

Kooktae Lee

CONTACT INFORMATION

Dept. of Mechanical & Aerospace Engineering
Texas Tech University
Lubbock, TX 79409, USA

Phone: 806-834-8428 (work)
E-mail: kooktae.lee@ttu.edu
<https://sites.google.com/view/kooktaelee>

RESEARCH INTEREST

Robotics and Control, Multi-Agent Systems, Multi-Robot Coordination, Distributed Networked Control Systems, Uncertainty Quantification, Distributed Optimization, Asynchronous Algorithm, Artificial Intelligence

APPOINTMENT

Associate Professor

Aug. 2026 – Present

Department of Mechanical and Aerospace Engineering,
Texas Tech University, Lubbock, Texas, USA

Associate Professor

Aug. 2023 – Jul. 2026

Department of Mechanical Engineering,
New Mexico Institute of Mining and Technology, Socorro, New Mexico, USA

Assistant Professor

Aug. 2017 – May 2023

Department of Mechanical Engineering,
New Mexico Institute of Mining and Technology, Socorro, New Mexico, USA

Postdoctoral Scholar

Jul. 2016 – Jul. 2017

Department of Mechanical & Aerospace Engineering,
University of California San Diego, La Jolla, California, USA

Postdoctoral Research Associate

Aug. 2015 – Jul. 2016

Department of Aerospace Engineering,
Texas A&M University, College Station, Texas, USA

Research and Development Engineer

Feb. 2008 – Jun. 2009

SAMSUNG Electronics, Suwon, South Korea

EDUCATION

Texas A&M University, College Station, Texas, USA

Ph.D., Department of Aerospace Engineering,

Aug. 2010 – Aug. 2015

- Advisor: Dr. Raktim Bhattacharya
- Dissertation : Analysis of Large-Scale Asynchronous Switched Dynamical Systems

Korea University, Seoul, Republic of Korea

M.S., School of Mechanical Engineering,

Mar. 2006 – Feb. 2008

- Advisor: Dr. Woojin Chung
- Thesis: Improvement of Odometry Accuracy and Parking Control for a Car-Like Mobile Robot

Korea University, Seoul, Republic of Korea

B.S., School of Mechanical Engineering,

Mar. 1998 – Feb. 2006

- Honors in Mechanical Engineering

HONORS AND AWARDS

MAJOR PROFESSIONAL RECOGNITION

- **NSF Faculty Early Career Development (CAREER) Award** **2022**
The National Science Foundation's most prestigious honor in support of early-career faculty.
NSF Directorate for Engineering (ENG), CMMI-DCSD program.
- **Best Paper Award** (as corresponding author and research advisor) **2023**
IEEE 14th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), Columbia University, New York.
- **Best Presentation Award**, IEEE 14th Annual UEMCON, Columbia University **2023**
- **Best Paper Award** (as corresponding author and research advisor) **2022**
9th International Conference of Control, Dynamic Systems, and Robotics (CDSR'22).
- **Best Presentation Award**, IEEE Annual Computing and Communication Workshop **2019**
and Conference (CCWC), Las Vegas, Nevada.
- **Best Presentation in Session Award**, American Control Conference (ACC) **2014**

PRIOR HONORS AND FELLOWSHIPS

- **2015 Outstanding Ph.D. Student Award**, Texas A&M University **2015**
- **Aerospace Graduate Student Fellowship**, Texas A&M University **2013**
- **Honors in Mechanical Engineering**, Graduate School, Korea University **2006**
- **The Brain Korea 21 Scholarship**, Graduate School, Korea University **2006–2007**
- **Honors/Research Scholarships**, Korea University **2004–2005**
- **Mechanical Engineering Semester High Honors**, Korea University **2004–2005**

RESEARCH GRANTS AND PROPOSALS

NM Consortium Grant for AI Scholar in Collaboration with Los Alamos National Lab. **2025**

- Project Title: Enhancing Resilience of Smart Grids Through AI-Based Asynchronous Fault Detection and Recovery
- Funding Agency: New Mexico Consortium
- Role: PI

NASA MPLAN (MUREP Partnership Learning Annual Notification) Award **2024**

- Project Title: Information-Theoretic Multi-Robot Exploration
- Funding Agency: NASA
- Role: PI

NSF CAREER Award #2145810 / #2638508 **2022 – 2027**

- Project Title: CAREER: Optimal Transport-based Density-Aware Multi-Agent Exploration
- Funding Agency: NSF (ENG/CMMI/DCSD)
- Role: PI

