

**VENANZIO CICHELLA**  
**Member of IEEE and AIAA**  
**Assistant Professor of Mechanical Engineering**  
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## EDUCATION AND DEGREES

- 2018      **Ph.D. in Mechanical Engineering**, Department of Mechanical Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois  
Dissertation: “Planning and Control of Cooperative Autonomous Systems” (Advisor: Naira Hovakimyan)
- 2011      **MS in Automation Engineering**, Automation Engineering, University of Bologna, Bologna, Italy.  
Dissertation: “3D Path Following of Quadrotor UAVs” (Advisor: Lorenzo Marconi, Isaac Kammer)

## PROFESSIONAL EXPERIENCE

- 2018 – Pres.      Assistant Professor of Mechanical Engineering, University of Iowa  
2014      Research Intern at NASA Langley, the Autonomy Incubator group  
2010 - 2012      Visiting Researcher at the Naval Postgraduate School, Monterey, California.

## TEACHING EXPERIENCE

- 2020-Pres.      “Control of Mechanical Engineering Systems”, ME 3600, Department of Mechanical Engineering, University of Iowa, IA.  
2019-Pres.      “Cooperative Autonomous Systems”, ME 6115, Department of Mechanical Engineering, University of Iowa, IA.  
2018-Pres.      “Advanced Linear Control Systems”, ME 4120, Department of Mechanical Engineering, University of Iowa, IA.

## NOTABLE RECOGNITIONS

2022	Best Paper Award, “Navy Science and Technology Program: Pathways to Careers in the Navy and Supporting Industries”, 2022 ASEE Annual Conference and Exposition, 26-29 June, Minneapolis, MN
2021	Amazon Research Award
2015	Outstanding achievements award from the College of Engineering at the University of Illinois at Urbana-Champaign

## FUNDINGS (Total: \$2,416,200. Cichella’s portion: \$1,111,466)

2022-2023	Amazon, “Concurrent allocation and planning for large-scale multi-robot systems,” PI, \$92,000 (100%)
2022-2025	Office of Naval Research, “Underwater Vehicle Maneuvering in Complex Scenarios,” PI, \$320,132 (50%)
2022-2023	NASA EPSCoR, “Twisted and Coiled Artificial Muscle-based Soft Robots,” Co-PI, \$46,066 (50%)
2022-2023	National Science Foundation, “NSF STTR: Smart Semiautonomous Fluid Drainage System for Surgical Procedures,” PI, \$151,282.00 (34%)
2022-2023	US Army, “Modeling of a ground vehicle operating in shallow water,” Co-PI, \$131,500 (25%)
2022-2024	Office of Naval Research, “Experimental measurement of maneuvering dynamics and autonomy for a cycloidal propeller equipped amphibious UUV,” Co-PI, \$310,734.00 (20%)
2021-2024	Office of Naval Research, “Optimal Control Strategies for Cooperative Autonomous Systems,” PI, \$316,609 (100%)
2019-2022	Office of Naval Research, “Optimal and robust nonlinear control strategies for low-speed and near-surface maneuvering of underwater vehicles,” PI, \$396,732 (50%)
2019-2023	Office of Naval Research, “Broadening Education in Naval Science & Technology with an Expanded Undergraduate Curriculum and Learning Community”, Co-PI, \$614,145 (16.6%)
2019-2020	Air Force Research Laboratory, “Persistent monitoring of uncertain targets,” PI, \$40,000 (100%)

## PROFESSIONAL SERVICE

2018-Present	<b>Member</b> of the American Institute of Aeronautics and Astronautics (AIAA)
2018-Present	<b>Member</b> of the Institute of Electrical and Electronics Engineers (IEEE CSS and TCAC)
2022-Present	<b>Associate Editor</b> , IEEE Conference on Control Technology and Applications (CCTA)
2019-2020	<b>Associate Editor</b> , IEEE Access “Advanced Communications and Networking Techniques for Wireless Connected Intelligent Robot Swarms”.

