

## Curriculum Vitae

Notarization. I have read the following and certify that this *curriculum vitae* is a current and accurate statement of my professional record.

Signature \_\_\_\_\_ Date \_\_\_\_\_

### **I. Personal Information**

#### I.A. UID, Last Name, First Name, Middle Name, Contact Information

UID:

Saetti, Umberto

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UMD: <https://aero.umd.edu/clark/faculty/1709/Umberto-Saetti>

Google Scholar: [https://scholar.google.com/citations?user=FDZb\\_XoAAAAJ&hl=en](https://scholar.google.com/citations?user=FDZb_XoAAAAJ&hl=en)

Scopus: <https://www.scopus.com/authid/detail.uri?authorId=57192229769>

Research Gate: <https://www.researchgate.net/profile/Umberto-Saetti>

Personal: <https://umbertoschetti.com/>

#### I.B. Academic Appointments

08/2022–Present    Assistant Professor  
Alfred Gessow Rotorcraft Center  
Maryland Robotics Center  
Neuroscience and Cognitive Science (NACS) Program  
Department of Aerospace Engineering  
University of Maryland, College Park, MD

07/2021–08/2022    Assistant Professor  
Department of Aerospace Engineering

Auburn University, Auburn, AL

08/2019–06/2021 Postdoctoral Fellow  
Vertical Lift Research Center of Excellence  
School of Aerospace Engineering  
Georgia Institute of Technology, Atlanta, GA

01/2015–08/2019 Graduate Research Assistant  
Vertical Lift Research Center of Excellence  
Department of Aerospace Engineering  
Pennsylvania State University, University Park, PA

#### I.C. Other Employment

12/2018–12/2018 Visiting Scholar  
U.S. Army Aviation Development Directorate, NASA  
Ames, Moffett Field, CA  
Identification of linear time-periodic systems from rotorcraft flight test data.

#### I.D. Educational Background

07/2014 B.S. Politecnico di Milano  
Aerospace Engineering

08/2015 M.S. Pennsylvania State University  
Aerospace Engineering

08/2017 M.S. Pennsylvania State University  
Electrical Engineering

08/2019 Ph.D. Pennsylvania State University  
Aerospace Engineering

#### I.E. Professional Certifications, Licenses, and Memberships

Member Vertical Flight Society (VFS)  
Senior Member American Institute of Aeronautics and Astronautics (AIAA)

## **II. Research, Scholarly and Creative Activities**

### II.A. Books

1. Saetti, U., Horn, J. F., and Berger, T., Rotorcraft Flight Dynamics and Control. In preparation.

## II.B. Refereed Journals

*Italics* indicate undergraduate advisee, **bold** indicates graduate advisee, and underline indicates postdoctoral advisee.

### i. Refereed Journal Articles

21. Hayajnh, M. A., Saetti U., and Prasad, J. V. R., Identification of High-Order Linear Time-Invariant Models From Periodic Nonlinear System Responses. *Aerospace*, Vol. 11, No. 11, pp. 1-20(20), 2024. doi: 10.3390/aerospace11110875
20. Saetti U., and Rogers, J. D., Explicit Uncertainty Quantification for Probabilistic Assessment of Rotorcraft Handling Qualities, *Journal of the American Helicopter Society*, Vol. 69, No. 4, pp. 1-14(14) 2024. doi: 10.4050/JAHS.69.042007
19. **Hussien, A. A. H.**, Cocco, A., and Saetti, U., Implementation and Linearization of a Coupled Panel and Vortex Particle Method in State-Space Form, *AIAA Journal*, Vol. 62, No. 9, pp. 3491-3509(19), 2024. doi: 10.2514/1.J063855
18. **Bugday, B.**, and Saetti, U., Rotorcraft Flight Control Design with Rotor Noise Abatement, *Journal of the American Helicopter Society*, Vol 69, No. 3, pp. 1-16(16), 2024. doi: 10.4050/JAHS.69.032009
17. Saetti U., Real-Time Simulation of a Shipborne Rotor via Linearized State-Space Free-Vortex Wake Models, *Journal of Aircraft*, Vol. 61, No. 3, 2024, pp. 1025-1033(9). doi: 10.2514/1.C037389
16. Saetti, U., Horn, J. F., and Berger, T., On the Effects of Rotor Induced Vibrational Stability on Helicopter Flight Dynamics, *CEAS Aeronautical Journal*, Vol. 15, pp. 439-458(20), 2024. doi: 10.1007/s13272-024-00718-w
15. Saetti, U., Rogers, J. D., Alam, M., and Jump, M., Tau Theory-Based Flare Control in Autonomous Helicopter Autorotation, *Aerospace*, Vol 11, No. 1, 2024, pp. 1-21(21). doi: 10.3390/aerospace11010033
14. Saetti, U., **Bugday, B.**, Horn, J. F., and Brentner, K. S., Linearized Models of the Coupled Rotorcraft Flight Dynamics and Acoustics for Real-Time Noise Prediction, *Journal of the American Helicopter Society*, Vol. 69, No. 2, 2024, pp. 1-14(14). doi: 10.4050/JAHS.69.022002
13. Saetti, U., and **Bugday, B.**, Tiltrotor Simulations with Coupled Flight Dynamics, State-Space Aeromechanics, and Acoustics, *Journal of the American Helicopter Society*, Vol. 69, No. 1, 2024, pp. 1-18(18). doi: 10.4050/JAHS.69.012003