NMT Sophomore Year Research Program **2022**

- Project Title: Obstacle Avoidance and Environment Mapping using a LiDAR Sensor
- Funding Agency: NMT
- Role: PI

NMT Grant **2022 – 2023**

- Project Title: Autonomous Navigation and Control of a Ground Robot for Campus Security and Tour Guide

- Funding Agency: NMT / Center for Graduate Studies
- Role: PI

NM EPSCoR Smart Grid Center Infrastructure Seed Award **2021 – 2022**

- Project Title: Optimal Microgrid Operation via Distributed Resource Estimation and Microgrid Network Design
- Funding Agency: NSF / NM EPSCoR
- Role: PI

National Cave and Karst Research Institute (NCKRI) Seed Grant **2021 – 2022**

- Project Title: Development of a Hybrid Drone for Sustainable Cave and Karst Research
- Funding Agency: NCKRI
- Role: PI

Undergraduate Research Opportunities in Caves and Karst (UROCK) Fellowship
2021

- Project Title: Development of LiDAR technologies for a Hybrid Drone System
- Funding Agency: NCKRI
- Role: PI
- Recipient: Jesse Montano (undergrad student in Dept. of ME at NMT)

Undergraduate Research Opportunities in Caves and Karst (UROCK) Fellowship
2021

- Project Title: Hybrid Drone Stability Analysis for UROCK Fellowship
- Funding Agency: NCKRI
- Role: PI
- Recipient: Trung Le (undergrad student in Dept. of ME at NMT)

NASA/NM Space Grant Consortium Research Infrastructure Development (RID) Grant #80NSSC19M0181 **2020 – 2021**

- Project Title: Development of an Efficient Planetary Exploration Algorithm for Future Multi-Rover Systems
- Funding Agency: NASA / NM Space Grant Consortium
- Role: PI
- Collaborator: Dr. Ali Agha, Robotics Technologist at NASA JPL

NSF Grant #1757793 **2018 – 2022**

- Project Title: REU Site: Intelligent Energetic Systems Engineering (INTENSE)
- Funding Agency: NSF (ENG/EEC)
- Role: Senior Personnel

Past Involved Projects

AFOSR Grant #FA9550-15-1-0071 **2015 – 2017**

- Project Title: Cloud Computing Based Robust Space Situational Awareness
- Funding Agency: AFOSR
- Role: Postdoctoral Scholar (participated in the grant proposal writing at Texas A&M)

NSF Grant #1439145 **2014 – 2016**

- Project Title: Asynchronous PDE Algorithms for Turbulent Flows at Exascale
- Funding Agency: NSF (CISE/CCF)
- Role: Research Assistant

NSF Grant #1349100 **2013 – 2014**

- Project Title: Asynchronous Algorithms for Exascale Computing Systems
- Funding Agency: NSF (CISE/CCF)

- Role: Research Assistant

NSF Grant #1016299

2012 – 2013

- Project Title: Uncertainty Management in Real-Time Embedded Control Systems
- Funding Agency: NSF (CISE/CNS)
- Role: Research Assistant

Korea Ministry of Commerce, Industry, and Energy Award

2005 – 2008

- Project Title: Vision-based Intelligent Steering System - Project as Core Part Operation
- Funding Agency: Korea Ministry of Commerce, Industry, and Energy
- Role: Research Assistant

**WORK
EXPERIENCES**

SAMSUNG Advanced Institute of Technology

Summer Intern

Summer 2012

- Control of Nano-scale printing head
- Data analysis and analytical programming

Energy System Laboratory, Texas A&M University

Student Worker

Summer 2011

- Supervisor: Dr. Baltazar-Cervan , JuanC
- Data Analysis for energy efficiency of residential and industrial buildings

SAMSUNG Electronics

Research and Development Engineer

Feb. 2008 – Jun. 2009

- Hardware Development for television and monitor products
- Robust Design for product ejecting robot
- Temperature and Pressure Control for molding products

SKILLS

Programming & Software experiences:

- Languages – C/C++/Visual C++, Visual Basic, Python
- Libraries – OpenMP, MPI, CUDA, PyOpenCL, PyCUDA, OpenCV
- Software Tools – MATLAB, SIMULINK, ROS(Robot Operating System), LABVIEW, Microsoft Office, L^AT_EX
- Operating systems – Windows, Linux
- Optimization Tools – MOSEK

