through Colored Motion Trails”, *Frontiers in Robotics and AI*, 7, 143, 2020

A9. A. Ames, G. Notomista, Y. Wardi, and M. Egerstedt, “Integral Control Barrier Functions for Dynamically Defined Control Laws”, *IEEE Control Systems Letters*, Vol. 5, No. 3, pp. 887-892, 2020

A8. R. Funada, X. Cai, G. Notomista, M. W. Surya Atman, J. Yamauchi, M. Fujita, and M. Egerstedt, “Coordination of robot teams over long distances. From Georgia Tech to Tokyo Tech and back: An 11,000 km multi-robot experiment”, *IEEE Control Systems Magazine*, Vol. 40, No. 4, pp. 53-79, 2020

A7. S. Wilson, P. Glotfelter, L. Wang, S. Mayya, G. Notomista, M. Mote, and M. Egerstedt, “The Rob-otarium: Globally impactful opportunities, challenges, and lessons learned in remote-access, distributed control of multi-robot systems”, *IEEE Control Systems Magazine*, Vol. 40, No. 1, pp. 26-44, 2020

A6. M. Ohnishi, L. Wang, G. Notomista, and M. Egerstedt, “Safety-aware adaptive reinforcement learning with applications to brushbot navigation”, *IEEE Transactions on Robotics*, Vol. 35, No. 5, pp. 1186-1205, 2019

A5. G. Notomista, Y. Emam, and M. Egerstedt, “The SlothBot: A novel design for a wire-traversing robot”, *IEEE Robotics and Automation Letters*, Vol. 4, No. 2, pp. 1993-1998, 2019

A4. M. Egerstedt, J. Pauli, G. Notomista, and S. Hutchinson, “Robot ecology: Constraint-based control design for long duration autonomy”, *Annual Reviews in Control*, Vol. 46, pp. 1-7, 2018

A3. G. Notomista, S. Ruf, and M. Egerstedt, “Persistification of robotic tasks using control barrier functions”, *IEEE Robotics and Automation Letters*, Vol. 3, No. 2, pp. 758-763, 2018

A2. G. Notomista and M. Botsch, “A machine learning approach for the segmentation of driving maneuvers and its application in autonomous parking”, *Journal of Artificial Intelligence and Soft Computing Research*, Vol. 7, No. 4, pp. 243-255, 2017

A1. G. Notomista, M. Selvaggio, F. Sbrizzi, G. Di Maio, S. Grazioso, and M. Botsch, “A fast airplane boarding strategy using online seat assignment based on passenger classification”, *Journal of Air Transport Management*, Vol. 53, pp. 140-149, 2016

Book Chapters

B1. G. Notomista and X. Cai, “A Safety and Passivity Filter for Robot Teleoperation Systems”, *In M.*

Conference Proceedings

- C22.** Y. Emam, G. Notomista, P. Glotfelter, and M. Egerstedt, “Data-Driven Adaptive Task Allocation for Heterogeneous Multi-Robot Teams Using Robust Control Barrier Functions”, *IEEE International Conference on Robotics and Automation*, 2021
- C21.** G. Notomista and M. Egerstedt, “Communication constrained distributed spatial field estimation using mobile sensor networks”, *IFAC World Congress*, 2020
- C20.** G. Notomista, M. Wang, M. Schwager, and M. Egerstedt, “Enhancing game-theoretic autonomous car racing using control barrier functions”, *IEEE International Conference on Robotics and Automation*, 2020
- C19.** G. Notomista, S. Mayya, M. Selvaggio, M. Santos, and C. Secchi, “A set-theoretic approach to multi-task execution and prioritization”, *IEEE International Conference on Robotics and Automation*, 2020
- C18.** Y. Emam, S. Mayya, G. Notomista, A. Bohannon, and M. Egerstedt, “Adaptive task allocation for heterogeneous multi-robot teams with evolving and unknown robot capabilities”, *IEEE International Conference on Robotics and Automation*, 2020
- C17.** G. Notomista, S. Mayya, A. Mazumdar, S. Hutchinson, and M. Egerstedt, “A study of a class of vibration-driven robots: Modeling, analysis, control and design of the brushbot”, *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2019
- C16.** S. Mayya, G. Notomista, D. Shell, S. Hutchinson, and M. Egerstedt, “Non-uniform robot densities in vibration driven swarms using phase separation theory”, *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2019
- C15.** G. Notomista, X. Cai, J. Yamauchi, and M. Egerstedt, “Passivity-based decentralized control of multi-robot systems with delays using control barrier functions”, *IEEE International Symposium on Multi-Robot and Multi-Agent Systems*, 2019
- C14.** M. Santos, S. Mayya, G. Notomista, and M. Egerstedt, “Decentralized minimum-energy coverage control for time-varying density functions”, *IEEE International Symposium on Multi-Robot and Multi-Agent Systems*, 2019
- C13.** G. Notomista, S. Mayya, S. Hutchinson, and M. Egerstedt, “An optimal task allocation strategy for heterogeneous multi-robot systems”, *European Control Conference*, 2019
- C12.** A. Ames, S. Coogan, M. Egerstedt, G. Notomista, K. Sreenath, and P. Tabuada, “Control barrier functions: Theory and applications”, *European Control Conference*, 2019
- C11.** G. Notomista and M. Egerstedt, “Constraint-driven coordinated control of multi-robot systems”, *American Control Conference*, 2019
- C10.** G. Notomista, M. Santos, S. Hutchinson, and M. Egerstedt, “Sensor coverage control using robots constrained to a curve”, *IEEE International Conference on Robotics and Automation*, 2019
- C9.** S. Mayya, G. Notomista, and M. Egerstedt, “Optimal task allocation in heterogeneous multi-robot