12. Saetti U., and Horn J. F., Implementation and Linearization of State-Space Free-Vortex Wake Models for Rotary- and Flapping-Wing Vehicles, *Journal of the American Helicopter Society*, Vol. 68, No. 4, 2023, pp. 42004-42017(14). doi: 10.4050/JAHS.68.042004
11. Saetti U., and Horn J. F., Linear Time-Invariant Approximations of Non-linear Time-Periodic Systems. *Journal of the American Helicopter Society*, Vol. 68, No. 1, 2023, pp. 1-10(10). doi: 10.4050/JAHS.68.012006
10. Saetti U., and Rogers, J. D., Harmonic Decomposition Models of Flapping-Wing Flight for Stability Analysis and Control Design, *Journal of Guidance, Control, and Dynamics*, Vol. 48, No. 8, 2022, pp. 1371-1384(14). doi: 10.2514/1.G006447
9. Saetti U., Enciu, J., and Horn J.F., Flight Dynamics and Control of an eVTOL Concept Aircraft with a Propeller-Driven Rotor, *Journal of the American Helicopter Society*, Vol. 67, No. 3., 2022, pp. 153-166(14). doi: 10.4050/JAHS.67.032012
8. Saetti U., Lovera M., Time-Periodic and High-Order Time-Invariant Linearized Models of Rotorcraft: A Survey, *Journal of the American Helicopter Society*, Vol. 67, No. 1, 2022, pp. 1-19(19). doi: 10.4050/JAHS.67.012008
7. Musso D., Saetti U., and Rogers J. D., Probabilistic Fatigue Damage Estimation for Rotorcraft Life-Limited Components. *Journal of Aircraft*, Vol. 59, No. 2, 2021, pp. 364-376(13). doi: 10.2514/1.C036561
6. Saetti U., Rogers, J. D., Motion Primitive Approach to Rotorcraft Regime Recognition, *Journal of the American Helicopter Society*, Vol. 66, No. 4, 2021, pp. 1-19(19). doi: 10.4050/JAHS.66.042006
5. Saetti U., Rogers, J. D., Revisited Harmonic Balance Trim Solution Method for Periodically-Forced Aerospace Vehicles, *Journal of Guidance, Control, and Dynamics*, Vol. 44, No. 5, 2021, pp. 1008-1017(10). doi: 10.2514/1.G005553
4. Saetti U., Horn J. F., Berger T., and Tischler M. B., Handling-Qualities Perspective on Load Alleviation Control, *Journal of Guidance, Control, and Dynamics*, Vol. 43, No. 10, 2020, pp. 1792-1804(13). doi: 10.2514/1.G004965
3. Saetti U., and Horn J. F. Load Alleviation Flight Control Design Using High Order Dynamic Models, *Journal of the American Helicopter Society*, Vol. 65, No. 3, 2020, pp. 1-15(15). doi: 10.4050/JAHS.65.032009

2. Saetti U., Horn J. F., Lakhmani, S., Lagoa C., and Berger, T. Dynamic Inversion and Explicit Model Following Flight Control Laws for Quadrotor UAS, *Journal of the American Helicopter Society*, Vol. 65, No. 3, 2020, pp. 1-16(16). doi: 10.4050/JAHS.65.032006
  1. Saetti U., Horn J. F., Berger T., Lopez M., and Tischler M. B., Identification of Linear Time-Periodic Systems from Rotorcraft Flight Test Data, *Journal of Guidance, Control, and Dynamics*, Vol. 42, No. 10, 2019, pp. 2288-2296(9). doi: 10.2514/1.G004406
- ii. Perspectives, Opinions, and Letters
- iii. Other: Submissions and Works in Progress
- A. Manuscripts under Review
6. **Jun, D.**, Cocco, A., Saetti, U., and Juhasz, O., Flight Dynamics and Control of a Coaxial Compound Helicopter with Rotor-On-Rotor Interactional Aerodynamics. *Journal of the American Helicopter Society*, Submitted November 2024.
  5. **Fischer, M.**, Saetti, U., Godfroy-Cooper, M., Characterization of Precision and Accuracy for Combined Visual, Auditory, and Haptic Localization. *Frontiers in Neuroscience*, Submitted November 2024.
  4. Saetti, U., **Arias, P. T.**, and Baeder, J. D., Flight Dynamics and Control of a Transitioning Quadrotor Biplane Tailsitter. *Journal of the American Helicopter Society*, Submitted November 2024.
  3. Saetti, U., Dynamic Inversion Flight Control Laws for Autonomous Transition of Tilt-Rotor/Wing Aircraft. *Journal of the American Helicopter Society*, Submitted August 2024.
  2. **Hussien, A. A. H.**, Cocco, A., and Saetti, U., Implementation and Analytical Linearization of a Rotor Simulation with a Coupled Panel and Vortex Particle Method in State-Space Form. *Journal of the American Helicopter Society*, Submitted June 2024.
  1. **Morcos, M. T.**, Fishman, S. M., Saetti, U., Berger, T., Godfroy-Cooper, M., and Bachelder, E. N., Full-Body Haptic and Spatial Audio Cueing Algorithms for Enhanced Pilot-Vehicle System Performance. *Journal of Guidance, Control, and Dynamics*, Submitted January 2024.
- G. Manuscripts in Preparation
3. **Luzzani, G.**, **Fischer, M. R.**, **Morcos, M. T.**, Saetti, U., Demarchi, D., Buraioli, I., and Guglieri, G., Multimodal Cueing in Attitude Tracking Tasks: Toward the Prediction of Pilot Cognitive Workload via Phys-

iological Measurements. Human Factors.

2. Cocco, A., Saetti, U., and Savino, A., Aeroelastic Load Evaluation During Tiltrotor Transition Using a Comprehensive Mid-Fidelity Approach. CEAS Aeronautical Journal.
1. Saetti, U., **Bugday, B.**, Cocco, A., Manjhi, A. K., and Horn, J. F., Implementation and Linearization of a State-Space Free Wake Model with a Near-Wake Vortex Lattice Model. Journal of the American Helicopter Society.

