Zak M. Kassas

Contact Information	2015 Neil Ave., Office 420 Electrical & Computer Engineering ElectroScience Laboratory (ESL) The Ohio State University Columbus, OH 43210, USA	Office: (614) 292-5940 E-mail: zkassas@ieee.org Web: http://ece.osu.edu/people/kassas.2 Lab: http://ece.osu.edu/aspin Center: http://utc.engineering.osu.edu

Research Interests

Cyber-physical systems, autonomous vehicles, navigation systems, intelligent transportation systems, cognitive software-defined radio

Capsule Bio

Prof. Kassas is the TRC Endowed Chair in Intelligent Transportation Systems and a Full Professor of Electrical & Computer Engineering at The Ohio State University (OSU). He is also the Director of U.S. Department of Transportation Center: CARMEN (**C**enter for **A**utomated Vehicles **R**esearch with **M**ultimodal Assur**E**d **N**avigation), focusing on navigation resiliency and security of highly automated transportation systems.

He is a Fellow of the IEEE, a Fellow of the Institute of Navigation (ION), and a Distinguished Lecturer of IEEE Aerospace & Electronic Systems Society. He authored more than 180 peer-reviewed journal and conference papers, 11 magazine articles, 3 invited book chapters, and 21 U.S. patents. His awards include the 2022 Air Force Office of Scientific Research (AFOSR) Young Investigator Program (YIP) award; 2019 Office of Naval Research (ONR) YIP award; 2018 National Science Foundation (NSF) CAREER award; 2022 IEEE Harry Rowe Mimno Award in recognition of the best paper published in the IEEE Aerospace and Electronic Systems Magazine; 2020 IEEE Signal Processing Society grand prize for beamforming research video contest; 2019 ION Col. Thurlow Award; 2018 ION Burka Award in recognition of the best paper published in NAVIGATION, Journal of the Institute of Navigation; and 2018 IEEE Walter Fried Award in recognition of the best paper published in IEEE/ION PLANS. His students have won several awards, including three Best Ph.D. Dissertation awards (from IEEE, ION, OSU); two US DOT Graduate Student of the Year awards; and 30+ best paper, student paper, and paper presentation awards.

He started his academic career in 2014 at University of California, Riverside; then was an Associate Professor at University of California, Irvine; then was very early promoted to Full Professor and joined The Ohio State University in 2022. His research has attracted more than $26 million in competitive grants from ONR, NSF, AFOSR, DOT, NIST, Sandia National Labs, Aerospace Corporation, among others. He has given 100+ invited presentations, keynotes, and plenaries, and served as a subject matter expert to DOD, GAO, DOT, and NSF. His research was featured in dozens of international media outlets (Science, BBC, Forbes, IEEE, ACM, among others) and appeared on 6 magazine covers. He is a Senior Editor of IEEE T-ITS and Associate Editor of IEEE T-AES. He organized and chaired numerous conferences, workshops, and special sessions: IEEE/ION PLANS, IEEE VTC, IEEE ICASSP, IEEE ITSC, ION GNSS+, ION ITM, FUSION, and ACC.

Prior to his academic career, he was a research & development engineer with the Control Design & Dynamical Systems Simulation Group at National Instruments (NI), where he contributed to the full-development cycle (research, implementation, and testing) of 6 major and minor releases of: LabVIEW Control Design & Simulation Module, LabVIEW System Identification Toolkit, and LabVIEW PID & Fuzzy Logic Toolkit.

Education	**The University of Texas at Austin**, Austin, TX	

Ph.D., Electrical & Computer Engineering, May 2014
Dissertation: Analysis and Synthesis of Collaborative Opportunistic Navigation Systems
Advisors: Todd E. Humphreys (primary) and Ari Arapostathis (co-advisor)

The University of Texas at Austin, Austin, TX
M.S.E., Aerospace Engineering, August 2010
Report: Optimal $\mathcal{H}_2$ and $\mathcal{H}_\infty$ Control of Large Segmented Telescopes
Advisor: Robert H. Bishop

The Ohio State University, Columbus, OH
M.S., Electrical & Computer Engineering, December 2003
Thesis: An Optimal Nonlinear Bayesian Filter Design and Combined Hospitability and Synthetic Inclination Approach for Tracking
Advisor: Ümit Özgüner

