

ABHINAV SINHA

 <https://sinha-abhinav.github.io/>  abhinav.sinha@uc.edu
 [linkedin.com/in/drabhinavsinha](https://www.linkedin.com/in/drabhinavsinha)  github.com/sinha-abhinav

WORK EXPERIENCE

- Dec 2023- Present** | **UNIVERSITY OF CINCINNATI**, CINCINNATI, USA
Assistant Professor, Department of Aerospace Engineering and Engineering Mechanics
- Dec 2021- Nov 2023** | **THE UNIVERSITY OF TEXAS AT SAN ANTONIO**, SAN ANTONIO, USA
Postdoctoral Fellow, Host : Dr. Yongcan Cao
- May 2021- Nov 2021** | **INDIAN INSTITUTE OF TECHNOLOGY BOMBAY**, MUMBAI, INDIA
Postdoctoral Fellow, Host : Dr. Shashi Ranjan Kumar
- Jan 2019- May 2021** | **INDIAN INSTITUTE OF TECHNOLOGY BOMBAY**, MUMBAI, INDIA
Teaching Assistant
- AE 305 : Flight Mechanics– II, Spring 2019, 2020, and 2021
 - AE 717 : Aircraft Flight Dynamics, Spring 2019, 2020, and 2021
 - AE 410 : Navigation and Guidance, Fall 2019, 2020, and 2021
 - AE 641 : Introduction to Navigation and Guidance, Fall 2019, 2020, and 2021
- Jun 2019- May 2018** | **CENTRAL SCIENTIFIC INSTRUMENTS ORGANISATION**, CHANDIGARH, INDIA
Research Student
- Sep 2014- Jul 2016** | **TATA CONSULTANCY SERVICES LIMITED**, PUNE, INDIA
Assistant System Engineer, Consulting in Manufacturing, Automation and Control Systems
- Nov 2015** | **TATA CONSULTANCY SERVICES LIMITED**, TRIVANDRUM, INDIA
Visiting faculty at TCS Global Learning Center
- Jun 2011- May 2014** | **KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY**, BHUBANESWAR, INDIA
Instructor and Coordinator, KIIT Robotics Society

EDUCATION

-  **INDIAN INSTITUTE OF TECHNOLOGY BOMBAY** 2018 - 2021
Doctor of Philosophy (Ph.D.), Aerospace Engineering
Advisor : Dr. Shashi Ranjan Kumar
-  **INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY** 2016 - 2018
Master of Technology (M.Tech.), Mechatronics
Advisor : Dr. Ritesh Kumar (CSIR-CSIO), Dr. Rishemjit Kaur (CSIR-CSIO)

PATENTS

- [P1] Y. Cao, D. Casbeer, P. K. Ranjan, **Abhinav Sinha**, and I. Weintraub, "Relational Maneuvering of Leader-Follower Unmanned Aerial Vehicles for Flexible Formation," U.S. Patent [Filed]