## STUDENTS ADVISED

2018-Present	Calvin Kielas-Jensen (Ph.D candidate – Expected graduation May 2023)
2020-Present	Camilla Tabasso (Ph.D candidate – previously UG researcher)
2020-Present	Maxwell Hammond (Ph.D candidate)
2022-Present	Gage MacLin (Ph.D candidate – previously UG researcher)
2023-Present	Vladimir Petrov (Ph.D candidate)

2023-Present Niloufar Seyfi (Ph.D candidate)  
2022-Present Cristian Sanchez (UG researcher)  
2020-2021 Rachit Singhvi (MS – now at Airbus)

## ACHIEVEMENTS BY STUDENTS

1. Ph.D. student Camilla Tabasso won the 2022 Ph.D. Student Excellence award from the College of Engineering, University of Iowa. (2022)
2. Undergraduate student Gage MacLin named a NASA Iowa Space Grant Consortium undergraduate research scholarship recipient. (2022)
3. Ph.D. student Calvin Kielas-Jensen is awarded the Department of Defense Science, Mathematics, and Research for Transformation Scholarship (SMART). (2022)
4. Ph.D. student Calvin Kielas-Jensen receives the Outstanding Mentorship Award from the College of Engineering. (2020)
5. Undergraduate student Camilla Tabasso (now a Ph.D candidate at the CAS Lab) is awarded as an Outstanding Student Researcher during the 2019 CoE Professional Developments Awards ceremony. (2019)

## PUBLICATIONS

**Citations (Google Scholar): ~960, h-index: 17 (2023)**

### Books

1. Isaac Kaminer, M. Antonio Pascoal, Enric Xargay, Naira Hovakimyan, Venanzio Cichella, Vladimir Dobrokhodov. "Time-Critical Cooperative Control of Autonomous Air Vehicles." Elsevier, ISBN: 9780128099469, 2017.

### Papers in Edited Volumes

1. Isaac Kaminer, Enric Xargay, Venanzio Cichella, Naira Hovakimyan, M. Antonio Pascoal, A. Pedro Aguiar, Vladimir Dobrokhodov, Reza Ghabcheloo. "Time-Critical Cooperative Path Following of Multiple UAVs: Case Studies." *In Advances in Estimation, Navigation, and Spacecraft Control – Itzhack Y. Bar-Itzhack Memorial Symposium* (Eds.: D. Choukroun, Y. Oshman, J. Thienel, and M. Idan), Springer-Verlag, pp. 209-233, 2014.

### Journal Papers

1. Thilina H. Weerakkody, Maxwell Hammond, James H. Neilan, Venanzio Cichella, and Caterina Lamuta. "Modeling and control of twisted and coiled artificial muscles for soft robotics." *Meccanica* (2023): 1-16.
2. Venanzio Cichella, and Isaac Kaminer. "Coordinated Vision-Based Tracking by Multiple Unmanned Vehicles." *Drones* 7, no. 3 (2023): 177.