Instrumentations & Platforms:

- Robots – Pioneer 3-DX
- Sensors – 2D/3D Range Sensor (SICK LMS200), IMU, Infra-red sensor, Encoder, Optical sensor, Photoelectric sensor
- AVR – ATmega128 & ATMEL8051 (Microcontrollers)
- NI-DAQ (Data-measurement equipment)

**PROFESSIONAL
AND OTHER
ACTIVITIES**

Administrative Roles

- *Graduate Program Chair*, Department of Mechanical Engineering, NMT, 2025 – 2026

Editorial Board/Session Chair(Co-Chair)/Program Committee

- *Associate Editor* for ASME Journal of Dynamic Systems, Measurement, and Control, since 2025
- *Editorial Board Member* for Journal of Korea Robotics Society since 2023
- *Associate Editor* for Intelligent Service Robotics (ISR), Springer, 2021 – 2025
- *Review Editor* for Intelligent Aerospace Systems, Frontiers in Aerospace Engineering since 2021

- *Topic Editor* for Sensors, MDPI, 2020 – 2026
- *Guest Editor* for Applied Sciences, MDPI, Special Issue: Cutting-Edge Technologies of the Unmanned Aerial Vehicles (UAVs) in 2020 – 2022
- *Session Chair* for Multi-Agent and Networked Systems, 2025 Modeling, Estimation and Control Conference (MECC), October 5-8, 2025, Pittsburgh, PA, USA, 2025.
- *Session Chair* for Security and Privacy, IEEE 2023 Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), 2023
- *Session Chair* for Planning and Control of Autonomous Robots, IEEE 2021 American Control Conference, 2021
- *Session Chair* for Path Planning and Motion Control, ASME 2020 Dynamical Systems and Control Conference, 2020
- *Session Co-Chair* for Autonomous Robots II, IEEE 2020 American Control Conference, 2020
- *Track Chair* for Distributed systems and Robotics, IEEE 2019 Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), 2019
- *Committee Member* for Distributed Systems and Robotics, IEEE 2019 Annual Information Technology Electronics & Mobile Communication Conference (IEMCON), 2019

Reviewer/Participated in reviewing

- NSF Panel Reviewer
- IEEE Transaction on Automatic Control
- IEEE Transaction on Systems, Man and Cybernetics: Systems
- IEEE Transaction on Aerospace & Electronic Systems
- Automatica
- Journal of Intelligent & Robotic Systems
- Journal of the Korean Society for Precision Engineering
- International Journal of Control, Automation and Systems
- IEEE Transaction on Robotics
- MDPI Sensors
- IEEE Transaction on Human-Machine Systems
- IEEE Conference on Decision and Control
- IEEE American Control Conference
- IEEE Conference on Control Technology and Applications
- ASME Dynamic Systems and Control Conference
- IEEE International Conference on Robotics and Automation
- IEEE International Conference on Advanced Robotics
- IEEE International Conference on Control, Automation and Systems

Advising & Mentoring

- Thesis Advisor to graduate students at NMT
- Thesis Committee Member to graduate students at NMT
- Academic Advisor to undergraduate students at NMT
- Mentored Ph.D. and M.S. students at NMT, UCSD, and TAMU
- Advisor for multiple Capstone Design Clinic Teams at NMT

Memberships

- ASME Member
- IEEE Member
- IEEE Young Professionals
- IEEE Control Systems Society Member
- IEEE Robotics Society Member
- IEEE Communications Society Member

Other Services

New Mexico Institute of Mining and Technology, Socorro, New Mexico, USA

- Graduate Program Chair (2025 – 2026)
- Graduate Committee for a Ph.D. Qualifying Exam/Graduate Admission/Graduate Recruiting Event (2017 – 2026)
- A judge for student research posters (across institution) at New Mexico Academic of Science Research Symposium
- A judge for student research posters at New Mexico Tech Student Research Symposium
- Safety Committee in the Department of Mechanical Engineering
- Faculty research display & demo at Founders Club Dinner (NMT Alumni invitation event)
- Involved in various department events including
 - + Graduate Recruiting Days for faculty research presentation
 - + Transfer@Tech Day and New Student Orientation to guide students
 - + Department tour for prospective students