## II.C. Refereed Conference Proceedings

*Italics* indicate undergraduate advisee, **bold** indicates graduate advisee, and underline indicates postdoctoral advisee.

37. Saetti, U., Dynamic Inversion Flight Control Laws for Autonomous Conversion of Tilt-Rotor/Wing Aircraft, The Second International Conference on Advanced Air Mobility Systems (ICAAMS-2), Singapore, Dec 4-6, 2024.
36. **Fischer, M.**, *Ganelin, B.*, Saetti, U., Godfroy-Cooper, M., and Fischer, D., Characterization of Precision and Accuracy for Combined Visual and Haptic Localization, 50<sup>th</sup> European Rotorcraft Forum, Marseille, France, Sep 10-12, 2024.
35. Cocco, A., Saetti, U., and Savino, A., Aeroelastic Load Evaluation During Tiltrotor Transition Using a Comprehensive Mid-Fidelity Approach, 50<sup>th</sup> European Rotorcraft Forum, Marseille, France, Sep 10-12, 2024.
34. **Jun, D.**, Cocco, A., Saetti, U., and Juhasz, O., Flight Dynamics of a Coaxial Compound Helicopter with Rotor-On-Rotor Interactional Aerodynamics, 50<sup>th</sup> European Rotorcraft Forum, Marseille, France, Sep 10-12, 2024.
33. **Luzzani, G.**, **Fischer, M. R.**, **Morcos, M. T.**, Saetti, U., Demarchi, D., Buraioli, I., and Guglieri, G., Multimodal Cueing in Attitude Tracking Tasks: Toward the Prediction of Pilot Cognitive Workload via Physiological Measurements, 50<sup>th</sup> European Rotorcraft Forum, Marseille, France, Sep 10-12, 2024.
32. **Morcos, M. T.**, Fishman, S. M., Saetti, U., Bachelder, E. N., and Godfroy-Cooper, M., Full-Body Haptic and Spatial Audio Cueing Algorithms for Augmented Pilot Perception, Vertical Flight Society 80<sup>th</sup> Annual Forum, Montreal, Quebec, Canada, May 7-9, 2024. 10.4050/F-0080-2024-1179
31. Saetti, U., **Bugday, B.**, Cocco, A., Manjhi, A. K., and Horn, J. F., Implementation and Linearization of a State-Space Free Wake Model with a Near-Wake Vortex Lattice Model, Vertical Flight Society 80<sup>th</sup> Annual Forum, Montreal, Quebec, Canada, May 7-9, 2024. 10.4050/F-0080-2024-1144
30. Manjhi, A. K., Horn, J. F., and Saetti, U., Analytical Linearization of a State-Space Free Vortex Wake Model, Vertical Flight Society 80<sup>th</sup> Annual Forum, Montreal, Quebec, Canada, May 7-9, 2024. 10.4050/F-0080-2024-1254
29. **Hussien, A. A. H.**, Cocco, A., and Saetti, U., Implementation of a Rotor Simulation with a Coupled Panel and Free-Vortex Wake Method in State-Space

- Form, 6<sup>th</sup> Decennial VFS Aeromechanics Specialists' Conference, Santa Clara, CA, February 6–8, 2024.
28. Saetti U., and Guner, F., Interactional Aerodynamics Modeling and Flight Control Design of Multi-Rotor Aircraft, 6<sup>th</sup> Decennial VFS Aeromechanics Specialists' Conference, Santa Clara, CA, February 6–8, 2024.
  27. **Hussien, A. A. H.**, Cocco, A., and Saetti, U., Implementation and Linearization of a Coupled Panel and Free-Vortex Wake Method in State-Space Form, AIAA SciTech Forum, Orlando, FL, January 8–12, 2024. doi: 10.2514/6.2024-2265
  26. Saetti U., Chen, Z., Horn, J. F., and Berger, T., Vibrational Stability Effects in Rotorcraft Flight Dynamics, 49<sup>rd</sup> European Rotorcraft Forum, Bückeburg, Germany, September 5–7, 2023.
  25. **Morcos, M. T.**, Saetti, U., Berger, T., Godfroy-Cooper, M., and Bachelder, E. N., Spatial Audio Cueing Algorithms for Augmented Pilot Perception in Degraded/Denied Visual Environments, 49<sup>rd</sup> European Rotorcraft Forum, Bückeburg, Germany, September 5–7, 2023.
  24. **Morcos M. T.**, Fishman, S. M., Cocco, A., Saetti, U., Berger, T., Godfroy-Cooper, M., and Bachelor, E., Full-Body Haptic Cueing algorithms for Augmented Pilot Perception in Degraded/Denied Visual Environments. Vertical Flight Society 79<sup>th</sup> Annual Forum, West Palm Beach, FL, May 16-18, 2023. doi: 10.4050/F-0079-2023-18072
  23. Saetti U., and **Bugday, B.**, Generic Tilt-Rotor Simulation Model with Coupled Flight Dynamics, State-Variable Aeromechanics, and Aeroacoustics, Vertical Flight Society 79<sup>th</sup> Annual Forum, West Palm Beach, FL, May 16–18, 2023. doi: 10.4050/F-0079-2023-18110
  22. **Bugday B.**, and Saetti U., Active Reduction of Rotor Noise via Redundant Control Allocation, Vertical Flight Society 79<sup>th</sup> Annual Forum, West Palm Beach, FL, May 16-18, 2023. doi: 10.4050/F-0079-2023-18071
  21. Saetti U., and Sharan, N., Harmonic Decomposition Models of Periodically-Forced Fluid Flows, AIAA Aviation Forum, Chicago, IL, Jun 27 - Jul 1, 2022. doi: 10.2514/6.2022-3841
  20. Saetti U., Linearization of a Rotor Simulation with a State-Space Free-Vortex Wake Model in a Shipboard Environment, AIAA Aviation Forum, Chicago, IL, Jun 27 - Jul 1, 2022. doi: 10.2514/6.2022-3646
  19. Saetti U., and Horn J. F., Implementation and Linearization of a State-Space Free-Vortex Wake Model for Flapping-Wing Flight, Vertical Flight Society 78<sup>th</sup> Annual Forum, Fort Worth, TX, May 10-12, 2022. doi: 10.4050/F-0078-2022-17578
  18. Saetti U., and Horn J. F., Implementation and Linearization of a Rotor Simulation with a State-Space Free-Vortex Wake Model, Vertical Flight Society 78<sup>th</sup> Annual Forum, Fort Worth, TX, May 10-12, 2022. doi: 10.4050/F-0078-2022-17577