3. Carlo Greco, Thilina H. Weerakkody, Venanzio Cichella, Leonardo Pagnotta, and Caterina Lamuta. "Lightweight Bioinspired Exoskeleton for Wrist Rehabilitation Powered by Twisted and Coiled Artificial Muscles." *Robotics* 12, no. 1 (2023): 27.
4. Venanzio Cichella, Isaac Kaminer, Claire Walton, Naira Hovakimyan, Antonio Pascoal. "Bernstein Polynomial-Based Method for Solving Optimal Trajectory Generation Problems." *Machines* 22, no. 10(12) (2022): 1132.
5. James Buchholz, Jae-Eun Russell, Shaoping Xiao, Casey Harwood, Venanzio Cichella, and Juan Martin. "Factors Influencing Student Interest in a Curriculum on Naval Science & Technology at a Midwestern University." *Bulletin of the American Physical Society* (2022).
6. Nicholas Rober, Maxwell Hammond, Venanzio Cichella, Juan E. Martin, Pablo Carrica. "3D Path Following and L1 Adaptive Control for Underwater Vehicles." *Ocean Engineering* 253 (2022): 110971.
7. Calvin Kielas-Jensen, Venanzio Cichella, Thomas Berry, Isaac Kaminer, Claire Walton, and Antonio Pascoal. "Bernstein Polynomial-Based Method for Solving Optimal Trajectory Generation Problems." *Sensors* 22, no. 5 (2022): 1869.
8. Camilla Tabasso, Calvin Kielas-Jensen, Venanzio Cichella, Satyanarayana Gupta Manyam, David Casbeer, and Isaac Weintraub. "Continuous Monitoring of a Path-Constrained Moving Target by Multiple UAVs". *Journal on Guidance, Control and Dynamics* (2022): 1-10.
9. Calvin Kielas-Jensen, Venanzio Cichella, David Casbeer, Satyanarayana Gupta Manyam, and Isaac Weintraub. "Persistent Monitoring by Multiple Unmanned Aerial Vehicles Using Bernstein Polynomials." *Journal of Optimization Theory and Applications* (2021): 1-18.
10. Maxwell Hammond, Venanzio Cichella, Thilina Weerakkody, and Caterina Lamuta. "Robust and Adaptive Sampled-Data Control of Twisted and Coiled Artificial Muscles." *IEEE Control Systems Letters* (2021): page(s): 1232-1237. Print ISSN: 2475-1456. Online ISSN: 2475-1456. Digital Object Identifier: 10.1109/LCSYS.2021.3091414
11. Camilla Tabasso, Venanzio Cichella, Syed Bilal Mehdi, Thiago Marinho, and Naira Hovakimyan. "Time coordination and collision avoidance using leader-follower strategies in multi-vehicle missions." *Robotics*. 10, no. 1 (2021): 34.
12. Nicholas Rober, Venanzio Cichella, J. Ezequiel Martin, Yagin Kim, and Pablo Carrica. "Three-Dimensional Path-Following Control for an Underwater Vehicle." *Journal of Guidance, Control, and Dynamics* (2021): 1-11.
13. Camilla Tabasso, Nicola Mimmo, Venanzio Cichella, and Lorenzo Marconi. "Optimal Motion Planning for Localization of Avalanche Victims by Multiple UAVs." *IEEE Control Systems Letters* 5, no. 6 (2021): 2054-2059.
14. Camilla Tabasso, Venanzio Cichella, Syed Bilal Mehdi, Thiago Marinho, and Naira Hovakimyan. "Guaranteed Collision Avoidance in Multivehicle Cooperative Missions Using Speed Adjustment." *Journal of Aerospace Information Systems* 17, no. 8 (2020): 436-453.
15. Venanzio Cichella, Isaac Kaminer, Claire Walton, Naira Hovakimyan, and Antonio Manuel Pascoal. "Optimal Multi-Vehicle Motion Planning using Bernstein Approximants." *IEEE Transactions on Automatic Control* (2020).
16. Lee, Hanmin, Venanzio Cichella, and Naira Hovakimyan. "L1 Adaptive Output Feedback for Non-square Systems with Arbitrary Relative Degree." *IEEE Transactions on Automatic Control* (2020).
17. Valentina Giovinco, Parth Kotak, Venanzio Cichella, Carmine Maletta, and Caterina Lamuta. "Dynamic model for the tensile actuation of thermally and electro-thermally actuated twisted and coiled artificial muscles (TCAMs)." *Smart Materials and Structures* 29, no. 2 (2019): 025004.
18. Venanzio Cichella, Isaac Kaminer, Claire Walton, and Naira Hovakimyan. "Optimal motion planning for differentially flat systems using Bernstein approximation." *IEEE Control Systems Letters* 2, no. 1 (2017): 181-186.
19. Venanzio Cichella, Thiago Marinho, Dušan Stipanović, Naira Hovakimyan, Isaac Kaminer, and Anna Trujillo. "Collision avoidance based on line-of-sight angle." *Journal of Intelligent & Robotic Systems* 89, no. 1 (2018): 139-153.

20. Ronald Choe, Javier Puig-Navarro, Venanzio Cichella, Enric Xargay, and Naira Hovakimyan. Cooperative trajectory generation using Pythagorean Hodograph Bezier curves. *AIAA Journal of Guidance, Control, and Dynamics*, 38(8):1744–1763, 2016.
21. Venanzio Cichella, Ronald Choe, S. Bilal Mehdi, Enric Xargay, Naira Hovakimyan, Vladimir Dobrokhodov, Isaac Kaminer, M. Antonio Pascoal, and A. Pedro Aguiar. “Safe coordinated maneuvering of teams of multirotor unmanned aerial vehicles: A cooperative control framework for multivehicle, time-critical missions.” *IEEE Control Systems Magazine*, 36(4):59–82, 2016.
22. Zungyu Zuo, Venanzio Cichella, Ming Xu, and Naira Hovakimyan. “Three-dimensional coordinated path-following control for second-order multi-agent networks.” *Journal of the Franklin Institute*, 352(9):3858–3872, September 2015.
23. Venanzio Cichella, Isaac Kaminer, Vladimir Dobrokhodov, Enric Xargay, Ronald Choe, Naira Hovakimyan, A. Pedro Aguiar, and M. Antonio Pascoal. “Cooperative Path Following of Multiple Multirotors over Time-Varying Networks.” *IEEE Transactions on Automation Science and Engineering*, 12(3):945–957, July 2015.
24. Enric Xargay, Isaac Kaminer, M. Antonio Pascoal, Naira Hovakimyan, Vladimir Dobrokhodov, Venanzio Cichella, A. Pedro Aguiar, and Reza Ghabcheloo. “Time-critical cooperative path following of multiple unmanned aerial vehicles over time-varying networks.” *AIAA Journal of Guidance, Control, and Dynamics*, 36(2):499–516, 2013.
25. Klaus Andersson, Isaac Kaminer, Vladimir Dobrokhodov, and Venanzio Cichella. “Thermal centering control for autonomous soaring; stability analysis and flight test results.” *AIAA Journal of Guidance, Control, and Dynamics*, 35(3):963–975, 2012.