PUBLICATIONS

REFEREED JOURNALS– PUBLISHED/IN PRESS

- [J29] P. Ranjan, **Abhinav Sinha**, and Y. Cao, "3D Guidance Law for Flexible Target Enclosing with Inherent Safety", *IEEE Robotics and Automation Letters*, early access, 2025.
- [J28] P. Ranjan, **Abhinav Sinha**, and Y. Cao, "Self-organizing Multiagent Target Enclosing under Limited Information and Safety Guarantees", *IEEE Transactions on Aerospace and Electronic Systems*, early access, 2024.
- [J27] P. Ranjan, **Abhinav Sinha**, Y. Cao, D. Casbeer, and I. Weintraub, "Relational Maneuvering of Leader-Follower Unmanned Aerial Vehicles for Flexible Formation", *IEEE Transactions on Cybernetics*, vol. 54, no. 10, pp. 5598-5609, 2024.
- [J26] **Abhinav Sinha** and S. R. Kumar, "Time-Critical Unified Rendezvous Guidance for an Unmanned Autonomous Vehicle", *ASME Journal of Autonomous Vehicles and Systems*, vol. 4, no. 3, pp. 031001 1-8, 2024.
- [J25] S. Kumar, **Abhinav Sinha**, and S. R. Kumar, "Robust Path-following Guidance for an Autonomous Vehicle in the Presence of Wind", *Aerospace Science and Technology*, vol. 150, pp. 109225, 2024.
- [J24] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, "Three-Dimensional Path Following Nonlinear Guidance for Unmanned Aerial Vehicles", *AIAA Journal of Guidance, Control, and Dynamics*, vol. 47, no. 6, pp. 1231-1240, 2024.
- [J23] **Abhinav Sinha** and Y. Cao, "Three-Dimensional Autonomous Guidance for Enclosing a Stationary Target within Arbitrary Smooth Geometrical Shapes", *IEEE Transactions on Aerospace and Electronic Systems*, vol. 59, no. 6, pp. 9247-9256, 2023.
- [J22] **Abhinav Sinha** and Y. Cao, "Three-Dimensional Guidance Law for Target Enclosing Within Arbitrary Smooth Shapes", *AIAA Journal of Guidance, Control, and Dynamics*, vol. 46, no. 11, pp. 2224-2234, 2023.
- [J21] P. Ranjan, **Abhinav Sinha**, Y. Cao, D. Tran, D. Casbeer, and I. Weintraub, "Energy-efficient Ring Formation Control with Constrained Inputs", *AIAA Journal of Guidance, Control, and Dynamics*, vol. 46, no. 7, pp. 1397-1407, 2023.
- [J20] **Abhinav Sinha** and Y. Cao, "3-D Nonlinear Guidance Law for Target Circumnavigation", *IEEE Control System Letters*, vol. 7, pp. 655-660, 2023 (also accepted for presentation at 2023 American Control Conference, San Diego, California, USA).
- [J19] **Abhinav Sinha**, R. V. Nanavati, and S. R. Kumar, "Three-dimensional Nonlinear Impact Time Guidance using Predicted Interception Point", *AIAA Journal of Guidance, Control, and Dynamics*, vol. 46, no. 3, pp. 608-617, 2023.
- [J18] **Abhinav Sinha**, and Y. Cao, "Nonlinear Guidance Law for Target Enclosing with Arbitrary Smooth Shapes", *AIAA Journal of Guidance, Control, and Dynamics*, vol. 45, no. 11, pp. 2182-2192, 2022.
- [J17] **Abhinav Sinha**, and S. R. Kumar, "Cooperative target capture using predefined-time consensus over fixed and switching networks", *Aerospace Science and Technology*, vol. 127, pp. 107686, 2022. [Preprint available at arXiv:2109.01338]
- [J16] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, "Three-agent Time-constrained Cooperative Pursuit-Evasion", *Journal of Intelligent & Robotic Systems*, vol. 104, no. 28, pp. 1–27, 2022. [Preprint available at arXiv:2106.01895]

