

# ABHINAV SINHA

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## WORK EXPERIENCE

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| Dec 2023-<br>Present  | <b>UNIVERSITY OF CINCINNATI</b> , CINCINNATI, USA<br><i>Assistant Professor</i> , Department of Aerospace Engineering and Engineering Mechanics   |
| Dec 2021-<br>Nov 2023 | <b>THE UNIVERSITY OF TEXAS AT SAN ANTONIO</b> , SAN ANTONIO, USA<br><i>Postdoctoral Fellow</i> , Host : Dr. Yongcan Cao   |
| May 2021-<br>Nov 2021 | <b>INDIAN INSTITUTE OF TECHNOLOGY BOMBAY</b> , MUMBAI, INDIA<br><i>Postdoctoral Fellow</i> , Host : Dr. Shashi Ranjan Kumar   |
| Jan 2019-<br>May 2021 | <b>INDIAN INSTITUTE OF TECHNOLOGY BOMBAY</b> , MUMBAI, INDIA<br><i>Teaching Assistant</i> <ul style="list-style-type: none"><li>➤ AE 305 : Flight Mechanics– II, Spring 2019, 2020, and 2021</li><li>➤ AE 717 : Aircraft Flight Dynamics, Spring 2019, 2020, and 2021</li><li>➤ AE 410 : Navigation and Guidance, Fall 2019, 2020, and 2021</li><li>➤ AE 641 : Introduction to Navigation and Guidance, Fall 2019, 2020, and 2021</li></ul> |
| Jun 2019-<br>May 2018 | <b>CENTRAL SCIENTIFIC INSTRUMENTS ORGANISATION</b> , CHANDIGARH, INDIA<br><i>Research Student</i>   |
| Sep 2014-<br>Jul 2016 | <b>TATA CONSULTANCY SERVICES LIMITED</b> , PUNE, INDIA<br><i>Assistant System Engineer, Consulting in Manufacturing, Automation and Control Systems</i>   |
| Nov 2015              | <b>TATA CONSULTANCY SERVICES LIMITED</b> , TRIVANDRUM, INDIA<br><i>Visiting faculty at TCS Global Learning Center</i>   |
| Jun 2011-<br>May 2014 | <b>KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY</b> , BHUBANESWAR, INDIA<br><i>Instructor and Coordinator, KIIT Robotics Society</i>  |

## EDUCATION

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

## PUBLICATIONS

### REFEREED JOURNALS– PUBLISHED/IN PRESS

- [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

- [j7] P. Ranjan, **Abhinav Sinha**, Y. Cao, D. Casbeer, and I. Weintraub, “Relational Maneuvering of Leader-Follower Unmanned Aerial Vehicles for Flexible Formation”, under review.
- [j6] P. Ranjan, **Abhinav Sinha**, and Y. Cao, “Self-organizing Multiagent Target Enclosing under Limited Information and Safety Guarantees”, under review.
- [j5] P. Ranjan, **Abhinav Sinha**, and Y. Cao, “3D Guidance Law for Maximal Coverage and Target Enclosing with Inherent Safety”, under review.
- [j4] **Abhinav Sinha**, and S. R. Kumar, “Time-Critical Unified Rendezvous Guidance for an Autonomous Vehicle”, under review.
- [j3] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, “Cooperative Nonlinear Guidance Strategies for Guaranteed Pursuit-Evasion”, under review.
- [j2] **Abhinav Sinha**, D. Mukherjee, and S. R. Kumar, “Consensus-driven Deviated Pursuit for Guaranteed Simultaneous Interception of Moving Targets”, under review.
- [j1] U. Siddique, **Abhinav Sinha**, and Y. Cao, “Fairness in Multi-Objective Preference-based Reinforcement Learning”, 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.

- [C36] M. Wu, U. Siddique, **Abhinav Sinha**, and Y. Cao, "Offline Reinforcement Learning with Failure Under Sparse Reward Environments", in *Proc., 3<sup>rd</sup> International Conference on Computing and Machine Intelligence (ICMI)*, Mt. Pleasant (Michigan), USA, 13<sup>th</sup>-14<sup>th</sup> 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, 8<sup>th</sup>-12<sup>th</sup> 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, 8<sup>th</sup>-12<sup>th</sup> 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, 8<sup>th</sup>-12<sup>th</sup> 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, 8<sup>th</sup>-12<sup>th</sup> 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, 8<sup>th</sup>-12<sup>th</sup> Jan 2024.
- [C30] R. Tabiyar, **Abhinav Sinha**, and S. R. Kumar, "Decentralized Cooperative Guidance for Time-constrained Rendezvous with Non-Accelerating Targets", in *Proc., 9<sup>th</sup> Indian Control Conference (ICC)*, Vishakhapatnam, India, 18<sup>th</sup>-20<sup>th</sup> 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, 31<sup>st</sup> May-2<sup>nd</sup> 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, 23<sup>rd</sup>-27<sup>th</sup> 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, 23<sup>rd</sup>-27<sup>th</sup> 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, 23<sup>rd</sup>-27<sup>th</sup> 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, 23<sup>rd</sup>-27<sup>th</sup> 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, 23<sup>rd</sup>-27<sup>th</sup> Jan 2023.
- [C23] S. Kumar, S. R. Kumar, and **Abhinav Sinha**, "Separate Guidance and Control Design for Autonomous Path-following", in *Proc., 22<sup>nd</sup> IFAC International Symposium on Automatic Control in Aerospace (ACA)*, Mumbai, India, 21<sup>st</sup>-25<sup>th</sup> 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., 7<sup>th</sup> Indian Control Conference (ICC)*, Mumbai, India, 20<sup>th</sup>-22<sup>nd</sup> Dec 2021.