### **Selected Conference papers**

1. Shaoping Xiao, James Buchholz, Casey Harwood, Jae-eun Russell, Venanzio Cichella, and J. Ezequiel Martin. "Navy Science and Technology Program: Pathways to Careers in the Navy and Supporting Industries." In 2022 ASEE Annual Conference & Exposition. 2022.
2. Juan E. Martin, Maxwell Hammond, Nicholas Rober, Yagin Kim, Venanzio Cichella and Pablo Carrica. 2022. Reduced Order Model of a Generic Submarine for Maneuvering Near the Surface. In 34th Symposium on Naval Hydrodynamics.
3. Thilina Weerakkody, Maxwell Hammond, M., James Neilan, Venanzio Cichella, Caterina Lamuta, 2022. Modeling and Control of Twisted and Coiled Artificial Muscles for Soft Robotics. In ASME 2022 Conference on Smart Materials, Adaptive Structures and Intelligent Systems.
4. Maxwell Hammond, Venanzio Cichella, Thilina Weerakkody, and Caterina Lamuta. “Robust and Adaptive Sampled-Data Control of Twisted and Coiled Artificial Muscles,” 2021 IEEE Conference on Decision and Control. December 2021.
5. Hyungsoo Kang, Hyung Jin Yoon, Venanzio Cichella, Naira Hovakimyan, and Petros Voulgaris. “Time Coordination of Multiple UAVs over Switching Communication Networks with Digraph Topologies,” 2021 IEEE Conference on Decision and Control. December 2021.
6. James Buchholz, Jae-Eun Russell, Venanzio Cichella, Casey Harwood, Shaoping Xiao, and Ezequiel Martin. "An Undergraduate Naval Science & Technology Certificate." In APS Division of Fluid Dynamics Meeting Abstracts, pp. T19-010. 2021.
7. James Buchholz, Jae-Eun Russell, Venanzio Cichella, Casey Harwood, Shaoping Xiao, and Pablo M. Carrica. "A Curriculum on Naval Science & Technology for a Midwestern University." In 2021 ASEE Virtual Annual Conference Content Access. July 2021.
8. Camilla Tabasso, Nicola Mimmo, Venanzio Cichella, Lorenzo Marconi. “Optimal Motion Planning for Localization of Avalanche Victims by Multiple UAVs” 2021 American Control Conference (ACC). May 2021.
9. Massinissa Amrouche, Thiago Marinho, Dusan Stipanovic, Venanzio Cichella, Naira Hovakimyan. “Biologically Inspired Collision Avoidance Without Distance Information,” 2021 American Control Conference (ACC). May 2021.