- [J15] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Cooperative integrated guidance and control design for simultaneous interception”, *Aerospace Science and Technology*, vol. 120, pp. 107262, 2022.
- [J14] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Impact time constrained integrated guidance and control design”, *Aerospace Science and Technology*, vol. 115, pp. 106824, 2021.
- [J13] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Nonsingular impact time guidance and control using deviated pursuit”, *Aerospace Science and Technology*, vol. 115, pp. 106776, 2021.
- [J12] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Cooperative Salvo Based Active Aircraft Defense Using Impact Time Guidance”, *IEEE Control Systems Letters*, vol. 5, no. 5, pp. 1573–1578, 2021 (also accepted for presentation at 2021 American Control Conference, New Orleans, Louisiana, USA).
- [J11] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Three-Dimensional Nonlinear Cooperative Salvo Using Event-Triggered Strategy”, *AIAA Journal of Guidance, Control, and Dynamics*, vol. 44, no. 2, pp. 328–342, 2021.
- [J10] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Three-Dimensional Guidance With Terminal Time Constraints for Wide Launch Envelops”, *AIAA Journal of Guidance, Control, and Dynamics*, vol. 44, no. 2, pp. 343–359, 2021.
- [J9] **Abhinav Sinha**, and S. R. Kumar, “Super-Twisting Control Based Cooperative Salvo Guidance Using Leader-Follower Approach”, *IEEE Transactions on Aerospace and Electronic Systems*, vol. 56, no. 5, pp. 3556–3565, 2020.
- [J8] **Abhinav Sinha**, and R. K. Mishra, “Consensus in first order nonlinear heterogeneous multi-agent systems with event-based sliding mode control”, *International Journal of Control*, vol. 93, no. 4, pp. 858–871, 2020.
- [J7] **Abhinav Sinha**, R. Kumar, R. Kaur and R. K. Mishra, “Consensus-Based Odor Source Localization by Multiagent Systems Under Resource Constraints”, *IEEE Transactions on Cybernetics*, vol. 50, no. 7, pp. 3254–3263, 2020.
- [J6] **Abhinav Sinha**, R. Kumar, R. Kaur and A. P. Bhondekar, “Consensus-Based Odor Source Localization by Multiagent Systems”, *IEEE Transactions on Cybernetics*, vol. 49, no. 12, pp. 4450–4459, 2019.
- [J5] R. K. Mishra, and **Abhinav Sinha**, “Event-triggered sliding mode based consensus tracking in second order heterogeneous nonlinear multi-agent systems”, *European Journal of Control*, vol. 45, pp. 30–44, 2019.
- [J4] T. Majumder, R. K. Mishra, **Abhinav Sinha**, S. S. Singh, and P. K. Sahu, “Robust congestion control in cognitive radio network using dynamic event-triggered sliding mode”, *International Journal of Communication Systems*, vol. 33, no. 10, pp. e4206, 2019.
- [J3] **Abhinav Sinha**, and R. K. Mishra, “Control of a nonlinear continuous stirred tank reactor via event triggered sliding modes”, *Chemical Engineering Science*, vol. 187, pp. 52–59, 2018.
- [J2] T. Majumder, R. K. Mishra, **Abhinav Sinha**, S. S. Singh, and P. K. Sahu, “Congestion Control in Cognitive Radio Networks with Event-triggered Sliding Mode”, *AEU– International Journal of Electronics and Communication*, vol. 90, pp. 155–162, 2018.
- [J1] **Abhinav Sinha**, and R. K. Mishra, “Nonlinear autonomous altitude control of miniature helicopter UAV based on sliding mode methodology”, *International Journal of Electronics and Communication Technology*, vol. 61, spl.- 1, Jan- Mar 2015.

REFEREED JOURNALS– UNDER REVIEW/PREPARATION

- [j6] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Cooperative Nonlinear Guidance Strategies for Guaranteed Pursuit-Evasion”, under review.
- [j5] **Abhinav Sinha**, D. Mukherjee, and S. R. Kumar, “Consensus-driven Deviated Pursuit for Guaranteed Simultaneous Interception of Moving Targets”, under review.
- [j4] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Trajectory Tracking for Unmanned Aerial Vehicles in 3D Spaces under Motion Constraints”, under review.

- [j3] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Three-dimensional Nonlinear Path-following Guidance with Bounded Input Constraints”, under review.
- [j2] U. Siddique, **Abhinav Sinha**, and Y. Cao, “Fairness in Multi-Objective Preference-based Reinforcement Learning”, under review
- [j1] U. Siddique, **Abhinav Sinha**, and Y. Cao, “Adaptive Event-triggered Reinforcement Learning Control for Complex Nonlinear Systems”, under review

BOOK CHAPTERS

- [BC2] **Abhinav Sinha**, and R. K. Mishra, “Smooth sliding mode control of a nonlinear CSTR using an inverse hyperbolic function-based law, *Foundations and Frontiers in Computer, Communication and Electrical Engineering*, Taylor and Francis, 2016.
- [BC1] T. Majumder, **Abhinav Sinha**, R. K. Mishra, S. S. Singh, and P. K. Sahu, “Congestion control in Cognitive Radio Networks using fractional order rate reaching law based sliding modes, *Foundations and Frontiers in Computer, Communication and Electrical Engineering*, Taylor and Francis, 2016.

