Giuseppe Loianno | Curriculum Vitae

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Date of Birth: 11/03/1985, Nationality: Italian

Professional Experience

- **New York University** — **New York, USA**
  Assistant Professor, Tandon School of Engineering — *September 2018–present*
- Affiliated faculty NYU Riskecon Lab Courant Institute of Mathematical Sciences, NYU Wireless, NYU CUSP Center for Urban Science And Progress
- **University of Pennsylvania** — **Philadelphia, USA**
  Research Scientist, Lecturer and Team Leader, GRASP Lab — *July 2015–August 2018*
- **University of Pennsylvania** — **Philadelphia, USA**
  Postdoctoral Researcher, GRASP Lab — *June 2014–June 2015*
  Advisor: Prof. Dr. V. Kumar

Education

Academic Qualifications

- **University of Naples "Federico II"** — **Naples, Italy**
  Ph.D. in Computer and Control Engineering, PRISMA Lab — *2011–2014*
  Thesis: "**The Role of Vision Algorithms for Micro Aerial Vehicles**"
  Advisors: Prof. Dr. B. Siciliano, Prof. Dr. V. Lippiello
- **University of Naples "Federico II"** — **Naples, Italy**
  Master (Laurea Specialistica) in Automation Engineering, 110/110 cum laude — *2007–2010*
  Thesis: **"Control of Micro Aerial Vehicles using a Vision System based on Optical Flow"**
  Advisors: Prof. Dr. B. Siciliano, Prof. Dr. R. Siegwart, Prof. Dr. D. Scaramuzza
  Master Thesis in Control and Aerial Robotics
  ETH Zürich at ASL (Autonomous System Lab)
- **University of Naples "Federico II"** — **Naples, Italy**
  Bachelor (Laurea Triennale) in Automation Engineering, 110/110 cum laude — *2004–2007*
  Thesis: **"Grasping Problems in Robotics"**
  Advisors: Prof. Dr. Bruno Siciliano, Prof. Dr. Luigi Villani

International Experiences

- **Visiting Ph.D. student at the University of Pennsylvania** — **Philadelphia, USA**
  GRASP Lab — *April 2013–March 2014*
- **Visiting Ph.D. student at KTH** — **Stockholm, Sweden**
  Automatic Control Laboratory — *August 2012*
- **Internship and Master Thesis at ETH Zürich** — **Zürich, Switzerland**
  Autonomous System Lab — *October 2009–March 2010*
- **Exchange Period at KTH** — **Stockholm, Sweden**
  Master Student Exchange Program — *August 2008–March 2009*

Current Projects and Leadership

Project Investigator

Research Grants

- Project Investigator (PI), "DCIST CRA Distributed and Collaborative Intelligent Systems and Technology Collaborative Research Alliance", 2018
- Project Investigator (PI), "The Mohamed Bin Zayed International Robotics Challenge (MBZIRC) 2019", Abu Dhabi, 2019
- NYU Wireless grant 2019
- Nokia research award 2019
- Tepco grant 2019
- Qualcomm grant 2019

Other or Past Research Fundings

- Project Investigator (PI), "The Mohamed Bin Zayed International Robotics Challenge (MBZIRC) 2017", Abu Dhabi, 2017
- MAST Project Investigator (co-PI), "Robust estimation, planning and control for fast navigation in 3-D indoor environments"
- MAST Project Investigator (co-PI), "Vision-Based Cooperative Control for Aerial Robots"
- MAST Project Investigator (co-PI), "Air Ground Mapping of Feature Rich 3-D Indoor Environments with RGB-D Sensors"
- Qualcomm grant
- Tepco grant
- Terraswarm
- ONR SMART
- NSF Printable Robots
- FLA DARPA grant

Publications

For latest update the reader can access my Google Scholar

Patents

- G. LOIANNO, Y. Mulgaonkar, and V. Kumar, "**Description Systems, devices and methods for on-board sensing and control of Micro Aerial Vehicles**", 2018.
- G. LOIANNO, D. Thakur, W. Liu, J. Wang, and V. Kumar, "**Unmanned Aerial Systems for Exploring Hazardous Environments**", provisional filed, pending, 2017.

Book Chapters

- J. Cacace, A. Finzi, V. Lippiello, G. LOIANNO, and D. Sanzone, "**Aerial Service Vehicles for Industrial Inspection: Task Decomposition and Plan Execution**", Lecture Notes in Artificial Intelligence, Springer-Verlag, Heidelberg, Germany, 2013.
- G. LOIANNO, A. Weinstein, and V. Kumar, "**Unmanned Aerial Vehicles Swarms**", Springer Encyclopedia of Robotics, Springer, 2019.