17. Hayajnh, M. A., Saetti U., and Prasad, J. V. R., Identification of High-Order Linear Time-Invariant Models from Periodic Nonlinear System Responses, Transformative Vertical Flight 2022 Meeting, San Jose, CA, Jan 25-27, 2022.
16. Saetti U., and Horn J. F., Flight Simulation and Control Using the Julia Language, AIAA SciTech Forum, San Diego, CA, Jan 3-7, 2022. doi: 10.2514/6.2022-2354
15. Saetti U., Rogers J. D., Alam, M., Jump, M., and Cameron, N., Dynamic-Inversion Based Flare Control Law for Autonomous Helicopter Autorotation, AIAA SciTech Forum, San Diego, CA, Jan 3-7, 2022. doi: 10.2514/6.2022-1645
14. Horn J. F., Scaramal M., and Saetti U., Load Alleviation Control using Dynamic Inversion with Direct Load Feedback, Vertical Flight Society 77<sup>th</sup> Annual Forum, Virtual, May 10-14, 2021. doi: 10.4050/F-0077-2021-16792
13. Saetti U., Rogers J. D., Linear Time-Invariant Models of the Dynamics of Flapping-Wing Flight, Vertical Flight Society 77<sup>th</sup> Annual Forum, Virtual, May 10-14, 2021. doi: 10.4050/F-0077-2021-16843
12. Saetti U., Horn J. F., and Brentner, K. S., High-Order Linear Time-Invariant Models of Rotorcraft Flight Dynamics, Vibrations, and Acoustics, Vertical Flight Society 77<sup>th</sup> Annual Forum, Virtual, May 10-14, 2021. doi: 10.4050/F-0077-2021-16842
11. Saetti U., and Rogers J. D., A Motion Primitive Prospective on Rotorcraft Regime Recognition, Vertical Flight Society 76<sup>th</sup> Annual Forum, Virginia Beach, VA, Oct 6-8, 2020. doi: 10.4050/F-0076-2020-16266
10. Saetti U., and Rogers J. D., Explicit Uncertainty Quantification for Probabilistic Handling Qualities Assessment, Vertical Flight Society 76<sup>th</sup> Annual Forum, Virginia Beach, VA, Oct 6-8, 2020. doi: 10.4050/F-0076-2020-16389
9. Saetti U., Enciu, J. and Horn J.F., Flight Dynamics and Control of an eVTOL with a Propeller-Driven Rotor, Vertical Flight Society 76<sup>th</sup> Annual Forum, Virginia Beach, VA, Oct 6-8, 2020. doi: 10.4050/F-0076-2020-16385
8. Saetti U., and Rogers J. D., A probabilistic Approach to Pilot/Vehicle System Performance and Perceived Rotorcraft Handling Qualities, Vertical Flight Society Rotorcraft Handling Qualities Technical Meeting, Huntsville, AL, Feb 18-19, 2020.
7. Saetti U., Horn J. F., Berger T., and Tischler M. B., Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads, Vertical Flight Society 75<sup>th</sup> Annual Forum, Philadelphia, PA, May 13-16, 2019. doi: 10.4050/F-0075-2019-14587
6. Saetti U., Enciu, J., and Horn J.F., Performance and Design Optimization of the F-Helix eVTOL Concept, Vertical Flight Society 75<sup>th</sup> Annual Forum, Philadelphia, PA, May 13-16, 2019. doi: 10.4050/F-0075-2019-14488
5. Saetti U., Horn J. F., Lakhmani, S., Lagoa C., and Berger, T., Design of Dynamic Inversion and Explicit Model Following Control Laws for Quadrotor Inner and Outer Loops, American Helicopter Society 74<sup>th</sup> Annual Forum, Phoenix, AZ, May 14-17, 2018.



4. Saetti U., and Horn J. F., Load Alleviation Control Design Using Harmonic Decomposition Models, Rotor State Feedback, and Redundant Control Effectors, American Helicopter Society 74<sup>th</sup> Annual Forum, Phoenix, AZ, May 14-17, 2018.
3. Saetti U., and Horn J. F., Use of Harmonic Decomposition Models in Rotorcraft Control Design with Alleviation of Vibratory Loads, 43<sup>rd</sup> European Rotorcraft Forum, Milan, Italy, Sep 12-15, 2017.
2. Saetti U., Villafana W., Wachspress D., Brentner K. S., and Horn J. F. Rotorcraft Simulations with Coupled Flight Dynamics, Free Wake, and Acoustics, American Helicopter Society 72<sup>nd</sup> Annual Forum, West Palm Beach, FL, May 16-19, 2016.
1. Li Y., Saetti U., Sharma K., Wachspress D., Horn J. F., and Brentner K. S., Tools for Development and Analysis of Rotorcraft Noise Abatement, American Helicopter Society Sustainability 2015, Montreal, Canada, Sep 22-24, 2015.

#### II.D. Conferences, Workshops, and Talks

*Italics* indicate undergraduate advisee, **bold** indicates graduate advisee, and underline indicates postdoctoral advisee.