- [C19] **Abhinav Sinha**, and S. R. Kumar, “Cooperative Target Capture using Predefined-time Consensus”, in *Proc., 7<sup>th</sup> Indian Control Conference (ICC)*, Mumbai, India, 20<sup>th</sup>-22<sup>nd</sup> 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, 25<sup>th</sup>-28<sup>th</sup> 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, 11<sup>th</sup>-15<sup>th</sup> and 19<sup>th</sup>-21<sup>st</sup> 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, 1<sup>st</sup>-3<sup>rd</sup> 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, 1<sup>st</sup>-3<sup>rd</sup> 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, 6<sup>th</sup>-10<sup>th</sup> Jan 2020.
- [C12] **Abhinav Sinha**, S. R. Kumar, and D. Mukherjee, “Consensus Based Nonlinear Guidance for Cooperative Salvo”, in *Proc., 6<sup>th</sup> Indian Control Conference (ICC)*, Hyderabad, India, 18<sup>th</sup>-20<sup>th</sup> 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, 18<sup>th</sup>-21<sup>st</sup> Nov 2018.
- [C10] **Abhinav Sinha**, and R. K. Mishra, “Convergence of multi-agent systems to unknown source of an odor”, in *Proc., 2018 IEEE 3<sup>rd</sup> International Conference for Convergence in Technology*, Pune, India, 7<sup>th</sup>-8<sup>th</sup> 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, 15<sup>th</sup>-17<sup>th</sup> 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, 19<sup>th</sup>-20<sup>th</sup> 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, 19<sup>th</sup>-20<sup>th</sup> 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, 19<sup>th</sup>-20<sup>th</sup> 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, 26<sup>th</sup>-27<sup>th</sup> Feb 2015, **Awarded Best Paper**.
- [C3] **Abhinav Sinha**, P. Prasoon, 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, 12<sup>th</sup>-13<sup>th</sup> 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, 22<sup>nd</sup>-24<sup>th</sup> 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, 16<sup>th</sup>-18<sup>th</sup> Dec 2013.

#### OTHERS

- [A3] U. Siddique, **Abhinav Sinha**, and Y. Cao, "Fairness in Preference-based Reinforcement Learning", in *41<sup>th</sup> International Conference on Machine Learning (ICML) Workshop : The Many Facets of Preference-Based Learning*, Honolulu, USA, 26<sup>th</sup> Jul-27<sup>th</sup> 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.

#### COURSES TAUGHT/OFFERED

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- > AEEM 4042 : Fundamentals of Control Theory, Fall 2024
- > AEEM 2013 : Introduction to Systems Engineering, Spring 2024

#### PROFESSIONAL SERVICES

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##### 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

#### 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
- > 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, 8<sup>th</sup> Jul-12<sup>th</sup> 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, 8<sup>th</sup> Jul-12<sup>th</sup> 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, 31<sup>st</sup> May-2<sup>nd</sup> Jun 2023.
- > Co-chair, Session on **Aerospace** at the American Control Conference (ACC), San Diego, USA, 31<sup>st</sup> May-2<sup>nd</sup> Jun 2023.

## PROFESSIONAL MEMBERSHIPS

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- > **Life Member**, IITB Alumni Association
- > **Member**, Institute of Electrical and Electronics Engineers (IEEE)
- > **Member**, IEEE Aerospace and Electronic Systems Society (AESS)
- > **Member**, IEEE Control Systems Society (CSS)
- > **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
- > **Member**, International Federation of Automatic Control (IFAC)
- > **Senior Member**, American Institute of Aeronautics and Astronautics (AIAA)
- > **Member**, IFAC Automatic Control and Dynamic Optimization Society (ACDOS)
- > **Member**, Asian Control Association

## AWARDS, ACHIEVEMENTS AND HONORABLE MENTIONS

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|---|---------------------|
| > <b>NAIK AND RASTOGI AWARD FOR EXCELLENCE IN PH.D. RESEARCH</b><br><i>Indian Institute of Technology Bombay, India</i> | AUG 2022            |
| > <b>ACC STUDENT TRAVEL GRANT</b><br><i>American Automatic Control Council, USA</i>                                     | MAY 2021            |
| > <b>ACC STUDENT TRAVEL GRANT</b><br><i>American Automatic Control Council, USA</i>                                     | JUN 2020            |
| > <b>ICC STUDENT SUPPORT</b><br><i>Indian Control Conference and IEEE-CSS</i>   | DEC 2019            |
| > <b>MHRD POSTGRADUATE GATE FELLOWSHIP FOR PH.D.</b><br><i>Ministry of Human Resource Development, India</i>            | JUL 2018 - APR 2021 |
| > <b>MHRD POSTGRADUATE GATE FELLOWSHIP FOR M.TECH</b><br><i>Ministry of Human Resource Development, India</i>           | JUL 2016 - JUN 2018 |
| > <b>CHAMPIONS OF INITIAL LEARNING PROGRAMME (ILP)</b><br><i>TATA Consultancy Services Limited</i>                      | DEC 2015            |
| > <b>ON THE SPOT AWARD</b><br><i>TATA Consultancy Services Limited</i>  | JUL 2015            |
| > <b>OUTSTANDING CONTRIBUTION AWARD</b><br><i>KIIT Robotics Society, Kalinga Institute of Industrial Technology</i>     | AUG 2013            |