International Journal Papers

1. J. Cacace, A. Finzi, V. Lippiello, G. LOIANNO, and D. Sanzone, "**Aerial Service Vehicles for Industrial Inspection: Task Decomposition and Plan Execution**", Applied Intelligence, Springer, 2014.
2. J. Thomas, G. LOIANNO, J. Polin, K. Sreenath, and V. Kumar, "**Toward autonomous avian-inspired grasping for micro aerial vehicles**", Bioinspiration and Biomimetics, vol. 9, no. 2, p. 025010, June 2014.
3. G. LOIANNO, G. Cross, C. Qu, Y. Mulgaonkar, J. A. Hesch, and V. Kumar, "**Flying Smartphones: Automated Flight Enabled by Consumer Electronics**", IEEE Robotics and Automation Magazine, June 2015.
4. R. Tron, J. Thomas, G. LOIANNO, K. Daniilidis, and V. Kumar, "**A Distributed Optimization Framework for Localization and Formation Control with Applications to Vision-Based Measurements**", IEEE Control Systems Magazine, 2016.
5. J. Thomas, M. Pope, G. LOIANNO, E. W. Hawkes, M. A. Estrada, H. Jiang, M. R. Cutkosky, and V. Kumar, "**Aggressive Flight for Perching on Inclined Surfaces**", Journal of Mechanisms and Robotics, 2016.
6. J. Thomas, G. LOIANNO, K. Daniilidis, and V. Kumar, "**Visual Servoing of Quadrotors for Perching by Hanging from Cylindrical Objects**", IEEE RA-L Robotics and Automation Letters, January, 2016.
7. M. Saska, T. Baca, J. Thomas, J. Chudoba, L. Preucil, T. Krajnik, J. Faigl, G. LOIANNO, and V. Kumar, "**System for Stabilization of Micro Aerial Vehicle Swarms using onboard Visual Relative Localization**", Autonomous Robots, 2016.
8. M. Saska, V. Vonásek, J. Chudoba, J. Chudoba, J. Thomas, G. LOIANNO, and, V. Kumar, "**Swarm Distribution and Deployment for Cooperative Surveillance by Micro-Aerial Vehicles**", Journal of Intelligent & Robotic Systems, 2016.
9. G. LOIANNO, C. Brunner, G Mcgrath, and V. Kumar, "**Estimation, Control and Planning for Aggressive Flight with a Small Quadrotor with a Single Camera**

and IMU", IEEE RA-L Robotics and Automation Letters and ICRA 2017 and presented at ICRA 2017.

10. G. LOIANNO, Y. Mulgaonkar, C. Brunner, D. Ahuja, A. Ramanandan, M. Chari, S. Diaz, and V. Kumar, "**Autonomous Flight and Cooperative Control for Reconstruction using Aerial Robots Powered by Smartphones**", The International Journal of Robotics Research, IJRR, accepted, 2018.
11. A. Santamaria–Navarro, G. LOIANNO, J. Solà, V. Kumar, and J. Andrade–Cetto, "**Autonomous Navigation of Micro Aerial Vehicles using Fast and Low-cost Sensors**", Autonomous Robots, 2018.
12. J. Thomas, J. Welde, G. LOIANNO, K. Daniilidis, and V. Kumar, "**Autonomous Flight for Detection, Localization, and Tracking of Moving Targets with a Small Quadrotor**", IEEE RA-L Robotics and Automation Letters, 2017 and IROS 2017.
13. T. Ozaslan, G. LOIANNO, J. Keller, C. J. Taylor, and V. Kumar , "**Autonomous Navigation and Mapping for Inspections of Penstocks and Tunnels with MAVs**", IEEE RA-L Robotics and Automation Letters, 2017 and presented at IROS 2017.
14. K. Mohta, S. Liu, M. Watterson, $\cdots$, G. LOIANNO, and V. Kumar, "**Estimation, Control and Planning for High Speed Flight with a Quadrotor using On–board Sensing**" Journal of Field Robotics, 2017.
15. G. LOIANNO and V. Kumar, "**Cooperative Transportation using Small Quadrotors using Monocular Vision and Inertial Sensing**", IEEE RA-L Robotics and Automation Letters and ICRA, 2018.
16. A. Weinstein, A. Cho, G. LOIANNO, and V. Kumar, "**VIO-Swarm: A Swarm of 250g Quadrotors**", IEEE RA-L Robotics and Automation Letters 2018 and presented at ICRA, 2018.
17. G. LOIANNO, V. Spurny, T. Baca, J. Thomas, D. Thakur, T. Krajnik, A. Zhou, A. Cho, M. Saska, and V. Kumar, "**Localization, Grasping, and Transportation of Magnetic Objects by a team of MAVs in Challenging Desert like Environments**", IEEE RA-L Robotics and Automation Letters and ICRA, 2018.
18. T. Baca, S. Petr, V. Spurny, D. Hert, R. Penicka, M. Saska, J. Thomas, D. Thakur, G. Loianno, and V. Kumar, "**Autonomous Landing on a Moving Vehicle with an Unmanned Aerial Vehicle**", Journal of Field Robotics, 2018.
19. V. Spurny, T. Baca, M. Saska, R. Penicka , T. Krajnik, J. Thomas, D. Thakur, G. Loianno, and V. Kumar, "**Cooperative Autonomous Search, Grasping and Delivering in a Treasure Hunt Scenario by a Team of UAVs**", Journal of Field Robotics, 2018.
20. G. LOIANNO, D. Scaramuzza, and V. Kumar, "**Special Issue on High-Speed Vision-Based Autonomous Navigation of UAVs**", Journal of Field Robotics, 2018.
21. T. Ozaslan, G. LOIANNO, J. Keller, C. J. Taylor, and V. Kumar , "**Spatio-Temporally Smooth Local Mapping and State Estimation inside Generalized Cylinders with Micro Aerial Vehicles**", IEEE RA-L Robotics and Automation Letters, 2018 and IROS 2018.
22. J. Svacha, G. LOIANNO, and V. Kumar , "**Inertial Yaw-Independent Velocity and Attitude Estimation for High Speed Quadrotor Flight**", IEEE RA-L Robotics and Automation Letters, 2019 and presented at ICRA 2019.