##### i. Media Appearances

3. Saetti, U. (April 22, 2024). Making Flight Safer - Without Leaving the Ground. Enterprise: University of Maryland Research Stories, Virtual.
2. Saetti, U. (June 24, 2023). Fly by Feel: Can we Fly without Vision?. TEDx Mirandola 2023, Mirandola, Italy.
1. Saetti, U. (December 13, 2022). Newton. Un volo sul futuro. Italian National Television (RAI), Rome & Virtual.

##### ii. Invited Talks

41. Saetti, U. (TBD). Extended Reality Simulation and Control of Rotorcraft. Seminar at Aerospace Control and Guidance Systems Committee (ACGSC) Meeting, TBD, USA.
40. Saetti, U. (December 9, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at School of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, Melbourne, Australia.
39. Saetti, U. (October 28, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at NASA Ames (Aeromechanics Branch), Moffett Field, CA, USA. (Virtual)
38. Saetti, U. (September 4, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at Turkish Aerospace Industries (TAI), Ankara, Turkey.

37. Saetti, U. (September 3, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at Middle East Technical University (METU), Ankara, Turkey.
36. Saetti, U. (August 28, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at Istanbul Technical University (ITU), Istanbul, Turkey.
35. Saetti, U. (June 27, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at NASA Langley Research Center, Langley, VA, USA.
34. Saetti, U. (June 5, 2024). Extended Reality Flight Simulation and Control Lab. Seminar at Naval Air System Command (NAVAIR), Patuxent River, MD, USA.
33. Saetti, U. (March 19, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at Department of Civil, Computational Science and Aeronautical Technologies Engineering, Roma Tre University, Roma, Italy.
32. Saetti, U. (March 18, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at Department of Industrial Engineering, University of Bologna, Forlì, Italy.
31. Saetti, U. (March 15, 2024). Extended Reality Simulation and Control of Rotorcraft. Seminar at Department of Aerospace Science and Technology (DAER), Polytechnic University of Milan, Milan, Italy.
30. Saetti, U. (November 30, 2023). Extended Reality Simulation and Control of Rotorcraft. Seminar at Sikorsky Aircraft Corporation, Stratford, CT, USA.
29. Saetti, U. (October 20, 2023). Extended Reality Simulation and Control of Rotorcraft. Seminar at Department of Mechanical Engineering, University of New Mexico, Albuquerque, NM, USA. (Virtual)
28. Saetti, U. (October 13, 2023). Extended Reality Simulation and Control of Rotorcraft. 3<sup>rd</sup> Seminar on Latest Trends in VTOL Technologies, Indian Institute of Technology Kanpur, Kalyanpur, Kanpur, Uttar Pradesh, India. (Virtual)
27. Saetti, U. (October 11, 2023). Extended Reality Flight Simulation and Control Lab. Seminar at U.S. Army Combat Capabilities Development, Command Aviation & Missile, Moffett Field, CA, USA.
26. Saetti, U. (October 6, 2023). Extended Reality Simulation and Control of Rotorcraft. Seminar at Department of Mechanical and Aerospace Engi-

neering, University of California, Irvine, CA, USA.

25. Saetti, U. (September 21, 2023). Extended Reality Simulation and Control of Rotorcraft. Seminar at Department of Aerospace Engineering, Pennsylvania State University, University Park, PA, USA.
24. Saetti, U. (September 11, 2023). Extended Reality Simulation and Control of Rotorcraft. Seminar at Faculty of Aerospace Engineering, Technical University of Delft, Delft, The Netherlands.
23. Saetti, U. (August 31, 2023). Extended Reality Simulation and Control of Rotorcraft. Seminar at Centre for Aviation (ZAV), Zurich University of Applied Sciences, Winterthur, Switzerland.
22. Saetti, U. (July 13, 2023). Extended Reality Flight Simulation and Control Lab. Seminar at DEVCOM Army Research Laboratory (Aeromechanics Branch), Aberdeen, MD, USA.
21. Saetti, U. (April 17, 2023). Extended Reality Simulation and Control of Rotorcraft. Seminar at Institute of Helicopter Technologies and VTOL, Technical University of Munich, Munich, Germany.
20. Saetti, U. (April 12, 2023). Extended Reality Simulation and Control of Rotorcraft. Seminar at German Aerospace Center (DLR), Braunschweig, Germany.
19. Saetti, U. (August 24, 2022). Alfred Gessow Rotorcraft Center Overview. Seminar at AgustaWestland Philadelphia Corporation, Philadelphia, PA, USA.
18. Saetti, U. (April 31, 2022). Pushing the Boundaries of Modeling, Simulation, and Control of Rotorcraft. Seminar at Vertical Flight Society, Philadelphia Chapter, Philadelphia, PA. (Virtual)
17. Saetti, U. (May 24, 2022). Linearized High-Fidelity Aeromechanics for Stability, Control, and Extended Reality Simulation of Rotorcraft. Seminar at Dipartimento di Ingegneria Meccanica e Aerospaziale, Politecnico di Torino, Torino, Italy. (Virtual)
16. Saetti, U. (March 10, 2022). Stability, Control, and Extended Reality Simulation of Time-Periodic Aerospace Systems. Seminar at Department of Aerospace Engineering, University of Maryland, College Park, MD, USA.
15. Saetti, U. (April 9, 2021). Networked Flight Simulation and Control Lab. Seminar at Department of Aerospace Engineering, Auburn University, Auburn, AL, USA. (Virtual)