Texas A&M University, College Station, Texas, USA

- Registration Assistant and Volunteer at Texas Systems Day (Mar. 28, 2014)
- Volunteer at Texas A&M Physics & Engineering Festival (2012)
- Lab tour volunteer for Aerospace Engineering Undergraduate Student (2012)
- Vice President for Texas A&M - Korea University Student Association (2011 – 2012)

PUBLICATIONS

Book Chapters

1. M. Afrazi and K. Lee, “The Use of Robotics in Tunnel Inspection and Maintenance: A Comprehensive Review.” *Advancements in Underground Infrastructures*. CRC Press, 2025. 1-24.
2. M. Afrazi and K. Lee, “Autonomous Mapping and Exploration of Underground Structures.” *Advancements in Underground Infrastructures*. CRC Press, 2025. 401-433.

Journal Articles

1. K. Lee and J. Martinez, “Breaking Symmetry-Induced Degeneracy in Multi-Agent Ergodic Coverage via Stochastic Spectral Control,” *Automatica* (under review).
2. K. Lee and J. Martinez, “AI-Augmented Density-Driven Optimal Control for Decentralized Environmental Mapping,” *Engineering Applications of Artificial Intelligence*, 181, 115700, 2026.
3. K. Lee, “Density-Driven Optimal Control: Convergence Guarantees for Stochastic LTI Multi-Agent Systems,” *Automatica*, 193 (11), 113231, 2026.
4. K. Lee, “Optimal Transport-based Decentralized Multi-Agent Distribution Matching,” *IEEE Transactions on Automatic Control*, 71 (8), 5478-5485, 2026. <https://doi.org/10.1109/TAC.2026.3668445>
5. S. Seo, M. Afrazi, and K. Lee, “An Optimal Transport-based Undersampling Technique for Handling Imbalanced Datasets,” *ASME Journal of Dynamic Systems, Measurement, and Control*, 148 (3), 031012, 2026. <https://doi.org/10.1115/1.4070589>
6. S. Seo, and K. Lee, “On the Convergence of Density-Based Predictive Control for Multi-Agent Non-Uniform Area Coverage,” *ASME Journal of Dynamic Systems, Measurement, and Control*, 148 (2), 021014, 2026. <https://doi.org/10.1115/1.4070591>
7. K. Lee and E. Brook, “Connectivity-Preserving Multi-Agent Area Coverage via Density-Driven Optimal Control (D²OC),” *IEEE Control Systems Letters*, vol. 9, 2723-2728, 2025, <https://doi.org/10.1109/LCSYS.2025.3641127>
8. S. Seo and K. Lee, “Density-Driven Multi-Drone Coordination for Efficient Farm Coverage and Management in Smart Agriculture,” *IEEE Transactions on Control Systems Technology*, 34 (2), 711-724, 2025. <https://doi.org/10.1109/TCST.2025.3631091>.

