Maruthi R. Akella, Ph. D., P.E.
The University of Texas at Austin

Maruthi Akella is a professor with the Department of Aerospace Engineering and Engineering Mechanics at The University of Texas at Austin (UT Austin) where he holds the Cockrell Family Endowed Chair in Engineering. He is the founding director for the Center for Autonomous Air Mobility and the faculty lead for the Control, Autonomy, and Robotics area at UT Austin. Dr. Akella's research program encompasses control theoretic investigations of nonlinear and coordinated systems, vision-based sensing, perception, and development of integrated human and autonomous multivehicle systems. His research contributions led to high-impact applications for aerial robotics, high-speed flow-control systems, spacecraft formations, and computer vision. His research group contributed for the onboard guidance algorithm for the Intuitive Machines IM-1 mission – the first U.S. moon landing in more than 50 years since the Apollo era. He published more than 260 papers in peer-reviewed archival journals and professional conferences. His work was recognized through prestigious awards including the AIAA Mechanics and Control of Flight Award, the AAS Dirk Brouwer Award, the IEEE-CSS Award for Excellence in Aerospace Control, and the Judith A. Resnik Space Award from the IEEE Aerospace and Electronic Systems Society. During 2021-2022, Dr. Akella served as the Technology lead facilitator for the Urban Air Mobility Advisory Committee established by the Texas State Legislature tasked to assess current state law and provide necessary recommendations for facilitating air mobility operations and infrastructure within the state. In October 2024, the International Astronomical Union designated asteroid number 5376 – a nearly 5-mile diameter sized minor planet from the main asteroid belt – as "Maruthiakella" honoring Dr. Akella's contributions to "many successful applications in astrodynamics." Dr. Akella is Editor-in-Chief for the Journal of the Astronautical Sciences and serves on the AAS Board of Directors. Dr. Akella is a Fellow of the IEEE, AIAA, and AAS, and holds the Academician rank with the International Academy of Astronautics.

Education

Ph.D., Aerospace Engineering, Texas A&M University, 1998
M.E. (with distinction), Aerospace Engineering, Indian Institute of Science, Bangalore, India, 1994
B. Tech (Honors), Mechanical Engineering, National Institute of Technology Calicut (Formerly, Calicut Regional Engineering College), University of Calicut, India, 1992

Professional Experience

Dates	Employer or Affiliation	Position/Title
9/22-onwards	The Univ. of Texas at Austin	Cockrell Family Chair in Engineering #19
9/20-8/22	The Univ. of Texas at Austin	Ashley H. Priddy Centennial Professorship in Engineering
1/19 onwards	The Univ. of Texas at Austin	Founding Director, Center for Autonomous Air Mobility
9/17-8/20	The Univ. of Texas at Austin	E.P. Schoch Endowed Professorship in Engineering
9/16 onwards	The Univ. of Texas at Austin	Faculty Lead, Controls, Autonomy, and Robotics Area
9/15 onwards	The Univ. of Texas at Austin	Professor, Aerospace Engineering & Engineering Mechanics
9/14-8/17	The Univ. of Texas at Austin	Myron L. Begeman Faculty Fellowship
9/05-8/15	The Univ. of Texas at Austin	Associate Professor
9/99-8/05	The Univ. of Texas at Austin	Assistant Professor
1/99-8/99	Yale University	Post-doctoral Fellow, Center for Systems Science

Awards and Honors

- International Astronautical Union, Asteroid designated in the name "MaruthiAkella", October 2024
- Distinguished Alumni Award (Academic Excellence), National Institute of Technology Calicut, August 2023
- Fellow, American Institute of Aeronautics and Astronautics (AIAA), 2022
- Elected IEEE Fellow, 2021
- AAS Dirk Brouwer Award, 2020
- IEEE CSS Award for Technical Excellence in Aerospace Control, 2020