14. Saetti, U. (January 5, 2021). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, OK, USA. (Virtual)
13. Saetti, U. (December 8, 2020). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at Department of Aerospace Engineering, Auburn University, Auburn, AL, USA. (Virtual)
12. Saetti, U. (November 24, 2020). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at Department of Mechanical and Aerospace Engineering, Carleton University, Ottawa, Canada. (Virtual)
11. Saetti, U. (November 19, 2020). Methods in the Stability Analysis and Control of Periodically-Forced Aerospace Vehicles. Seminar at Department of Aerospace Engineering, Pennsylvania State University, University Park, PA, USA. (Virtual)
10. Saetti, U. (November 6, 2020). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at Department of Mechanical Engineering, University of South Carolina, Columbia, SC, USA. (Virtual)
9. Saetti, U. (October 28, 2020). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at Department of Mechanical and Aerospace Engineering, North Carolina State University, Raleigh, NC. (Virtual)
8. Saetti, U. (March 12, 2020). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at Department of Mechanical and Aerospace Engineering, University of California, Irvine, CA, USA.
7. Saetti, U. (October 24, 2019). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at Department of Aerospace Engineering, Embry-Riddle Aeronautical University, Daytona Beach, FL, USA.
6. Saetti, U. (July 1, 2019). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at Network for Innovative Rotorcraft Safety (NITROS), Department of Aerospace Engineering, Polytechnic University of Milan (broadcasted live to Delft University of Technology, University of Liverpool, and University of Glasgow), Milan, Italy & Virtual.
5. Saetti, U. (April 17, 2019). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA, USA.

4. Saetti, U. (April 11, 2019). Rotorcraft Flight Control Design with Alleviation of Unsteady Rotor Loads. Seminar at AIAA Penn State Chapter, Department of Aerospace Engineering, Pennsylvania State University, University Park, PA, USA.
3. Saetti, U. (December 10, 2018). Identification of Linear Time-Periodic Systems from Flight Test Data. Seminar at U.S. Army Aviation Development Directorate (ADD), NASA Ames Research Center, Moffett Field, CA, USA.
2. Saetti, U. (November 12, 2013). Skyward Experimental Rocketry: The Tsiolkovsky Rocket Equation. Guest Lecture, Theoretical Mechanics Class, Department of Aerospace Engineering, Polytechnic University of Milan, Milan, Italy.
1. Saetti, U. (October 18, 2012). Skyward Experimental Rocketry: A students' Way to Space. Seminar at Department of Aerospace Engineering, Polytechnic University of Milan, Milan, Italy.

iii. Non-Refereed Conference Publications

iv. Refereed Abstracts

v. Non-Refereed Presentations

vi. Non-Refereed Abstracts

vii. Non-Refereed Posters

viii. Non-Refereed Panels

ix. Symposia

x. Workshops

1. Saetti, U. (August 1-2, 2023). Air Force Studies Board Digital Transformation & Joint Simulation Environment Planning Workshop. Hosted by National Academies of Sciences, Engineering, and Medicine and Air Force. Washington, DC, USA.

xi. Other

## II.E. Sponsored Research

- i. Grants (total funding w/o cost share: **\$2.93 M**; w/ cost share: \$3.42 M)
  12. Flight Dynamics and Control of Multiple Interacting Heterogenous Rotorcraft in Ground Effect, 2024-2026  
Source of Support: Department of the Army

- Program: Vertical Lift Research Center of Excellence (VLRCOE)  
PI: U. Saetti; Co-PI: O. Juhasz \$190,011 (plus UMD Cost Share \$123,507)
11. Simultaneous Use of Synthetic Actors for Multimodal Cueing of Sensory-Motor Interactions in Pilot Training, 2024-2026  
Source of Support: National Science Foundation (NSF)  
Program: EARly-Concept Grants for Exploratory Research (EAGER)  
PI: U. Saetti \$300,000
  10. CERTIFICATE: Certification and Safety of In-Flight Multi-Objective Decision Making Algorithm Techniques, 2024-2025  
Source of Support: Systems Technology, Inc.  
Prime Sponsor: NASA  
Program: SBIR Phase II  
PI: U. Saetti \$80,000
  9. Extended Reality Simulation and Control of Aerospace Vehicles with Brain Activity Monitoring, 2024-2025  
Source of Support: Office of Naval Research (ONR)  
Program: Defense University Research Instrumentation Program (DURIP)  
PI: U. Saetti \$251,535
  8. Multimodal Pilot Modeling for Extended Reality Simulation and Control of Manned-Unmanned Teaming, 2023-2025  
Source of Support: Lockheed Martin  
PI: U. Saetti \$300,000
  7. CERTIFICATE: Certification and Safety of In-Flight Multi-Objective Decision Making Algorithm Techniques, 2023-2024  
Source of Support: Systems Technology, Inc.  
Prime Sponsor: NASA  
Program: SBIR Phase I  
PI: U. Saetti \$8,222
  6. Blade Tip Propeller-Driven Autogiro Basic Aeromechanics Characterization, 2022-2026  
Source of Support: Office of Naval Research (ONR)  
PI: I. Chopra; Co-PI: U. Saetti \$600,000
  5. Interactional Aerodynamics Modeling and Flight Control Design of Multi-Rotor Unmanned Aircraft Systems, 2022-2023  
Source of Support: San Jose State University  
Program: Joint Tactical Aerial Resupply Vehicle (JTARV)  
Prime Sponsor: NASA  
PI: U. Saetti \$133,000