Lebanese American University, Byblos, Lebanon
B.E. with Honors, Electrical Engineering, March 2001
Final Project: A Power Matching Approach for Using GPS as a Reliable Standalone Positioning System
Advisor: Samer S. Saab

Employment

TRC Endowed Chair in Intelligent Transportation Systems — Jul. 2023 – present
Full Professor — Jul. 2022 – present
The Ohio State University
Department of Electrical & Computer Engineering

Center Director — Sep. 2020 – present
US Department of Transportation (USDOT) Tier 1 University Transportation Center (UTC) – CARMEN: **C**enter for **A**utomated Vehicles **R**esearch with **M**ultimodal Assur**E**d **N**avigation

Assistant/Associate Professor (Tenured) — Jan. 2019 – Jun. 2022
University of California, Irvine
Department of Mechanical & Aerospace Engineering
Department of Electrical Engineering & Computer Science
Institute of Transportation Studies

Assistant Professor — Jul. 2014 – Dec. 2018
University of California, Riverside
Department of Electrical & Computer Engineering

Graduate Research Assistant — Jun. 2011 – Jun. 2014
The University of Texas at Austin
Radionavigation Laboratory
Wireless Networking & Communications Group (WNCG)

Adjunct Professor — Jan. – May, 2008 – 2011
Texas State University, San Marcos, TX
Ingram School of Engineering

Research and Development (R&D) Engineer	**Oct. 2004 – Dec. 2010**

National Instruments Corp., Austin, TX
Control Design & Dynamical Systems Simulations Group

Graduate Research Associate	**Apr. 2002 – Sep. 2004**

The Ohio State University
Collaborative Center of Control Science (CCCS)

Laboratory Research Assistant	**Mar. 2001 – May 2001**

Lebanese American University, Byblos, Lebanon
GPS Laboratory

Research Grants

Total: \$26,702,150; Conducted as PI: \$23,512,450; Kassas' Share: \$9,084,075

Federal Grants

- **Title:** Icarus: High Altitude Opportunistic Radio Frequency Navigation
  Sponsor: Sandia National Laboratories
  Amount: \$150,000
  Period: 2023–2024
  PI: Z. Kassas
- **Title:** <u>C</u>enter for <u>A</u>utomated Vehicles <u>R</u>esearch with <u>M</u>ultimodal Assur<u>E</u>d <u>N</u>avigation (CARMEN+) – Tier 1 University Transportation Center (UTC)
  Sponsor: US Department of Transportation (USDOT)
  Amount: \$10,000,000 (Cost Share: \$5,000,000); **Kassas' Share**: **\$1,463,345** (Cost Share: **\$767,610**)
  Period: 2023–2029
  PI: Z. Kassas; **Co-PIs:** Q. Ahmed (OSU), C. Chen (OSU), D. Grejner-Brzezinska (OSU), Z. Lin (OSU), Ü. Özgüner (OSU), F. Özgüner (OSU), K. Redmill (OSU), C. Toth (OSU), A. Yener (OSU), C. Bhat (UT-Austin), T. Humphreys (UT-Austin), A. Chen (UCI), V. Deguzman (UCI), R. Jayakrishnan (UCI), S. Ritchie (UCI), A. Homaifar (NCAT), M. Mahmoud (NCAT)
- **Title:** Alternative PNT using Signals of Opportunity Navigation
  Sponsor: Aerospace Corporation
  Amount: \$250,000
  Period: 2023–2025
  PI: Z. Kassas
- **Title:** Cognitive Opportunistic Navigation with Unknown LEO and MEO Satellite Signals
  Sponsor: Office of Naval Research (ONR)
  Amount: \$750,000
  Period: 2022–2025
  PI: Z. Kassas
- **Title:** SMAC-FIRE: Closed-Loop Sensing, Modeling and Communications for Wild-FIRE
  Sponsor: National Science Foundation (NSF)
  Amount: \$1,199,087, **Kassas' Share**: **\$269,600**
  Period: 2022–2025
  PI: A. Swindlehurst (UCI), **Co-PI: Z. Kassas**, H. Jafarkhani (UCI), T. Banerjee (UCI), and J. Coen (National Center for Atmospheric Research)