23. L. Yuan, C. Reardon, G. Warnell, and G. LOIANNO , "**Human Gaze-Driven Spatial Tasking of an Autonomous MAV**", IEEE RA-L Robotics and Automation Letters, 2019 and presented at ICRA 2019.
24. T. Nguyen, S. S. Shivakumar, I. D. Miller, J. Keller, E. S. Lee, A. Zhou, T. Özaslan, G. LOIANNO, C. J. Taylor, and V. Kumar, "**MAVNet: An Effective Semantic Segmentation Micro-Network for MAV-Based Tasks**", IEEE RA-L Robotics and Automation Letters 2019 and presented at IROS 2019.
25. E. Lee, G. LOIANNO, D. Thakur, and V. Kumar, "**Experimental Evaluation and Characterization of Radioactive Source Effects on Robot Perception**", IEEE RA-L Robotics and Automation Letters 2020 and presented at ICRA 2020.
26. J. Svacha, J. Paulos, G. LOIANNO, and V. Kumar, "**IMU-Based Inertia Estimation for a Quadrotor Using Newton-Euler Dynamics**", IEEE RA-L Robotics and Automation Letters 2020 and presented at ICRA 2020.

International Conference Papers and Workshops

1. V. Lippiello, G. LOIANNO and B. Siciliano "**MAV Indoor Navigation Based on a Closed-Form Solution for Absolute Scale Velocity Estimation Using Optical Flow and Inertial Data**", IEEE International conference on Decision and Control December 2011, Orlando, Florida.
2. J. Cacace, A. Finzi, V. Lippiello, G. LOIANNO, and D. Sanzone, "**Aerial Service Vehicles for Industrial Inspection: Task Decomposition and Plan Execution**" , 26th International Conference on Industrial, Engineering and other Applications of Applied Intelligent Systems, Amsterdam, The Netherlands, 2013. **Nomination for the Best Paper Award**
3. J. Cacace, A. Finzi, V. Lippiello, G. LOIANNO, and D. Sanzone, "**Integrated Planning and Execution for an Aerial Service Vehicle**", 23rd International Conference on Automated Planning and Scheduling, Workshop on Planning and Robotics, Rome, Italy, June 2013.
4. J. Thomas, J. Polin, G. LOIANNO, K. Sreenath, and V. Kumar, "**Avian-Inspired Grasping for Quadrotor MAVs**", RSS Robotics Science and Systems Conference, Workshop on Aerial Mobile Manipulation, 24-28 June 2013, Berlin, Germany.
5. F. Cordella, F. Di Corato, G. LOIANNO, L. Zollo, and B. Siciliano, "**Robust Pose Estimation Algorithm for Wrist Motion Tracking**", IEEE/RSJ Conference on Intelligent Robots and Systems, 3-7 November 2013, Tokyo, Japan.
6. G. LOIANNO, V. Lippiello, C. Fischione and B. Siciliano, "**Visual and Inertial Multi-Rate Data Fusion for Motion Estimation via Pareto-Optimization**", IEEE/RSJ Conference on Intelligent Robots and Systems, 3-7 November 2013, Tokyo, Japan.
7. G. LOIANNO, J. Thomas, K. Mohta, K. Sreenath, and V. Kumar, "**From autonomous grasping and navigation to cooperative localization for micro aerial vehicles**", IEEE/RSJ Conference on Intelligent Robots and Systems, Workshop From Remotely-Controlled to Autonomous Collaborative Robots, 3-7 November 2013, Tokyo, Japan.
8. G. LOIANNO, J. Thomas, K. Mohta, S. Shen, K. Sreenath, and V. Kumar, "**Vision based navigation, grasping and localization for micro aerial vehicles**", IEEE/RSJ Conference on Intelligent Robots and Systems, Workshop Vision-based Closed-Loop Control and Navigation of Micro Helicopters in GPS-denied Environments, 3-7 November 2013,

Tokyo, Japan.