PEER REVIEWED CONFERENCE PROCEEDINGS

- [C40] S. Bajpai, R. Boyinine, **Abhinav Sinha**, and R. Sharma, “Toward Simultaneous Localization and Guidance for Collaborative Combat Aircraft (CCA) Effectiveness”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 6th-10th Jan 2025.
- [C39] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Geometric Guidance for Enclosing Moving Targets”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 6th-10th Jan 2025.
- [C38] P. K. Ranjan, **Abhinav Sinha**, and Y. Cao, “Relational Maneuvering Guidance Strategy for Leader-Follower Flexible Formation in Three Dimensions”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 6th-10th Jan 2025.
- [C37] S. Bandela, **Abhinav Sinha**, and Y. Cao, “A Reinforcement Learning Approach to Target Capture in the Presence of a Defender”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 6th-10th Jan 2025.
- [C36] M. Wu, U. Siddique, **Abhinav Sinha**, and Y. Cao, “Offline Reinforcement Learning with Failure Under Sparse Reward Environments”, in *Proc., 3rd International Conference on Computing and Machine Intelligence (ICMI)*, Mt. Pleasant (Michigan), USA, 13th-14th Apr 2024.
- [C35] U. Siddique, **Abhinav Sinha**, and Y. Cao, “On Deep Reinforcement Learning for Target Capture Autonomous Guidance”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 8th-12th Jan 2024.
- [C34] P. K. Ranjan, **Abhinav Sinha**, and Y. Cao, “Robust UAV Guidance Law for Safe Target Circumnavigation with Limited Information and Autopilot Lag Considerations”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 8th-12th Jan 2024.
- [C33] **Abhinav Sinha**, D. White, and Y. Cao, “Deep Reinforcement Learning-based Optimal Time-constrained Intercept Guidance”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 8th-12th Jan 2024.
- [C32] S. Kumar, **Abhinav Sinha**, and S. R. Kumar, “Generic Path-following Guidance for an Autonomous Vehicle”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 8th-12th Jan 2024.
- [C31] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Robust Nonlinear Control for Exact-time Stability of a Quadrotor UAV under Uncertainties”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 8th-12th Jan 2024.
- [C30] R. Tabiyar, **Abhinav Sinha**, and S. R. Kumar, “Decentralized Cooperative Guidance for Time-constrained Rendezvous with Non-Accelerating Targets”, in *Proc., 9th Indian Control Conference (ICC)*, Vishakhapatnam, India, 18th-20th Dec 2023.