10. Camilla Tabasso and Venanzio Cichella. "Multiple Leader-Follower Coordination for Cooperative Missions." In *AIAA Scitech 2021 Forum*, p. 1766. 2021.
11. Nicholas Rober and Venanzio Cichella. "Geometric Path Following of Underwater Vehicles." In *AIAA Scitech 2021 Forum*, p. 1678. 2021.
12. Venanzio Cichella, Isaac Kaminer, Claire Walton, Naira Hovakimyan, Antonio M. Pascoal. "Consistent Approximation of Optimal Control Problems using Bernstein Polynomials." In Proceedings of the 58th IEEE Conference on Decision and Control (CDC). 2019.
13. Calvin Kielas-Jensen, Venanzio Cichella. "BeBOT: Trajectory Generation Toolkit for Multiple Autonomous Vehicles." International Conference on Intelligent Robots and Systems (IROS). November 4-8, 2019.
14. Arun Lakshmanan, Andrew Patterson, Venanzio Cichella, and Naira Hovakimyan. "Proximity Queries for Absolutely Continuous Parametric Curves." 2019 Robotics: Science and Systems, June 22-26, 2019.
15. Shawn Stephens, Satyanarayana G. Manyam, David W. Casbeer, Venanzio Cichella, and Donald L. Kunz. "Randomized continuous monitoring of a target by agents with turn radius constraints." In 2019 International Conference on Unmanned Aircraft Systems (ICUAS), pp. 588-595. IEEE, 2019.
16. Thiago Marinho, Massi Amrouche, Venanzio Cichella, Dusan Stipanovic, and Naira Hovakimyan. "Guaranteed collision avoidance based on line-of-sight angle and time to collision." In Proceedings of the American Control Conference (ACC), 2018.
17. S. Bilal Mehdi, Venanzio Cichella, Thiago Marinho, and Naira Hovakimyan. "Collision avoidance in multi-vehicle cooperative missions using speed adjustment." In Proceedings of the 56th IEEE Conference on Decision and Control (CDC), 2017.
18. Christopher Widdowson, Hyung-Jin Yoon, Venanzio Cichella, Frances Wang, and Naira Hovakimyan. "VR environment for the study of co-located interaction between small UAVs and humans." In Proceedings of the 8th International Conference on Applied Human Factors and Ergonomics and the Affiliated Conferences, Los Angeles, USA, 2017.
19. Venanzio Cichella, Thiago Marinho, Dusan Stipanović, Naira Hovakimyan, Isaac Kaminer, and Anna Trujillo. "Collision avoidance based on line-of-sight angle." In 2015 54th IEEE Conference on Decision and Control (CDC), pp. 6779-6784. IEEE, 2015.
20. Mehdi, Syed B., Ronald Choe, Venanzio Cichella, and Naira Hovakimyan. "Collision avoidance through path replanning using Bézier curves." In AIAA Guidance, navigation, and control conference, p. 0598. 2015.
21. Choe, Ronald, Javier Puig, Venanzio Cichella, Enric Xargay, and Naira Hovakimyan. "Trajectory generation using spatial pythagorean hodograph bezier curves." In AIAA Guidance, Navigation, and Control Conference, p. 0597. 2015.
22. Venanzio Cichella, Isaac Kaminer, Vladimir Dobrokhodov, and Naira Hovakimyan. "Coordinated vision-based tracking for multiple UAVs." In 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 656-661. IEEE, 2015.
23. Lee, Hanmin, Venanzio Cichella, and Naira Hovakimyan. "L1 adaptive output feedback augmentation of Model Reference Control." In 2014 American Control Conference, pp. 697-702. IEEE, 2014
24. Cichella, Venanzio, Ronald Choe, Bilal S. Mehdi, Enric Xargay, Naira Hovakimyan, Anna C. Trujillo, and Isaac Kaminer. "Trajectory generation and collision avoidance for safe operation of cooperating UAVs." In AIAA Guidance, Navigation, and Control Conference, p. 0972. 2014.
25. Cichella, Venanzio, Ronald Choe, S. Bilal Mehdi, Enric Xargay, Naira Hovakimyan, Isaac Kaminer, and Vladimir Dobrokhodov. "A 3D path-following approach for a multirotor UAV on SO(3)." IFAC Proceedings Volumes 46, no. 30 (2013): 13-18.
26. Choe, Ronald, Venanzio Cichella, Enric Xargay, Naira Hovakimyan, Anna C. Trujillo, and Isaac Kaminer. "A trajectory-generation framework for time-critical cooperative missions." In AIAA Infotech@ Aerospace (I@A) Conference, p. 4582. 2013.
27. Cichella, Venanzio, Isaac Kaminer, Vladimir Dobrokhodov, and Naira Hovakimyan. "Cooperative Vision-Based Tracking of Multiple UAVs." In AIAA Guidance, Navigation, and Control (GNC) Conference, p. 5110. 2013.
28. Cichella, Venanzio, Isaac Kaminer, Enric Xargay, Vladimir Dobrokhodov, Naira Hovakimyan, A. Pedro Aguiar, and António M. Pascoal. "A Lyapunov-based approach for time-coordinated 3D path-following of multiple quadrotors." In 2012 IEEE 51st IEEE Conference on Decision and Control (CDC), pp. 1776-1781. IEEE, 2012.

29. Cichella, Venanzio, Roberto Naldi, Vladimir Dobrokhodov, Isaac Kaminer, and Lorenzo Marconi. "On 3D path following control of a ducted-fan UAV on  $SO(3)$ ." In 2011 50th IEEE Conference on Decision and Control and European Control Conference, pp. 3578-3583. IEEE, 2011.
30. Cichella, Venanzio, Isaac Kaminer, Vladimir Dobrokhodov, Enric Xargay, Naira Hovakimyan, and Antonio Pascoal. "Geometric 3D path-following control for a fixed-wing UAV on  $SO(3)$ ." In AIAA Guidance, Navigation, and Control Conference, p. 6415. 2011.