9. G. LOIANNO, V. Lippiello, and B. Siciliano, "**Fast Localization and 3D Mapping using a RGB-D Sensor**", IEEE International Conference on Advanced Robotics, 25-29 November 2013, Montevideo, Uruguay.
10. J. Thomas, G. LOIANNO, K. Sreenath, and V. Kumar, "**Toward Image Based Visual Servoing for Aerial Grasping and Perching**", IEEE/ICRA International Conference on Robotics and Automation, 31 May-7 June 2014, Hong Kong, China.
11. M. Saska, J. Chudoba, L. Precil, J. Thomas, G. LOIANNO, A. Tresnak, V. Vonasek, and V. Kumar, "**Autonomous deployment of swarms of micro-aerial vehicles in cooperative surveillance**", International Conference on Unmanned Aircraft Systems (ICUAS), Orlando, USA, 2014.
12. M. Saska, J. Chudoba, L. Precil, J. Thomas, G. LOIANNO, and V. Kumar, "**Plume Tracking by a Self-Stabilized Group of Micro Aerial Vehicles**", Modelling and Simulation for Autonomous System Workshop, Rome, 2014.
13. R. Tron, J. Thomas, G. LOIANNO, J. Polin, V. Kumar, and K. Daniilidis, "**Vision-based Formation Control of Aerial Vehicles**", RSS Robotics Science and Systems, Distributed Control and Estimation for Robotic Vehicle Networks, Berkeley, USA, July 2014.
14. G. LOIANNO, J. Thomas and V. Kumar, "**Cooperative Localization and Mapping of MAVs using RGB-D Sensors**", IEEE/ICRA International Conference on Robotics and Automation, 26-30 May 2015, Seattle, USA.
15. J. Thomas, G. LOIANNO, M. Pope, E. W. Hawkes, M. A. Estrada, H. Jiang, M. R. Cutkosky, and V. Kumar, "**Planning and Control of Aggresive Maneuvers for Perching on Inclined and Vertical Surfaces**", International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE), 2015.
16. G. LOIANNO, Y. Mulgaonkar, C. Brunner, D. Ahuja, A. Ramanandan, M. Chari, S. Diaz, and V. Kumar, "**Smartphones Power Flying Robots**", IEEE/RSJ International Conference on Intelligent Robots and Systems, 28 September-2 October 2015, Hamburg, Germany.
17. A. Belenguer, G. LOIANNO, V. Kumar, and J. Civera, "**Visual-Inertial Direct SLAM**", IEEE/ICRA International Conference on Robotics and Automation, Stockholm, 2016.
18. G. LOIANNO, M. Watterson, and V. Kumar, "**Visual Inertial Odometry for Quadrotors on SE(3)**", IEEE/ICRA International Conference on Robotics and Automation, Stockholm, 2016.
19. G. LOIANNO and V. Kumar, "**Vision-based Fast Navigation of Micro Aerial Vehicles**", SPIE conference, Baltimore, April 2016.
20. J. Thomas, G. LOIANNO, K. Daniilidis and V. Kumar, "**The Role of Vision in landing, Perching and Grasping for MAV**", SPIE conference, Baltimore, April 2016.
21. G. LOIANNO, Y. Mulgaonkar, C. Brunner, D. Ahuja, A. Ramanandan, M. Chari, S. Diaz, and V. Kumar, "**A Swarm of Flying Smartphones**", IEEE/RSJ International Conference on Intelligent Robots and Systems, 10-14 October 2016, Daejeon, South Korea.
22. R. Tron, J. Thomas, G. LOIANNO, K. Daniilidis, and V. Kumar, "**Bearing-Only Formation Control with Auxiliary Distance Measurements, Leaders, and Collision Avoidance**", IEEE International Conference on Decision and Control 2016, Las Vegas,

USA.

23. T. Baca, G. LOIANNO, M. Saska, "**Embedded Model Predictive Control of Unmanned Micro Aerial Vehicles**", IEEE 21st International Conference on Methods and Models in Automation and Robotics (MMAR), Miedzyzdroje, Poland, 2016.
24. M. Saska, T. Baca, V. Spurny, G. LOIANNO, J. Thomas, T. Krajnik, P. Stepan, and V. Kumar, "**Vision-based high-speed autonomous landing and cooperative objects grasping - towards the MBZIRC competition**", IEEE/RSJ Conference on Intelligent Robots and Systems, Workshop High-Speed Autonomous Navigation of UAVs, 10-14 October 2016, Daejeon, South Korea.
25. W. Liu, G. LOIANNO, K. Mohta, K. Daniilidis, and V. Kumar, "**Semi-Dense Visual-Inertial Odometry and Mapping for Quadrotors with SWAP Constraints**", IEEE/ICRA International Conference on Robotics and Automation, 2018.
26. J. Svacha, K. Mohta, G. LOIANNO, and V. Kumar, "**Inertial Velocity Estimation for Quadrotors**", IEEE/RSJ Conference on Intelligent Robots and Systems, 2018.
27. T. Baca, D. Hert , G. Loianno, V. Kumar and M. Saska, "**Model Predictive Trajectory Tracking and Collision Avoidance for Reliable Outdoor Deployment of Unmanned Aerial Vehicles**", IEEE/RSJ Conference on Intelligent Robots and Systems, 2018.
28. G. Loianno, D. Thakur, W. Liu and V. Kumar, "**Nuclear Environments Inspection with Micro Aerial Vehicles: Algorithms and Experiments**", International Symposium on Experimental Robotics, 2018.
29. V. Wuest, V. Kumar, and G. LOIANNO, "**Online Estimation of Geometric and Inertia Parameters for Multirotor Aerial Vehicles**", IEEE/ICRA International Conference on Robotics and Automation, 2019.
30. W. Xia, M. Polese, M. Mezzavilla, G. LOIANNO, S. Rangan, and Michele Zorzi, "**Millimeter Wave Remote UAV Control and Communications for Public Safety Scenarios**, IEEE International Conference on Sensing, Communication and Networking,s International Workshop on Internet of Autonomous Unmanned Vehicles, 2019.
31. D. Thakur, G. LOIANNO, L. J. Lipschitz, A. Zhou, and V. Kumar, "**Autonomous Inspection of a Containment Vessel using a Micro Aerial Vehicle**", IEEE/SSRR International Symposium on Search, Safety and Rescue Robotics, 2019.
32. G. Li and G. LOIANNO, "**Vision-based Cooperative Transportation with MAVs**", Robot Learning Workshop Poster Session, 2019, Lehigh University.
33. S. Patel, A. Sarabakha, D. Kircali, G. LOIANNO, and E. Kayacan, "**Artificial Neural Network-Assisted Controller for Fast and Agile UAV Flight: Onboard Implementation and Experimental Results**", IEEE/RSJ International Conference on Intelligent Robots and Systems, Workshop on Fast Neural Perception and Learning for Intelligent Vehicles and Robotics, 2019.
34. S. Patel, A. Sarabakha, D. Kircali, G. LOIANNO, and E. Kayacan, "**Artificial Neural Network-Assisted Controller for Fast and Agile UAV Flight: Onboard Implementation and Experimental Results**", IEEE International Workshop on Research, Education and Development on Unmanned Aerial Systems, 2019.
35. D. Nguyen, G. LOIANNO, V. Ho, "**Towards Design of a Deformable Propeller for Drone Safety**", IEEE International Conference on Soft Robotics, 2020.