- [C29] **Abhinav Sinha**, and Y. Cao, “Three-dimensional Nonlinear Guidance Law for Target Circumnavigation”, in *Proc., American Control Conference (ACC)*, San Diego, USA, 31st May-2nd Jun 2023.
- [C28] **Abhinav Sinha**, and Y. Cao, “A Nonlinear Guidance Law for Target Enclosing with Arbitrary Smooth Shapes”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, National Harbor, USA, 23rd-27th Jan 2023.
- [C27] P. K. Ranjan, **Abhinav Sinha**, Y. Cao, D. Tran, D. Casbeer, and I. Weintraub, “Energy-efficient Ring Formation Control with Constrained Inputs”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, National Harbor, USA, 23rd-27th Jan 2023.
- [C26] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Robust Path-following Guidance for an Unmanned Vehicle”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, National Harbor, USA, 23rd-27th Jan 2023.
- [C25] **Abhinav Sinha**, and S. R. Kumar, “Nonsingular Impact Time Guidance and Control Co-design against a Stationary Target”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, National Harbor, USA, 23rd-27th Jan 2023.
- [C24] **Abhinav Sinha**, R. V. Nanavati, and S. R. Kumar, “Three-dimensional Nonlinear Impact Time Guidance using Predicted Interception Point”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, National Harbor, USA, 23rd-27th Jan 2023.
- [C23] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Separate Guidance and Control Design for Autonomous Path-following”, in *Proc., 22nd IFAC International Symposium on Automatic Control in Aerospace (ACA)*, Mumbai, India, 21st-25th Nov 2022.
- [C22] S. K. Singh, **Abhinav Sinha**, and S. R. Kumar, “Nonlinear Control Design for an Unmanned Aerial Vehicle for Path Following”, *IFAC PapersOnLine*, vol. 55, no. 1, pp. 592–597, 2022.
- [C21] Iftisam, **Abhinav Sinha**, and S. R. Kumar, “Three-dimensional Nonlinear Impact Time Guidance Accounting for Autopilot Lag”, *IFAC PapersOnLine*, vol. 55, no. 1, pp. 26–31, 2022.
- [C20] **Abhinav Sinha**, R. V. Nanavati, and S. R. Kumar, “Impact Angle Constrained Integrated Guidance and Control for a Dual-controlled Interceptor”, in *Proc., 7th Indian Control Conference (ICC)*, Mumbai, India, 20th-22nd Dec 2021.
- [C19] **Abhinav Sinha**, and S. R. Kumar, “Cooperative Target Capture using Predefined-time Consensus”, in *Proc., 7th Indian Control Conference (ICC)*, Mumbai, India, 20th-22nd Dec 2021.
- [C18] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Cooperative Salvo Based Active Aircraft Defense using Impact Time Guidance”, in *Proc., American Control Conference (ACC)*, New Orleans, USA, 25th-28th May 2021.
- [C17] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Integrated Guidance and Control For Dual Control Interceptors Under Impact Time Constraint”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Virtual Event, 11th-15th and 19th-21st Jan 2021.
- [C16] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Three-Dimensional Nonlinear Impact Time Guidance for Stationary Targets”, in *Proc., American Control Conference (ACC)*, Denver, USA, 1st-3rd Jul 2020.
- [C15] **Abhinav Sinha**, D. Mukherjee, and S. R. Kumar, “Deviated Pursuit based Cooperative Simultaneous Interception against Moving Targets”, in *Proc., American Control Conference (ACC)*, Denver, USA, 1st-3rd Jul 2020.
- [C14] H. Bishwash, **Abhinav Sinha**, and S. R. Kumar, “Deviated Pursuit Based Nonlinear Impact-Time Guidance with Finite-Time Convergence”, *IFAC PapersOnLine*, vol. 53, no. 1, pp. 93–98, 2020, **Awarded Best Paper**.
- [C13] **Abhinav Sinha**, and S. R. Kumar, “Super-Twisting Control Based Impact Time Constrained Guidance”, in *Proc., Guidance, Navigation, and Control Conference (AIAA SciTech Forum)*, Orlando, USA, 6th-10th Jan 2020.
- [C12] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Consensus Based Nonlinear Guidance for Cooperative Salvo”, in *Proc., 6th Indian Control Conference (ICC)*, Hyderabad, India, 18th-20th Dec 2019.
- [C11] **Abhinav Sinha**, R. Kumar, and R. Kaur, “Resource Efficient Control Strategy for Consensus Based Odour Source Localisation by Multiagent Systems”, *accepted, 2018 IEEE Symposium Series on Computational Intelligence*, Bengaluru, India, 18th-21st Nov 2018.