- **Title:** Young Investigator Program (YIP): Dynamic Data Driven C-SPAN: Cognitive Sensing, Perception, Autonomy, and Navigation
  Sponsor: Air Force Office of Scientific Research (AFOSR)
  Amount: $450,000
  Period: 2022–2025
  PI: Z. Kassas
- **Title:** Harnessing Terrestrial and Space-Based Millimeter-Wave Signals for Resilient and Accurate Positioning, Navigation, and Timing
  Sponsor: Office of Naval Research (ONR)
  Amount: $457,000
  Period: 2021–2025
  PI: Z. Kassas
- **Title:** Aircraft Navigation via Opportunistic Radio Frequency Simultaneous Localization and Mapping
  Sponsor: Sandia National Laboratories
  Amount: $300,000
  Period: 2021–2023
  PI: Z. Kassas
- **Title:** Assured Navigation and Timing Engineering for Automated Transportation Education and Research – Tier 1 University Transportation Center (UTC)
  Sponsor: US Department of Transportation (USDOT)
  Amount: $1,925,000 (Cost Share: $962,500); **Kassas' Share**: **$480,966** (Cost Share: **$190,604**)
  Period: 2020–2023
  PI: Z. Kassas; **Co-PIs:** D. Grejner-Brzezinska (OSU), C. Toth (OSU), K. Redmill (OSU), Ü. Özgüner (OSU), A. O'brien (OSU), Q. Ahmed (OSU), G. Rizzoni (OSU), T. Humphreys (UT-Austin), C. Bhat (UT-Austin), S. Ritchie (UCI), A. Chen (UCI), K. Cohen (UC)
- **Title:** Assessment of Cellular Signals of Opportunity for Aerial Vehicle Navigation
  Sponsor: Sandia National Laboratories
  Amount: $25,000
  Period: 2021
  PI: Z. Kassas
- **Title:** SNIFFER: Signals of opportunity for Navigation In Frequency-Forbidden EnviRonments
  Sponsor: Department of the Air Force
  Amount Value: $250,000
  Period: 2019–2020
  PI: Z. Kassas
- **Title:** Developmental Test (DT) Navigation Festival (NAVFEST)
  Sponsor: Department of the Air Force
  Amount Value: $43,700
  Period: 2019
  PI: Z. Kassas
- **Title:** Young Investigator Program (YIP): I Hear, Therefore I Know Where I Am: Exploiting Signals of Opportunity for Robust and Accurate Navigation in GPS-Denied Environments
  Sponsor: Office of Naval Research (ONR)

Amount: $750,000
Period: 2019–2023
PI: Z. Kassas
- **Title:** CAREER: Situational Awareness Strategies for Autonomous Systems in Dynamic Uncertain Environments
  Sponsor: National Science Foundation (NSF)
  Amount: $500,000
  Period: 2018–2024
  PI: Z. Kassas
- **Title:** Ultimate Navigation Chip (uNavChip): Chip-Scale Personal Navigation System Integrating Deterministic Localization and Probabilistic Signals of Opportunity
  Sponsor: National Institute of Standards and Technology (NIST)
  Amount: $1,960,613, **Kassas' Share**: **$350,000**
  Period: 2017–2022
  PI: A. Shkel (UCI), **Co-PI: Z. Kassas**, S. Kia (UCI)
- **Title:** Developing a New Generation of Engineers with Cutting-Edge Knowledge in Resilient Navigation and Communication Systems in Contested Electromagnetic Environments
  Sponsor: Office of Naval Research (ONR)
  Amount: $750,000
  Period: 2016–2022
  PI: Z. Kassas
- **Title:** A Collaborative Opportunistic Framework for Resilient and Accurate Navigation in GPS-Challenged Environments
  Sponsor: Office of Naval Research (ONR)
  Amount: $510,000
  Period: 2016–2020
  PI: Z. Kassas
- **Title:** Geophysical Navigation of Unmanned Underwater Vehicles (UUVs)
  Sponsor: Office of Naval Research (ONR)
  Amount: $225,000; **Kassas' Share**: **$150,000**
  Period: 2016–2020
  PI: Z. Kassas; **Co-PI:** J. Farrell (UCR)
- **Title:** Towards Optimal Information Gathering in Unknown Stochastic Environments
  Sponsor: National Science Foundation (NSF)
  Amount: $175,000
  Period: 2016–2019
  PI: Z. Kassas