Invited Talks

- G. LOIANNO, "**Challenges and Opportunities for Autonomous Navigation of Micro Aerial Vehicles**", NYU CUSP Seminar Series, November, 2019.
- G. LOIANNO, "**Resilient Agile Aerial Navigation**", IEEE/RSJ International Conference on Intelligent Robots and Systems, Workshop on Autonomous Agile Swarm Navigation and Interaction, Macau, China, November, 2019.
- G. LOIANNO, "**Challenges and Opportunities for Visual Inertial Navigation of Aerial Robots**", IEEE/RSJ International Conference on Intelligent Robots and Systems, Workshop on Visual-Inertial Navigation: Challenges and Applications, Macau, China, November, 2019.
- G. LOIANNO, "**Autonomous Agile Swarm Navigation and Interaction**", IEEE/RSJ International Conference on Intelligent Robots and Systems, Workshop on Aerial Swarms, Macau, China, November, 2019.
- G. LOIANNO, "**Autonomous Agile Human-friendly Drones**", Seminar University of Rhode Islands, October 2019.
- G. LOIANNO, "**Autonomous Flying Robots: Agile Navigation and Physical interaction**", NASA Jet Propulsion Lab, September 2019.
- G. LOIANNO, "**Autonomous Agile Human-friendly Drones**", Robotics Science and Systems Conference, Perception and Control for Fast and Agile Super-vehicles Workshop, Freiburg, March 2019.
- G. LOIANNO, "**Flying Robots: Autonomous Agile Physical Interaction**", Robotics Science and Systems Conference, Aerial Interaction and Manipulation: Unsolved Challenges and Perspectives Workshop, Freiburg, March 2019.
- G. LOIANNO, "**Autonomous Agile Human-friendly Drones**", University of Maryland College Park for the Robotics and Computer Vision seminar, March 2019.
- G. LOIANNO, "**Autonomous Agile Human-friendly Drones**", International Symposium on Robotics and Artificial Intelligence, Abu Dhabi, March 2019.
- G. LOIANNO, "**Autonomous Agile Human-friendly Drones**", NYC Media Lab Event Panel, New York, November, 2018.
- G. LOIANNO, "**Autonomous Agile Human-friendly Drones**", AI: What Future Can We Build Together?, Philadelphia, November, 2018.
- G. LOIANNO, "**Autonomous Agile Human-friendly Drones**", Google New York, November, 2018.
- G. LOIANNO, "**Autonomous Agile Human-friendly Drones**", IEEE/RSJ International Conference on Intelligent Robots and Systems, Workshop on Vision-based Drones: What's Next?, Madrid, Spain, October, 2018.
- G. LOIANNO, "**Flying Robots: Agile Autonomous Navigation and Physical Interaction**", New York University, January, 2018.
- G. LOIANNO, "**Flying Robots: Agile Autonomous Navigation and Physical Interaction**", University of California San Diego, January, 2018.
- G. LOIANNO, "**Flying Robots: Agile Autonomous Navigation and Physical Interaction**", Temple University, January, 2018.
- G. LOIANNO, "**Flying Robots: Agile Autonomous Navigation, Transportation and**

Physical Interaction", IEEE/RSJ International Conference on Intelligent Robots and Systems, Workshop on Vision-based Agile Autonomous Navigation of UAVs, Vancouver, Canada, September, 2017.