- Academician, International Academy of Astronautics, 2019
- Distinguished Lecturer, IEEE Aerospace and Electronic Systems Society, 2015-2020
- Judith A. Resnik Space Award, IEEE Aerospace and Electronic Systems Society, 2015
- Distinguished Aerospace Alumni Award, Texas A&M University, 2015
- Mechanics and Control of Flight Award, American Institute of Aeronautics and Astronautics, 2014
- Fellow, American Astronautical Society, 2013
- Halliburton Young Faculty Award, The University of Texas at Austin, Cockrell School of Engineering, 2001
- John Breakwell Student Travel Award, American Astronautical Society, 1999

Professional Memberships, Service, and Synergistic Activities

- 2023-2024: Advanced Air Mobility Advisory Committee, State of Texas
- 2021-present: Technical Chair, American Control Conference (AIAA Society)
- 2021-2022: Technology Area Lead, Urban Air Mobility Advisory Committee, State of Texas
- 2023-present: Technology Area Lead, Advanced Air Mobility Advisory Committee, State of Texas
- 2019-present: Editor-in-Chief, *The Journal of the Astronautical Sciences*
- 2019-present: Board of Directors, American Astronautical Society
- 2021-present: Chair, IEEE/AESS Judith A. Resnik Space Award Selection Committee
- 2019-present: Member, EuroGNC Council of European Aerospace Societies
- 2008-present: Associate Editor, *Journal of Guidance, Control, and Dynamics*
- 2017-2018: Chair, AAS Spaceflight Mechanics Committee
- 2016-2021: Senior Editor, *IEEE Transactions on Aerospace and Electronic Systems*
- 2019-2020: Associate Editor-at-Large, American Control Conference Technical Program Committee
- 2015-2017: Chair, Dirk Brouwer Award Selection Committee
- 2018: General Chair, AIAA SciTech Forum, Space Flight Mechanics
- Member, AIAA Guidance, Navigation, and Control Technical Committee, 2014-present

Publications

- 104 peer-reviewed archival journal articles
- 163 conference papers, 2 books (edited), 1 book chapter (invited)

(List of Representative Publications)

- Akella, M.R., "Vision-Based Adaptive Tracking Control of Uncertain Robot Manipulators," *IEEE Transactions on Robotics*, 21(4), pp. 748-753, August 2005.
- Summers, T.H., Akella, M.R., and Mears, M.J., "Coordinated Standoff Tracking of Moving Targets: Control Laws and Information Architectures," *Journal of Guidance, Control, and Dynamics,* 32(1), 2009, pp. 56-69.
- Mercker, T., Akella, M.R. and Alvarez, J., "Robot Navigation in a Decentralized Landmark-Free Sensor Network," *Journal of Intelligent and Robotic Systems*, Vol. 60, Nos. 3-4, 2010, 553-576.
- Hernandez, S., and Akella, M.R., "Lyapunov-Based Guidance for Orbit Transfers and Rendezvous in Levi-Civita Coordinates," *Journal of Guidance, Control, and Dynamics*, 37(4), July-Aug. 2014.
- Srikant, S., and Akella, M.R., "Stabilizing Controllers for Multi-Input Singular-Gain Systems," *Automatica*, Vol. 54, 2015, pp. 279-283.
- Okamoto, M., and Akella, M.R., 2016. Avoiding the local-minimum problem in multi-agent systems with limited sensing and communication. *International Journal of Systems Science*, *47*(8), pp.1943-1952.
- Yang, S., Akella, M.R., and Mazenc, F., "Dynamically Scaled Immersion and Invariance Adaptive Control for Euler-Lagrange Mechanical Systems," *Journal of Guidance, Control, and Dynamics*, 40(11), Nov. 2017.
- Dong, H., Hu, Q., and Akella, M.R., "Dual Quaternion Based Spacecraft Autonomous Rendezvous and Docking Under Six-Degree-of-Freedom Motion Constraints," *Journal of Guidance, Control, and Dynamics*, 41(5), 2018.
- Dong, H., Hu, Q., Akella, M.R., and Mazenc, F., "Anti-unwinding Control of Spacecraft with Forbidden Pointing

Constraints," *Journal of Guidance, Control, and Dynamics,* Vol. 42, No. 4, 2018, pp. 822-835.