- [C10] **Abhinav Sinha**, and R. K. Mishra, “Convergence of multi-agent systems to unknown source of an odor”, in *Proc., 2018 IEEE 3rd International Conference for Convergence in Technology*, Pune, India, 7th-8th Apr 2018.
- [C9] **Abhinav Sinha**, and R. K. Mishra, “Temperature regulation in a Continuous Stirred Tank Reactor using event triggered sliding mode control”, *IFAC PapersOnLine*, vol. 51, no. 1, pp. 401–406, 2018.
- [C8] T. Majumder, **Abhinav Sinha**, R. K. Mishra, S. S. Singh, and P. K. Sahu, “Robust nonlinear congestion controller for time delayed and uncertain cognitive radio based wireless network”, in *Proc., 2015 IEEE Power, Communication and Information Technology Conference (PCITC)*, Bhubaneswar, India, 15th-17th Oct 2015.
- [C7] **Abhinav Sinha**, and R. K. Mishra, “Sliding mode controller design for high performance of permanent magnet stepper motor”, in *Proc., 2015 IEEE International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS)*, Coimbatore, India, 19th-20th Mar 2015.
- [C6] **Abhinav Sinha**, and R. K. Mishra, “Robust altitude tracking of a miniature helicopter UAV based on sliding mode”, in *Proc., 2015 IEEE International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS)*, Coimbatore, India, 19th-20th Mar 2015.
- [C5] T. Majumder, **Abhinav Sinha**, R. K. Mishra, S. S. Singh, and P. K. Sahu, “Robust nonlinear congestion controller for cognitive radio based wireless network”, in *Proc., 2015 IEEE International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS)*, Coimbatore, India, 19th-20th Mar 2015.
- [C4] **Abhinav Sinha**, R. K. Mishra, and S. Jaiswal, “Robust and Smooth Nonlinear Control of an Industrial Robot for Automated Pick and Place”, in *Proc., 2015 IEEE International Conference on Computing Communication Control and Automation (ICCUBEA)*, Pune, India, 26th-27th Feb 2015, **Awarded Best Paper**.
- [C3] **Abhinav Sinha**, P. Prason, P. K. Bharadwaj, and A. C. Ranasinghe , “Nonlinear Autonomous Control of a Two-Wheeled Inverted Pendulum Mobile Robot Based on Sliding Mode”, in *Proc., 2015 IEEE International Conference on Computational Intelligence and Networks (CINE)*, Bhubaneswar, India, 12th-13th Jan 2015.
- [C2] A. C. Ranasinghe, K. Rasnayake, **Abhinav Sinha**, and K. K. Rasnayake, “Perturbing effect compensation technique for smart sensors”, in *Proc., 7th IEEE International Conference on Information and Automation for Sustainability (ICIAfS)*, Colombo, Sri Lanka, 22nd-24th Dec 2014.
- [C1] **Abhinav Sinha**, and R. K. Mishra, “Smooth sliding mode controller design for robotic arm”, in *Proc., 2013 International Conference on Control, Automation, Robotics and Embedded Systems (CARE)*, Jabalpur, India, 16th-18th Dec 2013.

OTHERS

- [A4] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Three-Dimensional Nonlinear Path-Following Guidance for UAVs”, in *8th Cyber-Physical Systems Symposium*, Bangalore, India, 25th Jul-27th Jul 2024.
- [A3] U. Siddique, **Abhinav Sinha**, and Y. Cao, “Fairness in Preference-based Reinforcement Learning”, in *41th International Conference on Machine Learning (ICML) Workshop : The Many Facets of Preference-Based Learning*, Honolulu, USA, 26th Jul-27th Jul 2023.
- [A2] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Integrated Guidance and Control Design For Time-Constrained Interception”, *IEEE TechRxiv*, 2020.
- [A1] **Abhinav Sinha**, R. Kaur, R. Kumar, and A. P. Bhondekar, “Cooperative control of multi-agent systems to locate source of an odor”, *arXiv:1711.03819, arXiv e-prints*, 2017.

GRANTS

- [G2] 2025-2027 : Principal Investigator, **AIR-GAME CCA : Autonomous Information-Driven Response for Guided Autonomous Missions and Engagement in Collaborative Combat Aircraft**, The US Air Force Research Labs

[G1] 2024-2025 : Principal Investigator, **CO AIR : Cooperative Operation of Assets using Intelligent Reinforcements to Enhance the Collaborative Combat Aircraft Capability**, UtopiaCompression Corporation and AFWERX

COURSES TAUGHT/OFFERED

- AEEM 9074 : Control of Networked Cyber-Physical Systems, Spring 2025
- AEEM 5115/6015 : Modern Control, Spring 2025
- AEEM 4042 : Fundamentals of Control Theory, Fall 2024
- AEEM 9074 : Introduction to Navigation and Guidance, Fall 2024
- AEEM 2013 : Introduction to Systems Engineering, Spring 2024

INVITED TALKS, SEMINARS, TUTORIALS

[T2] Jan 2025 : **On the Lady, the Bandit, and the Bodyguard Problem : Cooperative Guidance Strategies for Guaranteed Pursuit-Evasion**, UC-AEEM Graduate Seminar Series