- G. LOIANNO, "**Research Challenges and Opportunities for Autonomous Inspection of Penstocks and Agile Navigation with MAVs**", IEEE/RSJ International Conference on Intelligent Robots and Systems, Workshop on Perception and Planning for Robotic Inspection, Vancouver Canada, September, 2017.
- G. LOIANNO, "**Vision-based Fast and Aggressive Navigation with MAVs**", IEEE International Confenrence on Decision and Control (CDC), Perception, Control and Planning for Agile Autonomous Agents Workshop, Las Vegas, December 2016.
- G. LOIANNO, "**MBZIRC competition: Challenges, Results and Social Impacts of the 2017 competition**", Workshop Challenges in Robot Competitions, IEEE/RSJ International Conference on Intelligent Robots and Systems, Daejeon, October, 2016.
- G. LOIANNO, "**Vision-based Fast Localization and Environment Interaction with MAVs**", Vision-based High Speed Autonomous Navigation of UAVs, IEEE/RSJ International Conference on Intelligent Robots and Systems, 2 October 2015, Hamburg, Germany.
- G. LOIANNO, "**Flying Robots: Fast Autonomous Navigation and Physical Interaction**", Temple University, Sbarro Research Center, Philadelphia, March 2016.
- G. LOIANNO, "**Flying Robots: Fast Autonomous Navigation and Physical Interaction**", University of Southern California, Los Angeles, February 2016.
- G. LOIANNO, "**Aerial Manipulation of Suspended Payloads**", Aerial Manipulation and Load Transportation Workshop, IEEE International Conference on Robotics and Automation, Seattle, 2015.
- G. LOIANNO, "**Fast Localization and Environment Interaction with MAVs**", Vision-based Control and Navigation of Small Lightweight UAVs workshop, IEEE/RSJ International Conference on Intelligent Robots and Systems, 2 October 2015, Hamburg, Germany.
- G. LOIANNO, "**Vision-based Navigation, Planning and Control of Micro Aerial Vehicles**", University of Mayland College Park, April 2015.
- G. LOIANNO, "**Smartphones Power Flying Robots**", RSS Robotics Science and Systems, Workshop on Resource-efficient Integration of Planning and Perception for True Autonomous Operation of Micro Air Vehicles (MAVs), Berkeley, July 2014.
- G. LOIANNO, "**Visual Navigation, 3D Mapping and Reconstruction for MAVs**", University of Pennsylvania, Philadelphia, April 2013.

Awards

- G. LOIANNO, NIAF National Italian American Foundation Young Investigator Award, 2018, Washington D.C., USA.
- G. LOIANNO, **Best Reviewer Award**, Conference Editorial Board (CEB) , ICRA 2016, Stockholm, Sweden.
- G. LOIANNO, Cover of the IEEE Robotics and Automation Magazine, vol. 22, issue 2, USA.
- G. LOIANNO, Nomination for the **Best Paper Award** at the 26th International Conference

on Industrial, Engineering and other Applications of Applied Intelligent Systems, Amsterdam, The Netherlands, 2013.
- G. LOIANNO, Recognition from the Undersecretary of Defense, August 2016, USA.
- G. LOIANNO, Mohamed Bin Zayed International Robotics Challenge, 1^{st} place in Challenge 3, 2^{nd} place in Challenge 1 and 3^{rd} place in the Grand Challenge

Media Coverage

Realization of the first autonomous flying robots based on the smart phone Google Tango. The system has been shown at the Google headquarter in Mountain View, California, during an event organized for the RSS conference, held in Berkeley, California in July 2014
IEEE Spectrum,Techcrunch, International Business Times, MIT Technological Review, Tom's Hardware, DamnGeeky, DIY Drones, Geek, Engadget, SingularityHub, SlashGear, 9to5Google, Fédération Professionelle du Drone Civil, Brazilian Television, Vision Systems, Infocrowler, Veoz, Slashgear, Intorobotics

Realization of the first fully autonomous flying robots based on an app that can run on any android phone. The system has been first showcased at the CES 2015 in Las Vegas with more than 200 demos in 4 days

MIT Technological Review, Technical Philly, Breaking News, HPlusMagazine, IEEE Spectrum, Innovaticias

Realization of the first small 250g quadrotor able to generate aggressive maneuvers with just a single camera and IMU

IEEE Spectrum, Popular Science, Popular Mechanics, Quartz, Penn News, Gizmondo.
Winner of Challenge 3 at the Mohamed Bin Zayed International Robotics Challenge
MBZIRC, Heise, UPenn

World First Biggest Autonomous Quadrotor Swarm without GPS
IEEE Spectrum, Digital Trends

Microdrones Cooperate to Transport Objects can be the Future of Warehouse Automation
IEEE Spectrum, IEEE Spectrum, Digital Trends, La Nacion

Eye-Tracking Glasses Are All You Need to Control This Drone
IEEE Spectrum, DigitalTrends, DroneLife, TheDrive, DIYPhotography

Student Mentoring

Undergraduate Students
- Brian Chirikjian, University of Pennsylvania (Mechanical Engineering)

- Sadat Shaik, University of Pennsylvania (Computer Science)
- Zhengyi Luo, University of Pennsylvania (Computer Science)
- Tanmay Chordia, University of Pennsylvania (Wharton and Engineering)

Master Students

- Kshitij Jindal, NYU (Master Mechanical Engineering)
- Maxim Pavliv (Visiting student EPFL)
- Yichen Hu, NYU (Master Electrical Engineering)
- Anthony Wang, NYU (Master Mechanical Engineering)
- Rudong Ge, NYU (Master Computer Engineering)
- Kevin Lee, NYU (Master Computer Engineering)
- Liangzhe Yuan, University of Pennsylvania (Master Computer Science)
- Aaron Weinstein, University of Pennsylvania (Master Mechanical Engineering)
- Alex Zhou, University of Pennsylvania (Master Mechanical Engineering)
- Adam Cho, University of Pennsylvania (Master Mechanical Engineering)