9. S. Seo and K. Lee, "Density-Driven Optimal Control for Efficient and Collaborative Multi-Agent Non-Uniform Coveragage," *IEEE Transaction on Systems, Man and Cybernetics: Systems*, 55 (12), 9340-9354, 2025. <https://doi.org/10.1109/TSMC.2025.3622075>.
10. M. Afrazi, S. Seo, and K. Lee, "Enhanced Density-Driven Control of Multi-Agent UAV Systems for Efficient Victim Detection in Large-Scale Disaster Scenarios," *International Journal of Control, Automation and Systems*, 23 (9), 2728-2742, 2025. <https://doi.org/10.1007/s12555-024-1020-z>
11. L. Strebe and K. Lee, "Using optimal control theory to improve path planning for battery energy maximization of a unmanned ground vehicle," *Journal of Machine Intelligence and Data Science*, 3 (1), 36-45, 2022. <https://doi.org/10.11159/jmids.2022.004>.
12. G. Macias and K. Lee, "Design and Analysis of a Helium-Assisted Hybrid Drone for Flight Time Enhancement," *Journal of Mechatronics and Robotics*, 15 (4), 316-330, 2022. <https://doi.org/10.3844/ajeassp.2022.316.330>.
13. K. Lee and R. H. Kabir, "Density-Aware Decentralized Multi-Agent Exploration with Energy Constraint based on Optimal Transport Theory," *International Journal of Systems Science*, 53 (4), 851-869, 2022. <https://doi.org/10.1080/00207721.2021.1976305>.
14. K. Lee and G. Macias, "Asynchronous Distributed Average Consensus: A Switched System Framework for Biased Average Analysis," *International Journal of Control, Automation and Systems*, 20 (3), 869-876, 2022. <https://doi.org/10.1007/s12555-021-0114-0>.
15. R. H. Kabir and K. Lee, "Wildlife Monitoring Using a Multi-UAV System with Optimal Transport Theory," *Applied Sciences*, 2021, 11(9), 4070. <https://doi.org/10.3390/app11094070>.
16. K. Lee, "A Stabilizing Control Algorithm for Asynchronous Parallel Quadratic Programming via Dual Decomposition," *ASME Letters in Dynamic Systems and Control*, January 2021; 1(1): 011002. <https://doi.org/10.1115/1.4046365>.
17. M. Lin and K. Lee, "Outdoor Target Positioning using Wii Remote IR Camera and Signal Modulation," *Sensors*, 20(8), 2163, 2020. <https://doi.org/10.3390/s20082163>.
18. M. Hassanalain, A. Mirzaeinia, K. Lee, and M. Mirzaeinia, "Energy conservation of V-shaped swarming fixed-wing drones through position reconfiguration," *Aerospace Science and Technology*, Volume 94, 105398, 2019. <https://doi.org/10.1016/j.ast.2019.105398>.
19. K. Lee, "Effect of Asynchronous Communications on Stationary Solutions for Discrete-Time Multiagent Systems," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2019. <https://doi.org/10.1109/TSMC.2019.2926696>.
20. S. Weber and K. Lee, "Implementation of the central limit theorem to sensor fusion in drone applications," *New Mexico Journal of Science*, Vol. 53, No. 1, 2019.
21. B. Molley and K. Lee, "Accurate Positioning of Quadrotor UAVs using a Wii Remote Camera and Signal Modulations for Outdoor Precision Landing," *New Mexico Journal of Science*, Vol. 52, No. 1, 2018.
22. K. Lee and R. Bhattacharya, "Optimal Controller Switching for Resource-Constrained Dynamical Systems," *International Journal of Control, Automation and Systems*, 16, no. 3, p. 1323-1331, 2018. <https://doi.org/10.1007/s12555-017-0530-3>.
23. K. Lee, A. Halder, and R. Bhattacharya, "Performance and Robustness Analysis of Stochastic Jump Linear Systems using Wasserstein metric," *Automatica*, Vol. 51, p. 341-347, 2015. <https://doi.org/10.1016/j.automatica.2014.10.080>.
24. K. Lee and R. Bhattacharya, "Stability Analysis of Large-Scale Distributed Networked Control Systems with Random Communication Delays: A Switched System Approach," *Systems & Control Letters*, 85, p. 77-83, 2015. <https://doi.org/10.1016/j.sysconle.2015.08.011>.
25. A. Halder, K. Lee, and R. Bhattacharya, "Optimal Transport Approach for Probabilistic Robustness Analysis of F-16 Controllers," *Journal of Guidance, Control, and Dynamics*, p. 1-12, 2015. <https://doi.org/10.2514/1.G000386>.

26. K. Lee, C. Jung, D. Jung, and W. Chung, "Accurate Calibration of Kinematic Parameters for Two Wheel Differential Drive Robots by Considering the Coupled Effect of Error Sources," *Journal of Korea Robotics Society*, Vol. 9, No 1, p. 39-47, 2014.
<https://doi.org/10.7746/jkros.2014.9.1.039>.
27. K. Yoo, K. Lee, C. Jung, and W. Chung, "Convergence Analysis of Kinematic Parameter Calibration for a Car-Like Mobile Robot," *Journal of Institute of Control, Robotics and Systems*, Vol. 17, No 12, p. 1256-1265, 2011.
<https://doi.org/10.5302/J.ICROS.2011.17.12.1256>.
28. K. Lee, C. Jung, and W. Chung, "Accurate Calibration of Kinematic Parameters for Two Wheel Differential Mobile Robots," *Journal of Mechanical Science and Technology*, Vol. 25, No 6, p. 1603-1611, 2011. <https://doi.org/10.1007/s12206-011-0334-y>.
29. K. Lee, W. Chung, and K. Yoo, "Kinematic parameter calibration of a Car-Like Mobile Robot to improve odometry accuracy," *Mechatronics*, Vol. 20, Issue 5, p. 582-595, 2010.
<https://doi.org/10.1016/j.mechatronics.2010.06.002>.
30. K. Lee, W. Chung and H. Chang, "Improvement of odometry accuracy and parking control for a car-like mobile robot," *The Journal of Korea robotics Society*, Vol.3 No.1 p. 16-22, 2008.