4. Linearized High-Fidelity Aeromechanics for Extended Reality Simulation and Control of Shipboard Interactions, 2022-2025  
Source of Support: Office of Naval Research (ONR)  
Program: Young Investigator Program (YIP)  
PI: U. Saetti \$510,000
3. State-Variable Implementation and Linearization of Simulations with Multi-Disciplinary Aeromechanics, 2022-2026  
Source of Support: Department of the Army  
Program: Vertical Lift Research Center of Excellence (VLRCOE)  
PI: U. Saetti; Co-PI: J. F. Horn, K. S. Brentner \$461,143 (plus UMD Cost Share \$299,743)
2. State-Variable Implementation and Linearization of Simulations with Multi-Disciplinary Aeromechanics, 2022-2026  
Source of Support: Pennsylvania State University  
Prime Sponsor: Department of the Army  
Program: Vertical Lift Research Center of Excellence (VLRCOE)  
PI: U. Saetti; Co-PI: J. F. Horn, K. S. Brentner \$9,890
1. Performance and Design Optimization of the F-Helix eVTOL Concept, 2018-2019  
Source of Support: Vinati, S.R. L.  
PI: J. F. Horn; Co-PI: U. Saetti \$67,000

#### II.F. Research Fellowships, Prizes, and Awards

4. Dave Ward Memorial Lecture Award, Aerospace Control and Guidance Systems Committee (ACGSC), 2024.
3. Defense University Research Instrumentation Program (DURIP) Award, Office of Naval Research (ONR), 2024.
2. Young Investigator Program (YIP) Award, Office of Naval Research (ONR), 2022.
1. Barnes McCormick Memorial Scholarship, Vertical Flight Foundation, 2019.

### III. Teaching, Extension, Mentoring and Advising.

#### III.A. Courses Taught

- i. University of Maryland
  - ENAE 635 Helicopter Stability and Control; Spring 2023, 2024.
  - ENAE 432 Control of Aerospace Systems; Spring 2024.

- ii. Polytechnic University of Turin
  - Flight Dynamics and Control of Vertical Lift Vehicles (short course); Summer 2023.
- iii. Auburn University
  - AERO 3230 Flight Dynamics; Spring 2022.
  - AERO 4970/7970 Rotorcraft Aeromechanics; Fall 2021.
- iv. Georgia Institute of Technology
  - AE 4531 Aircraft Flight Dynamics; Spring 2021.
  - AE 4071 Rotorcraft Aeromechanics; Spring 2020.
- v. Polytechnic University of Milan
  - Aeronautical Systems - Guidance and Control (joint MathWorks, Inc. and Skyward Experimental Rocketry project-based short course); Fall 2014.

### III.B. Teaching Innovations

- i. Course or Curriculum Development
  - ENAE 635: Helicopter Stability and Control  
Redesigned course: updated course topics to include more of a focus on modern flight control design and computational methods for flight dynamics. Changed programming language to MATLAB<sup>®</sup>/Simulink.
  - ENAE 432: Control of Aerospace Systems  
Redesigned discussion sessions: updated discussion sessions to include control design exercises applied to aerospace vehicles of interest (fixed- and rotary-wing aircraft, spacecraft).

### III.C. Advising: Research

- i. Undergraduate Research Advisor
  - 9. Aviel Zuri-Shaday, Independent Research Project, 2024–2026  
*Real-Time Pilot Workload Estimation via Neuro-Physiological Wearable Sensors*
  - 8. Richard Huang, Independent Research Project, 2024–2026  
*Real-Time Pilot Workload Estimation via Neuro-Physiological Wearable Sensors*
  - 7. Evan Gary, Independent Research Project, 2024–2026  
*Identification of the Flight Dynamics of a Flapping-Wing Drone*



6. Ohm Sapa, Independent Research Project, 2024–2026  
*Multimodal Pilot Modeling for Extended Reality Simulation and Control of Manned-Unmanned Teaming*
5. Minh Nguyen, Independent Research Project, 2024–2026  
*Multimodal Pilot Modeling for Extended Reality Simulation and Control of Manned-Unmanned Teaming*
4. Adithya Sundar, Independent Research Project, 2024–2026  
*Multimodal Pilot Modeling for Extended Reality Simulation and Control of Manned-Unmanned Teaming*
3. Saketh Vegunta, Departmental Honors Student, 2024–2026  
*Pilot Workload Estimation via Neurophysiological Measurements*
2. Ben Ganelin, Departmental Honors Student, 2022–2024  
*Accuracy and Precision Characterization of Full-Body Haptic Feedback*
1. Dogyu Jun, Independent Research Project, 2022–2023  
*Interactional Aerodynamics Modeling and Flight Control Design of Multi-Rotor Unmanned Aircraft Systems*  
Placement: Graduate School, University of Maryland, College Park, MD

ii. Masters

Thesis Advisor:

1. Madeline Fischer, 2023–2024  
Statistics

Committee Member:

8. Lorenzo Giordano, Politecnico di Milano, 2024  
M.S. Thesis: *Aero.Next: Optimizing UAV Control Dynamics for Enhanced Stabilization in High-Velocity Aerial Deployments*
7. Soufiane El Omari, Politecnico di Milano, 2024  
M.S. Thesis: *Multirotor UAV Control via Dynamic Inversion*
6. Matteo Dall’Ora & Federico Gentile, Politecnico di Milano, 2024  
M.S. Thesis: *Enhancements of a Mid-Fidelity Aerodynamic Solver for Vortex Rings Analysis*
5. Dylan Black, University of Maryland, 2023  
M.S. Thesis: *The Effect of Confined Areas on Helicopter Performance*
4. Cole Shenk, University of Maryland, 2023

- M.S. Thesis: *Hover Performance of a Teetering Rotor in Confined Areas*
3. Jack Prewitt, University of Maryland, 2023  
M.S. Thesis: *Effect of Sloped Terrain on in-Ground-Effect Hover Performance for an Isolated Rotor*
  2. Eric Greenbaum, University of Maryland, 2023  
M.S. Thesis: *Flight Dynamics of a Coaxial Helicopter Hovering on Mars*
  1. Daniele Migliore, Politecnico di Milano, 2019  
M.S. Thesis: *Model identification and inversion-based control for multi-rotor UAVs*
- iii. Doctoral

Dissertation Advisor:

5. Marwan Mamdouh, 2025–Present  
Aerospace Engineering
4. Dogyu Jun, 2023–Present  
Aerospace Engineering
3. Hussien A. A. H. Hussien, 2023–Present  
Aerospace Engineering
2. Batin Bugday, 2022–Present  
Aerospace Engineering  
Status: Passed Qualification Exam  
Awards: 2024 Vertical Flight Foundation (VFF) Jing Yen Cost Awareness Scholarship
1. Michael T. Morcos, 2022–Present  
Aerospace Engineering  
Awards: Outstanding Graduate Assistant Award (AY 2023-24)

Committee Member:

6. Francesco Mazzeo, University of Modena and Reggio Emilia, 2024  
Ph.D. Dissertation: *Numerical Modeling and Linearization of a Side-by-Side Helicopter*
5. Mariano Scaramal, Pennsylvania State University, 2024  
Ph.D. Dissertation: *Trim Optimization of Over-Actuated Rotorcraft using Extremum Seeking Control*
4. Spencer Fishman, University of Maryland, 2024

Ph.D. Dissertation: *Aeroelastic Stability Analysis of Rotor Blades at High Advance Ratios*

3. Giovanni Gozzini, Politecnico di Milano, 2024

Ph.D. Dissertation: *Hybrid Control Techniques for UAVs*

2. Simone Godio, Politecnico di Torino, 2023

Ph.D. Dissertation: *Artificial Intelligence Applications for Drones Navigation in GPS-denied or degraded Environments*

1. Alexander Steinwandel, University of Stuttgart, 2023

Ph.D. Dissertation: *On the Role of the Number of Rotor Blades for Helicopter Vibrations*

iv. Post-doctoral

Research Advisor

1. Gabriele Luzzani, 2025–2026

Maryland Robotics Center Postdoctoral Fellow

2. Alessandro Cocco, 2023–2024

Alfred Gessow Rotorcraft Center Postdoctoral Fellow

v. Visiting Students

5. Cecilia Cannone, University of Bologna (Forlì), 2025

M.S. Student, Aerospace Engineering

4. Tale Kreienkamp, University of Stuttgart, 2024–2025

M.S. Student, Aerospace Engineering

3. Gabriele Luzzani, Politecnico di Torino, 2023–2024

PhD Student, Aerospace Engineering

2. Marco Rinaldi, Politecnico di Torino, 2023–2024

PhD Student, Aerospace Engineering

1. Warren Dufrenne, ESTACA, 2023

M.S. Student, Aerospace Engineering

III.D. Other Advising Activities (*Include advising student groups, special assignments, recruiting, etc.*)

- Faculty advisor to Vertical Flight Society Student Chapter, 2022–present

III.E. **Service and Outreach**

i. Editorships, Editorial Boards, and Reviewing Activities

- A. Editorships
  - Aerospace, Special Issue: Vertical Lift: Rotary- and Flapping-Wing Vehicles, Guest Editor, 2024
  - Journal of the American Helicopter Society, Associate Editor, 2022–Present
- B. Editorial Boards
- C. Reviewing Activities for Journals and Presses
  - Journal of Guidance, Control, and Dynamics (JGCD)
  - Journal of Aircraft (JA)
  - Journal of the American Helicopter Society (JAHS)
  - Council of European Aerospace Societies (CEAS) Aeronautical Journal
  - Journal of Optimization Theory and Applications (JOTA)
  - Journal of Intelligent and Robotic Systems
  - International Journal of Aerospace Engineering
  - Aerospace Science and Technology
- D. Reviewing Activities for Agencies and Foundations
  - 2025 Military Operational Medicine Research Program (MOMRP) Aviation and Vertical Lift (AVL) - 3 Panel
  - 2025 Military Operational Medicine Research Program (MOMRP) Aviation and Vertical Lift (AVL) - 2 Panel
  - 2025 Military Operational Medicine Research Program (MOMRP) Aviation and Vertical Lift (AVL) - 1 Panel
  - 2024 Military Operational Medicine Research Program (MOMRP) Aviation and Vertical Lift (AVL) - 1 Panel
- E. Reviewing Activities for Conferences
  - IEEE International Conference on Robotics and Automation (ICRA)
- ii. Committees, Professional, and Campus Service
  - A. Campus Service - Department
    - Chair, Minta Martin Seminar Series, 2024
    - Member, Teaching Workload Committee, 2024–Present
    - Member, Qualification and Comprehensive Exams Revision Committee, 2024–Present

- Member, Hiring Committee, Assistant Professor in Vertical Lift, 2023–2024
- Member, ENAE Dynamics, Control, and Autonomy Committee, 2022–Present

B. Campus Service - College

- Member, Maryland Robotics Center (MRC) Future Leaders Seminar Series Committee, 2023–2024

C. Campus Service - University

D. Offices and Committee Memberships

E. Leadership Roles in Meetings and Conferences

- Member, Modeling and Simulation Technical Committee, American Institute of Aeronautical and Astronautics (AIAA), 2024–Present
- Member, Education Committee, Vertical Flight Society (VFS), 2024–Present
- Committee Chair, Handling Qualities Technical Committee, Vertical Flight Society (VFS), 2023–Present
- Session Chair, Handling Qualities Technical Committee, Vertical Flight Society (VFS), 2022–2023
- Member, Handling Qualities Technical Committee, Vertical Flight Society (VFS) 79<sup>th</sup> Annual Forum, 2022

F. Other Non-University Committees, Memberships, Panels, etc.

iii. External Service and Consulting

iv. Community Engagements, Local, State, National, International

v. International Activities

vi. Corporate and Other Board Memberships

vii. Consultancies (to local, state and federal agencies; companies; organizations)

viii. Non-Research Presentations

ix. Outreach Presentations

x. Community & Other Service