Ph.D. Students

- Guanrui Li, NYU (Ph.D. Electrical and Computer Engineering)
- Yang Zhou, NYU (Ph.D. Electrical and Computer Engineering)
- Brigid Blanskee, NYU (Ph.D. Electrical and Computer Engineering)
- Elijah S. Lee, University of Pennsylvania (Ph.D. Computer Science)
- EJames Svacha, University of Pennsylvania (Ph.D. Electrical Engineering)
- Sebastian Verling, ETH Zurich (Ph.D. Mechanical Engineering)
- Wenxin Li, University of Pennsylvania (Ph.D. Computer Science)

Community activities

Editor

- **Regular Associate Editor**, Journal of Field Robotics 2018-current.
- **Associate Editor** IEEE/ICRA International Conference on Robotics and Automation 2019, 2020.
- **Lead Editor Special Issue**, "High Speed Vision-Based Autonomous UAVs", Journal of Field Robotics, 2017.
- **Lead Editor Special Issue**, "Special Issue on Future Challenges and Opportunities in Vision-based Drone Navigation", Journal of Field Robotics, 2019.

Workshops Organization

- Lead Organizer of the Workshop, "Challenges in Vision-based Drones Navigation", IEEE/RSJ International Conference on Intelligent Robots and Systems, September 2019, Macau, China.
- Lead Organizer of the "3rd International Symposium on Aerial Robotics", Toronto, 2019.
- Lead Organizer of the Workshop, "Vision-based Drones: What's Next?", IEEE/ICRA International Conference on Robotics and Automation, May 2019, Montreal, Canada.
- Lead Organizer of the Workshop, "Vision-based Drones: What's Next?", IEEE/RSJ International Conference on Intelligent Robots and Systems, September 2018, Madrid,

Spain.
- Lead Organizer of the "2nd International Symposium on Aerial Robotics", Philadelphia, 2018.
- Lead Organizer of the Workshop, "Vision-based Agile Autonomous Navigation of UAVs", attendance over 200 people, IEEE/RSJ International Conference on Intelligent Robots and Systems, September 2017, Vancouver, Canada.
- Lead Organizer of the "International Symposium on Aerial Robotics", Philadelphia, 2017.
- Lead Organizer of the Workshop, "Vision-based High Speed Autonomous Navigation of UAVs", attendance over 200 people, IEEE/RSJ International Conference on Intelligent Robots and Systems, 11–14 October 2016, Daejeon, South Korea.
- Lead Organizer of the Workshop, "Vision-based Control and Navigation of Small Lightweight UAVs", attendance over 150 people, IEEE/RSJ International Conference on Intelligent Robots and Systems, 2 October 2015, Hamburg, Germany.
- Co-Organizer of the Tutorial "Aerial Robotics", at ICRA 2016, Stockholm, Sweden.

Program Committee and Conference Services

- Program Chair IEEE/SSRR 2020.
- Program Chair IEEE/SSRR 2019.
- Chair IEEE Technical Committee Aerial Robotics and Unmanned Aerial Systems, 2018, 2019.
- Advisory board DroneXChallenge 2020.
- Unusual Solutions jury panel.
- Demo Chair IEEE/SSRR 2018.
- Session Chair, "**UAV-Vision**" at IROS 2016, Daejeon, South Korea.
- Session Chair, "**Unmanned Aerial Systems 3**" at IROS 2015, Hamburg, Germany.
- Program Committee of the Intelligent Robotics and Multi-Agent Systems (IRMAS) technical track on the 32^{nd} ACM Symposium on Applied Computing - SAC, 2017, 2018, 2019.
- Program Committee of the RSS Robotics Science and Systems Conference, 2016.
- Program Committee of the IEEE International Symposium on Search, Safety and Rescue Robotics 2015, 2016, 2017.
- Program Committee of the RSS Robotics Science ans Systems Conference, 2017, 2018, 2019.

Reviewer for Conferences and Journals Manuscripts

- IEEE Transactions on Control Systems Technology 2015, 2016, 2017
- IEEE Robotics and Automation Magazine
- IEEE/RSJ Conference on Intelligent Robots and Systems 2011, 2012, 2013, 2014, 2015, 2016
- IEEE Conference on Decision and Control 2012, 2016
- ISER International Symposium on Experimental Robotics
- IEEE DCOSS International Conference on Distributed Computing in Sensor Systems 2012
- Journal of Field Robotics 2013, 2014
- International Conference on Computer Vision Theory and Applications 2014
- International Journal of Robotics Research 2013

- IFAC World Congress 2014
- IEEE Transactions on Robotics 2014, 2015, 2016, 2017, 2018
- IEEE International Symposium on Safety and Rescue Robotics 2015, 2016
- Autonomous Robots Springer 2015, 2016
- IEEE/ICRA International Conference on Robotics and Automation 2012, 2013, 2014, 2015, 2016, 2017, 2018
- IEEE Multi-Conference on Systems and Control 2016
- RSS Robotics Science and Systems Conference 2016, 2017, 2018
- IEEE Transactions on Automation Science and Engineering 2016
- IEEE Transactions on Mechatronics 2016
- IEEE Robotics and Automation Letters 2016, 2017, 2018