systems using a mixed centralized/decentralized strategy”, *Workshop "Resilient Robot Teams: Composing, Acting, and Learning" at IEEE International Conference on Robotics and Automation, 2019*

C8. G. Notomista and M. Egerstedt, “Coverage control for wire-traversing robots”, *IEEE International Conference on Robotics and Automation, 2018*

C7. M. Selvaggio and G. Notomista, “Towards natural human-swarm teleoperation using hand synergies”, *Workshop "Swarms: From Biology to Robotics and Back" at IEEE International Conference on Robotics and Automation, 2018*

C6. M. Selvaggio, S. Grazioso, G. Notomista, and F. Chen, “Towards a self-collision aware teleoperation framework for compound robots”, *IEEE World Haptics Conference, 2017*

C5. F. Sbrizzi, S. Grazioso, M. Selvaggio, G. Di Maio, and G. Notomista, “Enhancing airplane boarding procedure using vision based passenger classification”, *IEEE International Conference on Intelligent Transportation Systems, 2016*

C4. M. Selvaggio, G. Notomista, F. Chen, B. Gao, F. Trapani, and D. Caldwell, “Enhancing bilateral teleoperation using camera-based online virtual fixtures generation”, *IEEE/RSJ International Conference on Intelligent Robots and Systems, 2016*

C3. M. Selvaggio, F. Chen, B. Gao, G. Notomista, F. Trapani, and D. Caldwell, “Vision based virtual fixture generation for teleoperated robotic manipulation”, *IEEE International Conference on Advanced Robotics and Mechatronics, 2016*

C2. G. Notomista, A. Kammenhuber, P. Nadarajan, M. Botsch, and M. Selvaggio, “Relative motion estimation based on sensor eigenfusion using a stereoscopic vision system and adaptive statistical filtering”, *VDE International Symposium on Robotics, 2016*

C1. G. Notomista and M. Botsch, “Maneuver segmentation for autonomous parking based on ensemble learning”, *IEEE International Joint Conference on Neural Networks, 2015*

PATENTS

- The SlothBot: A Novel Design for a Wire-Traversing Robot
- The Brushbot: A Robust and Versatile Swarm Robotics Platform (provisional)

REFERENCES

- Dr. Magnus Egerstedt, Georgia Institute of Technology, <http://www.ece.gatech.edu/~magnus>
- Dr. Seth Hutchinson, Georgia Institute of Technology, <https://www.cc.gatech.edu/~seth>
- Dr. Mac Schwager, Stanford University, <http://www.stanford.edu/people/schwager>
- Dr. Wayne Book, Georgia Institute of Technology, <https://www.me.gatech.edu/faculty/book>
- Dr. Samuel Coogan, Georgia Institute of Technology, <http://coogan.ece.gatech.edu/>
- Dr. Michael Botsch, Technische Hochschule Ingolstadt, <https://www.thi.de/carissma/personen/prof-dr-ing-michael-botsch>