Conference Papers

1. J. Martinez and K. Lee, "Computationally Efficient Density-Driven Optimal Control via Analytical KKT Reduction and Contractive MPC," *65th IEEE Conference on Decision and Control (CDC)*, 2026.
2. K. Lee and E. Brook, "Connectivity-Preserving Multi-Agent Area Coverage via Density-Driven Optimal Control," *2026 American Control Conference (ACC)*, 2026. (Selected for oral presentation; Non-archival)
3. S. Seo, and K. Lee, "Collision-Aware Density-Driven Control of Multi-Agent Systems via Control Barrier Functions," *The 5th Modeling, Estimation and Control Conference (MECC 2025)*, Pittsburgh, PA, IFAC-PapersOnLine, Vol. 59, Issue 30, pp. 449-454, 2025.
4. M. Afrazi and K. Lee, "Impact of Asynchronous Communications on Microgrid State Estimation Performance," *The 5th Modeling, Estimation and Control Conference (MECC 2025)*, Pittsburgh, PA, IFAC-PapersOnLine, Vol. 59, Issue 30, pp. 1006-1011, 2025.
5. M. Soroori and K. Lee, "Geodesic Path Planning for Robotic Tumor Site Visitation in Medical Applications," *The 5th Modeling, Estimation and Control Conference (MECC 2025)*, Pittsburgh, PA, IFAC-PapersOnLine, Vol. 59, Issue 30, pp. 1030-1035, 2025.
6. S. Seo, and K. Lee, "On the Convergence of Density-Based Predictive Control for Multi-Agent Non-Uniform Area Coverage," jointly presented at *The 5th Modeling, Estimation and Control Conference (MECC 2025)*, Pittsburgh, PA, 2025.
7. S. Seo, M. Afrazi, and K. Lee, "An Optimal Transport-based Downsampling Technique for Handling Imbalanced Datasets," jointly presented at *The 5th Modeling, Estimation and Control Conference (MECC 2025)*, Pittsburgh, PA, 2025.
8. M. Afrazi, S. Seo, and K. Lee, "Density-Driven Formation Control of a Multi-Agent System with an Application to Search-and-Rescue Missions," *2025 American Control Conference (ACC)*, p. 3622-3627, 2025.
9. M. Soroori and K. Lee, "Geodesic Path Planning using Exponential Map with Injectivity Radius," *2025 American Control Conference (ACC)*, p. 2011-2016, 2025.
10. L. Strebe and K. Lee, "Optimal Path Planning of a Solar-Powered Unmanned Ground Vehicle in an Unknown Solar Environment with Multi-Objective Optimization," *2024 American Control Conference (ACC)*, p. 1311-1316, 2024.