Professional Society Membership

- IEEE member
- IEEE-RAS member

Conferences and Schools

Conferences and Workshops attended

- IEEE International Conference on Decision and Control, December 2011, Orlando, Florida
- IEEE/RSJ International Conference on Intelligent Robots and Systems, Tokyo, Japan, November 2013
- IEEE/ICAR International Conference on Advanced Robotics, Montevideo, Uruguay, November 2013
- RSS Robotics Science and Systems Conference Berkeley, California, July 2014
- IEEE International Conference on Robotics and Automation, Seattle, USA, May 2015
- IEEE/RSJ International Conference on Intelligent Robots and Systems, Hamburg, Germany, September 2015
- IEEE International Conference on Robotics and Automation, Stockholm, Sweden, May 2016
- IEEE/RSJ International Conference on Intelligent Robots and Systems, Daejeon, South Korea, October 2016
- IEEE International Conference on Robotics and Automation, Singapore, May 2017
- IEEE/RSJ International Conference on Intelligent Robots and Systems, Vancouver, Canada, September 2017
- IEEE International Conference on Robotics and Automation, Brisbane, Australia, May 2018
- IEEE/RSJ International Conference on Intelligent Robots and Systems, Madrid, Spain, October 2018
- 2019 International Symposium on Robotics and Artificial Intelligence, Abu Dhabi, UAE, March 2019
- RSS Robotics Science and Systems Conference Freiburg, Germany, June, 2019
- IEEE International Conference on Robotics and Automation, Montreal, Canada, May 2019
- IEEE Robotics Science and Systems Conference, Freiburg, Germany, 2019

- IEEE/SSRR International Symposium on Search, Safety and Rescue Robotics, Wuerzburg, September 2019
- NSF workshop on Robot Learning, Lehigh University, October 2019
- IEEE/RSJ International Conference on Intelligent Robots and Systems, Macau, China, November 2019

Summer Schools and Project Meetings

- DCIST CRA meeting, April 2019, Los Angeles, USA
- DCIST CRA meeting, April 2018, Philadelphia, USA
- Summer Schools SIDRA on Control Theory, July 2010, 2011, 2012, Bertinoro Italy
- Summer School on Micro Aerial Vehicles, July 2011, Zürich
- BRICS research camp, November 2011
- Review Meetings AIRobots project Enschede, The Netherlands 2011, Bologna, Italy 2012, Zürich, Switzerland, 2013
- Robust Control
- Game Theory and Analysis of Competitive Dynamics for Industrial Systems
- MAST project meeting, March 2014, 2015, 2016

Teaching Experience

- Teaching assistant control and robotics classes, 2010–2013, University of Naples "Federico II", Italy.
- Instructor MEAM 620 Robotics, University of Pennsylvania, USA, 2016-2017 and 2017-2018.
- ECE-GY9253/ME-GY-7933, NYU, "Robot Localization and Navigation", Spring 2019.
- ECE-GY5223/ME-GY-6923, NYU, "Sensor-based Robotics", Fall 2019.

Technical and Personal skills

- **Programming Languages:** Proficient in: Very good knowledge of MATLAB/Simulink, C/C++, Python, Matlab, TeX
- **Industry Software Skills:** Good knowledge of the following languages and programs, Word, PowerPoint, Excel, Comsol Multiphysics, Embedded Systems, PLC, and excellent knowledge of the following operating systems, middle-ware, libraries and hardware devices: Windows, Ubuntu, MacOs, ROS, OpenCV, TooN, Vicon, Optitrack.
- **General Business Skills:** Good presentation skills, Works well in a team.
- **Languages:** Italian (mother tongue), Freanch (mother tongue), English (Proficiency), German (Beginner).
- **Hobbies:** Travel and be in Contact with new Cultures, Ideas, Wine Tasting, Theater and Music, Sport, Skiing, Play Cards and Videogames.

Certificates

- **Delf/Dalf (Diplome d'Études en Langue Française):** École Francaise de Naples, Naples, Italy.
- **Participation at the regional session of "Physics Olympic Games":** Italy.
- **American Study Center:** English Classes, American Study Center, Naples, Italy.
- **Goethe Institut Naples:** German Courses, Naples, Italy.

Collaborators

Faculty and Industry

Prof. Dr. Bruno Siciliano (Unina), Prof. Dr. Vijay Kumar (UPenn), Dr. Alessandro Masi (CERN), Prof. Dr. Kostas Damiilidis (UPenn), Prof. Dr. Ani M. Hsieh (Drexel University), Prof. Dr. Davide Scaramuzza (UniZH), Mr. Serafin Diaz (Qualcomm), Prof. Dr. Shaojie Shen (HKUST), Prof. Dr. Tobi Delbruck (UniZH), Dr. Morgan Quinley (OSRF), Prof. Dr. Carlo Fischione (KTH), Dr. Brian Sadler (ARL), Dr. Martin Saska (CTU Prague), Prof. Dr. Roberto Tron (Boston University), Prof. Dr. Mark Cutosky (Stanford University), Mr. Serafin Diaz (Qualcomm)

References

- Prof. Dr. Bruno Siciliano, University of Naples "Federico II", siciliano@unina.it
- Prof. Dr. Vijay Kumar, University of Pennsylvania, kumar@seas.upenn.edu
- Prof. Dr. Kostas Daniilidis, University of Pennsylvania, kostas@cis.upenn.edu
- Prof. Dr. Davide Scaramuzza, University of Zurich, sdavide@ifi.uzh.ch
- Prof. Dr. Carlo Fischione, KTH, Royal Institute of Technology, carlofi@kth.se