[T1] Jan 2025 : **On the Lady, the Bandit, and the Bodyguard Problem : Cooperative Guidance Strategies for Guaranteed Pursuit-Evasion**, Short Term Course cum Faculty Development Program On Advances in Control, Estimation & Optimization For Cyber-Physical Systems (ACEOCPS), NIT Rourkela

STUDENTS ADVISED/MENTORED

DOCTORAL STUDENTS

[D2] Rohith Boyinine (2024– , co-advised with Dr. Rajnikant Sharma, AFIT)

[D1] Shivam Bajpai (2024–)

MASTERS STUDENTS

[M4] Sandeep Bandarupalli (2024–), currently intern at LeanQubit Inc., Ohio

[M3] Mukhtar Ahmed (2024–)

[M2] Liam McKenna (2025), next : Air Force Institute of Technology, WPAFB, Ohio

[M1] Jayanth Ammapalli (2024), next : UtopiaCompression Corporation, California

BACHELOR STUDENTS

[B2] Pragyat Sood (2024–)

[B1] Hari Narayanan Sathyanarayanan (2024)

PROFESSIONAL SERVICES

REVIEWER OF REFEREED JOURNALS

- IEEE Transactions on Automatic Control
- Automatica
- International Journal of Control
- IEEE Transactions on Control Systems Technology
- International Journal of Robust and Nonlinear Control
- Systems and Control Letters
- IEEE Transactions on Control of Network Systems
- IEEE Transactions on System, Man and Cybernetics : Systems
- IEEE Transactions on Cybernetics
- Journal of The Franklin Institute
- European Journal of Control

- IET Control Theory and Applications
- AIAA Journal of Guidance, Control, and Dynamics
- IEEE Control Systems Letters
- IEEE Robotics and Automation Letters
- IEEE Transactions on Fuzzy Systems
- IEEE Transactions on Aerospace and Electronic Systems
- Journal of Intelligent & Robotic Systems
- Aerospace Science and Technology
- IEEE Transactions on Neural Networks and Learning Systems
- Asian Journal of Control
- Information Sciences
- ASME Journal of Dynamic Systems, Measurement, and Control
- IEEE Transactions on Industrial Electronics
- IEEE Transactions on Industrial Informatics
- ISA Transactions
- Journal of Process Control
- IEEE Access
- Defence Technology
- IEEE Systems Journal
- IEEE Sensors Letters
- Nonlinear Dynamics
- Advances in Space Research
- IET Generation, Transmission and Distribution
- Chemical Engineering Science
- Asia Pacific Journal of Chemical Engineering
- Journal of Computational Science
- Neurocomputing
- Swarm Intelligence
- IET Power Electronics
- Journal of Aerospace Engineering
- IEEE Journal of Emerging and Selected Topics in Industrial Electronics
- Plos One
- The Aeronautical Journal
- The Journal of the Astronautical Sciences
- IEEE Journal of Oceanic Engineering
- IEEE Transactions on Network Science and Engineering

REVIEWER OF PEER REVIEWED CONFERENCES (SELECTED)

- American Control Conference (ACC)
- Control and Decision Conference (CDC)
- Indian Control Conference (ICC)
- European Control Conference (ECC)
- AIAA SciTech Forum
- IFAC World Congress
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- International Workshop on Variable Structure Systems and Sliding Mode Control (VSS)
- International Conference on Control, Decision and Information Technologies (CoDIT)
- International Conference on Control and Automation (ICCA)
- Mediterranean Conference on Control and Automation (MED)
- International Conference on Unmanned Aircraft Systems (ICUAS)
- IFAC Advances in Control and Optimization of Dynamical Systems (ACODS)
- IFAC Symposium on Automatic Control in Aerospace (ACA)

- IEEE Conference on Control Technologies and Applications (CCTA)
- International Conference on Automation and Computing