11. S. Seo and K. Lee, "Density-Driven Multi-Agent Swarm Control with Potential Field Based Collision Avoidance." In *2023 IEEE 14th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, pp. 0714-0721. IEEE, 2023.
12. G. Macias and K. Lee, "Informative Path Planning Algorithm for the Exploration of Unknown 2D Environments," *IEEE 2023 14th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, 2023. (**Best Paper Award**)
13. G. Macias and K. Lee, "Optimal Gas Leak Localization and Detection using an Autonomous Mobile Robot," *2022 9th International Conference of Control, Dynamic Systems, and Robotics (CDSR 22)*, 2022.
14. L. Strebe and K. Lee, "Battery Energy Maximization of a Solar Powered Unmanned Ground Vehicle in an Unknown Environment," *2022 9th International Conference of Control, Dynamic Systems, and Robotics (CDSR 22)*, 2022. (**Best Paper Award**)
15. R. H. Kabir and K. Lee, "Efficient, Decentralized, and Collaborative Multi-Robot Exploration using Optimal Transport Theory," *2021 American Control Conference (ACC)*, p. 4203-4208, 2021.
16. J. Garcia and K. Lee, "Design and Analysis of a New Mechanism for a Snake Like Robot," *2020 ASME Dynamic Systems and Control Conference (DSCC)*, Volume 1, Virtual, Online. October 5–7, p. V001T18A002, 2020.
17. R. H. Kabir and K. Lee, "On the Ergodicity of an Autonomous Robot for Efficient Environment Explorations," *2020 ASME Dynamic Systems and Control Conference (DSCC)*, Volume 2, Virtual, Online. October 5–7, p. V002T31A003, 2020.
18. R. H. Kabir and K. Lee, "Receding-Horizon Ergodic Exploration Planning using Optimal Transport Theory," *2020 American Control Conference (ACC)*, p. 1447-1452, 2020.
19. M. Hassanalian, K. Lee, and A. Mirzaeinia, "Smart Cities and Organizing the Drones' Applications in Urban Areas: N.E.ST (Networking, Efficient, Strategies)," In *AIAA SciTech 2020 Forum*, p. 1944, 2020.
20. A. Mirzaeinia, M. Hassanalian, and K. Lee, "Drones for Borders Surveillance: Autonomous Battery Maintenance Station and Replacement for Multirotor Drones," In *AIAA SciTech 2020 Forum*, p. 0062, 2020.
21. C. Dotson, G. Macias, and K. Lee, "Energy-Balanced Leader-Switching Policy for Formation Rotation Control of Multi-Agent Systems inspired by Bird Flocks," *2019 ASME Dynamic Systems and Control Conference (DSCC)*, vol. 59155, p. V002T15A002. American Society of Mechanical Engineers, 2019.
22. K. Lee, "A Stabilizing Control Algorithm for Asynchronous Parallel Quadratic Programming via Dual Decomposition," *2019 ASME Dynamic Systems and Control Conference (DSCC)*, vol. 59155, p. V002T24A004. American Society of Mechanical Engineers, 2019.
23. A. Mirzaeinia, M. Hassanalian, K. Lee, & M. Mirzaeinia, "Performance Enhancement and Load Balancing of Swarming Drones through Position Reconfiguration," In *AIAA Aviation 2019 Forum*, p. 3463, 2019.
24. R. N. Sappington, G. A. Acosta, M. Hassanalian, K. Lee, & R. Morelli, "Drone Stations in Airports for Runway and Airplane Inspection Using Image Processing Techniques," In *AIAA Aviation 2019 Forum*, p. 3316, 2019.
25. K. Lee and R. Bhattacharya, "On the Uniqueness of Stationary Solutions of an Asynchronous Parallel and Distributed Algorithm for Diffusion Equations," *Computing and Communication Workshop and Conference (CCWC)*, 2019 IEEE 9th Annual, 2019.
26. K. Lee, S. Martinez, J. Cortes, R. H. Chen, and M. B. Milam, "Receding-Horizon Multi-Objective Optimization for Disaster Response," *2018 American Control Conference (ACC)*, p. 5304-5309, 2018.
27. K. Lee and R. Bhattacharya, "On the Relaxed Synchronization for Massively Parallel Numerical Algorithms," *2016 American Control Conference (ACC)*, p. 3334-3339, 2016.