- Hu, Q., Tan, X., and Akella, M.R., "Reduced Attitude Control for Boresight Alignment with Dynamic Pointing Constraints," *IEEE/ASME Transactions on Mechatronics*, Vol. 24, No. 6, 2019, pp. 2942-2952.
- Moghe, R., Zanetti, R. and Akella, M.R., 2019. Adaptive Kalman Filter for Detectable Linear Time-Invariant Systems. *Journal of Guidance, Control, and Dynamics*, *42*(10), pp.2197-2205.
- Subramani, A.R., and Akella, M.R., "Uniform Exponential Stability Result for the Rigid Spacecraft Attitude Tracking Control Problem," *Journal of Guidance, Control, and Dynamics,* Vol. 43, No. 1, 2020, pp. 39-45.
- Vanstone, L., Bosco, A., Saleh, Y., Akella, M.R., Clemens, N.T., and Gogineni, S., "Closed-Loop Control of Unstart in a Mach 1.8 Isolator," *Journal of Propulsion and Power*, Vol. 36, No. 1, 2020.
- Dong, H., Hu, Q., Akella, M.R., and Yang, H., "Composite Adaptive Attitude-Tracking Control with Parameter Convergence Under Finite Excitation," *IEEE Transactions on Control Systems Technology*, 28(6), 2019, pp. 2567-2664.
- Almeida, M., and Akella, M.R., "New Class of Attitude Controllers Guaranteed to Converge Within Specified Finite-Time," *The Journal of Astronautical Sciences*, Vol. 67, No. 2, 2020, pp. 552-570.
- Schubert, C., Black, K., Fonseka, D., Dhir, A., Deutsch, J., Dhamani, N., Martin, G. and Akella, M., 2021, March. A Pipeline for Vision-Based On-Orbit Proximity Operations Using Deep Learning and Synthetic Imagery. In *2021 IEEE Aerospace Conference (50100)* (pp. 1-15). IEEE.
- Kaki, S., Akella, M.R., and Mortari, D., "Angular Velocity and Covariance Estimates for Rigid Bodies in Near Pure-Spin Using Orientation Measurements," *The Journal of the Astronautical Sciences*, Vol. 69, May 2022, pp. 767-800.
- Moghe, R. and Akella, M., Projection scheme and adaptive control for symmetric matrices with eigenvalue bounds. IEEE Transactions on Automatic Control, 68(3), March 2023, pp.1738-1745.
- Kaki, S. and Akella, M.R., 2023. Coplanar circular-to-circular orbit transfer guidance with constant-thrust acceleration. *Celestial Mechanics and Dynamical Astronomy*, *135*(6), p.56.
- Kaki, S. and Akella, M.R., 2023. Spacecraft rendezvous in closed keplerian orbits using constant radial thrust acceleration. *Journal of Guidance, Control, and Dynamics*, *46*(6), pp.1112-1125.
- Vedantam, M. and Akella, M.R., 2024. Spectral Shifted Stabilized Continuation for Indirect Optimal Control. *Journal of Guidance, Control, and Dynamics*, *47*(5), pp.808-821.
- Kaki, S. and Akella, M.R., 2024. Kinematic Batch Estimator for Angular Velocity and Associated Uncertainty. *Journal of Guidance, Control, and Dynamics*, *47*(6), pp.1039-1054.
- Miller, A.J. and Akella, M.R., 2024. Guidance Templates for Spacecraft Attitude Maneuver Planning. *Journal of Guidance, Control, and Dynamics*, pp.1-9.
- Hoobler, R.D. and Akella, M.R., 2024. Direct Multi-Thread Adaptive Control With Attracting Manifold Design. *International Journal of Adaptive Control and Signal Processing*.
- Kim, D. and Akella, M.R., 2024, July. Two-Player Task Negotiation Based on Trust. In *2024 American Control Conference (ACC)* (pp. 2053-2059). IEEE.

Invited Seminars

7 plenary/keynote lectures, 67 invited talks