ACTIVITIES OF TECHNICAL COMMITTEES

- Sub-committee Chair (Membership/Website, 2023-Present) of the IEEE CSS TC on Manufacturing Automation and Robotic Control
- Chair of Session on **GNC-26/IS-24 : Guidance, Navigation, and Control in Intelligent Systems** at the AIAA 2025 SciTech Forum, Orlando, USA, 6th Jul-10th Jan 2025.
- Organizer (co-organizer : Yongcan Cao, UTSA) of Invited Session on **Synergistic Strategies in Robotics, Optimization, Learning, and Safety for Cyber-Physical and Cyber-Physical-Human Systems** at the American Control Conference (ACC), Denver, USA, 8th Jul-10th Jul 2025.
- Organizer (co-organizers : Yongcan Cao, UTSA and Xiacong Li, Harvard University/A*STAR Singapore) of Session on **Control Technologies and Solutions for Sustainable Energy Systems** at the IEEE CSS Day 2024.
- Organizer (co-organizers : Yongcan Cao, UTSA and David Casbeer, AFRL) of Invited Session on **Control of Cyber-Physical Systems : Multidisciplinary Approaches in Robotics, Autonomy, Optimization, and Safety** at the American Control Conference (ACC), Toronto, Canada, 8th Jul-12th Jul 2024.
- Chair of Invited Session on **Control of Cyber-Physical Systems : Multidisciplinary Approaches in Robotics, Autonomy, Optimization, and Safety** at the American Control Conference (ACC), Toronto, Canada, 8th Jul-12th Jul 2024.
- Organizer (co-organizers : Yongcan Cao, UTSA and Eloy Garcia, AFRL) of Invited Session on **Methods in Robotics, Optimization, Learning, and Safety for Control of Cyber-Physical Systems** at the American Control Conference (ACC), San Diego, USA, 31st May-2nd Jun 2023.
- Co-chair, Session on **Aerospace** at the American Control Conference (ACC), San Diego, USA, 31st May-2nd Jun 2023.



PROFESSIONAL MEMBERSHIPS

- **Life Member**, IITB Alumni Association
- **Senior Member**, Institute of Electrical and Electronics Engineers (IEEE)
 - ➔ **Member**, IEEE Aerospace and Electronic Systems Society (AESS)
 - ➔ **Member**, IEEE Control Systems Society (CSS)
 - ➔ **Member**, IEEE Robotics and Automation Society (RAS)
 - ➔ **Member and Sub-committee chair**, IEEE CSS Technical Committee on Manufacturing, Automation, and Robotic Control
 - ➔ **Member**, IEEE CSS Technical Committee on Aerospace Controls
 - ➔ **Member**, IEEE CSS Technical Committee on Automotive Controls
 - ➔ **Member**, IEEE CSS Technical Committee on Control Education
- **Senior Member**, American Institute of Aeronautics and Astronautics (AIAA)
- **Member**, International Federation of Automatic Control (IFAC)
 - ➔ **Member**, IFAC Automatic Control and Dynamic Optimization Society (ACDOS)
- **Member**, Asian Control Association



AWARDS, ACHIEVEMENTS AND HONORABLE MENTIONS

- | | |
|---|----------|
| ➤ NAIK AND RASTOGI AWARD FOR EXCELLENCE IN PH.D. RESEARCH
<i>Indian Institute of Technology Bombay, India</i> | AUG 2022 |
| ➤ ACC STUDENT TRAVEL GRANT
<i>American Automatic Control Council, USA</i> | MAY 2021 |

- **ACC STUDENT TRAVEL GRANT** JUN 2020
American Automatic Control Council, USA
- **ICC STUDENT SUPPORT** DEC 2019
Indian Control Conference and IEEE-CSS
- **MHRD POSTGRADUATE GATE FELLOWSHIP FOR PH.D.** JUL 2018 - APR 2021
Ministry of Human Resource Development, India
- **MHRD POSTGRADUATE GATE FELLOWSHIP FOR M.TECH** JUL 2016 - JUN 2018
Ministry of Human Resource Development, India
- **CHAMPIONS OF INITIAL LEARNING PROGRAMME (ILP)** DEC 2015
TATA Consultancy Services Limited
- **ON THE SPOT AWARD** JUL 2015
TATA Consultancy Services Limited
- **OUTSTANDING CONTRIBUTION AWARD** AUG 2013
KIIT Robotics Society, Kalinga Institute of Industrial Technology