28. K. Lee, R. Bhattacharya, J. Dass, V. Sakuru, and R. Mahapatra, "A Relaxed Synchronization Approach for Solving Parallel Quadratic Programming Problems with Guaranteed Convergence," *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2016. (acceptance rate: 23%)
29. K. Lee, R. Bhattacharya, and V. Gupta, "A Switched Dynamical System Framework for Analysis of Massively Parallel Asynchronous Numerical Algorithms," *American Control Conference (ACC)*, p. 1095-1100, 2015.
30. A. Halder, K. Lee, and R. Bhattacharya, "A Dynamical System Pair with Identical First Two Moments But Different Probability Densities," *2014 IEEE Conference on Decision and Control (CDC)*, 2014.
31. K. Lee and R. Bhattacharya, "Optimal Switching Synthesis for Jump Linear Systems with Gaussian initial state uncertainty," *2014 Dynamic Systems and Control Conference (DSCC)*, p. V002T24A003-V002T24A003, 2014.
32. K. Lee, A. Halder, and R. Bhattacharya, "Probabilistic Robustness Analysis of Stochastic Jump Linear System," *2014 American Control Conference (ACC)*, p. 2638-2643, 2014.
33. A. Halder, K. Lee, and R. Bhattacharya, "Probabilistic Robustness Analysis of F-16 Controller Performance: An Optimal Transport Approach," *2013 American Control Conference (ACC)*, p. 5562-5567, 2013.
34. C. Jung, K. Lee, and W. Chung, "Accurate calibration of Systematic odometry errors for mobile robots," *In Proceeding of the Korean Society of Mechanical Engineers*, p. 1065-1068, 2010.
35. K. Lee and W. Chung, "Calibration of Kinematic Parameters of a Car-Like Mobile Robot to Improve Odometry Accuracy," *In Proceeding of 2008 IEEE/RAS International Conference on Robotics and Automation (ICRA)*, p. 2546-2551, 2008.
36. K. Lee and W. Chung, "Experimental Research of Car Parking Control using a RC Car," *In Proceeding of the 13th International Conference on Advanced Robotics (ICAR)*, p. 247-252, 2007.
37. K. Lee, W. Chung, H. Chang, "Improvement of odometry accuracy and Parking Control for a Car-Like Mobile Robot," *In Proceeding of the 2nd Korea robot conference*, p. 505-511, 2007.
38. S. Hong, J. Won, K. Lee, W. Chung, "Backward Parking Motion Control of a Car with Passive Trailers," *In Proceeding of the 2nd Korea robot conference*, p. 519-523, 2007.
39. K. Lee, W. Chung, H. Chang, P. Yoon, "Odometry Calibration of a Car-Like Mobile Robot," *In Proceeding of International Conference on Control, Automation and Systems (ICCAS)*, p. 684-689, 2007.
40. D. Kim, W. Chung, K. Lee "Collision-free Path Planning for a Car Parking Problem," *In Proceeding of the 3rd International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, p. 321-326, 2006.
41. K. Lee, D. Kim, W. Chung, H. Chang, P. Yoon "Car Parking Control using a Trajectory Tracking Controller," *In Proceeding of SICE-ICCAS*, p. 2058-2063, 2006.
42. D. Kim, K. Lee, W. Chung, H. Chang, P. Yoon "Parking Control of a RC Car by using a Trajectory Tracking Controller," *In Proceeding of 1st Korea robot conference*, p. 448-455, 2006.

Current Graduate Students

- Julian Martinez: Ph.D. (Committee Chair), Aug. 2025 -
- Ruchika Singh: Ph.D. (Committee Chair), Aug. 2026 -
- Shafa Islam: Ph.D. (Committee Chair), Jan. 2027 -
- Faysal Ahamed: Ph.D. (Committee Member), Aug. 2026 -
- Sanchita Ghosh: Ph.D. (Committee Member), Aug. 2026 -
- Sarocha Jetawatthana: Ph.D. (Committee Member), Aug. 2026 -

Graduate Student Alumni

- Sungjun Seo: Ph.D. (Committee Chair), Jan. 2023 - Jun. 2026
- Mohammad Afrazi: M.S. (Committee Chair) Aug. 2022 - Jul. 2025, now a Ph.D. student at Duke University
- Mario Escarcega: M.S. (Committee Member), Aug. 2022 - Dec. 2024
- Dana Figueroa: M.S. (Committee Chair), Jul. 2023 - May 2025, now a full-time employee at Sandia National Lab.
- Funmilola Nwokocha: Ph.D. (Committee Member), Aug. 2022 - Dec. 2024
- Jesse Montano: M.S. (Committee Chair), Aug. 2022 - May 2024, now a full-time employee at Sandia National Lab.
- Daniel Mills: Ph.D. (Committee Member), Aug. 2023 - Dec. 2023
- Geronimo Macias: M.S. (Committee Chair), Aug. 2020 - May 2023
- Luke Strebe: M.S. (Committee Chair), Aug. 2021 - May 2023, now a full-time employee at Los Alamos National Lab.
- Mariah Gammill: M.S. (Committee Member), Aug. 2020 - Dec. 2022
- Brendan O'Brien: M.S. (Committee Chair), Jul. 2020 - Sep. 2022, now a full-time employee at Los Alamos National Lab.
- Rabiul Hasan Kabir: M.S. (Committee Chair), Aug. 2019 - Jun. 2021, now a Ph.D. student at Rutgers University
- Johnathon Garcia: M.S. (Committee Chair), graduated in May 2020, joined U.S. navy
- John Anthony Sanchez: M.S. (Committee Member), graduated in 2020
- Sean Coss: M.S. (Committee Member), graduated in 2019
- Benjamin Alan Chesebrough: M.S. (Committee Member), graduated in 2019
- Naghmeh Zamani: M.S. (Committee Member), graduated in 2018
- Jakub Patrick Mroczkowski: M.S. (Committee Member), graduated in 2018