Internal Grants
- **Title:** Characterization of Low Earth Orbit (LEO) Satellite Signals for Positioning and Timing
  Sponsor: Consortium on Electromagnetics and Radio Frequencies (CERF), ElectroScience Laboratory (ESL), The Ohio State University
  Amount: $10,000
  Period: 2024
  PI: Z. Kassas
- **Title:** Characterization of 5G Signals for Positioning, Navigation, and Timing
  Sponsor: Consortium on Electromagnetics and Radio Frequencies (CERF), Elec-

troScience Laboratory (ESL), The Ohio State University
Amount: $10,000
Period: 2023
PI: Z. Kassas
- **Title:** AI-Driven Intelligent Navigation for Autonomous Vehicles in Challenging Environments
Sponsor: Institute for Information & Communication Technology Promotion (IITP), South Korea
Amount: $10,000
Period: 2021
PI: Z. Kassas
- **Title:** The Internet of Things (IoT) for Wildfire Management
Sponsor: University of California, Irvine
Amount: $30,000; **Kassas' Share**: **$12,000**
Period: 2020–2021
PI: Lee Swindlehurst (UCI); **Co-PI: Z. Kassas**, H. Jafarkhani (UCI), T. Banerjee (UCI), and A. Eltawil (UCI)
- **Title:** Characterization of cellular LTE signals in a GPS-jammed environment
Sponsor: University of California, Irvine
Amount: $9,250
Period: 2020–2021
PI: Z. Kassas

In-Kind Hardware & Software Gifts	**Total: $276,000** - **Sponsor:** VectorNav **Items:** VN-200 Rugged IMU Development Kits **Value: $14,000** **Year:** 2024 - **Sponsor:** Orolia **Items:** Skydel GNSS Simulation Engine **Value: $250,000** **Year:** 2021 - **Sponsor:** Autel Robotics **Items:** X-Star Premium Drone Fleet **Value: $12,000** **Year:** 2016
Honors & Awards	**Outstanding research contributions awards** - Institute of Electrical and Electronics Engineers (IEEE) **Fellow promotion**, 2024 - Institute of Navigation (ION) **Fellow promotion**, 2023 - IEEE **Harry Rowe Mimno award**, 2022 - Institute of Navigation (ION) **Colonel Thomas Thurlow award**, 2019 - Institute of Navigation (ION) **Samuel Burka award**, 2018 - IEEE **Senior Member promotion**, 2011 **Young faculty awards** - **Young Investigator Program (YIP) award**, Air Force Office of Scientific Research (AFOSR), 2022

- **Young Investigator Program (YIP) award**, Office of Naval Research (ONR), 2019
- **CAREER award**, National Science Foundation (NSF), 2018
- **Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII) award**, NSF, 2016

Plenary, keynote, and distinguished presentations
- **Distinguished lecturer**, IEEE Aerospace and Electronic Systems Society, 2023–2024
- **Keynote speaker**, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, Workshop on Mega Constellation Satellite Network for 6G, Toronto, Canada, 2023
- **Distinguished speaker**, 6G Summit, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia, 2023
- **Plenary speaker**, International Global Navigation Satellite Systems Conference, Sydney, Australia, 2022
- **Keynote speaker**, IFAC Symposium on Advances in Automotive Control, Columbus, OH, 2022
- **Keynote speaker**, IEEE Vehicular Technology Conference, Workshop on Mission Critical Communications, Helsinki, Finland, 2022
- **Distinguished speaker**, Aerospace Corporation, El Segundo, CA, 2022
- **Keynote speaker**, International Conference on Information Technology: New Generations, Las Vegas, NV, 2020
- **Keynote speaker**, ION Cognizant Autonomous Systems for Safety Critical Applications Conference, Miami, FL, 2019
- **Plenary speaker**, European Navigation Conference, Gothenburg, Sweden, 2018

Research recognition awards
- **Grand prize**, "An indoor localization system exploiting LTE signals: A synthetic aperture-based beamforming approach to mitigate multipath," IEEE Signal Processing Society video contest for beamforming research (5-MICC), 2020
- **The University of Texas Research Excellence award**, 2013
- **The University of Texas Professional Development award**, 2011–2013

Best paper awards
- **Best student paper award**, "Multi-constellation blind beacon estimation, Doppler tracking, and opportunistic positioning with OneWeb, Starlink, Iridium NEXT, and Orbcomm LEO satellites," IEEE/ION Position, Location, and Navigation Symposium, 2023
- **Best student paper award**, "An interacting multiple model estimator of LEO satellite clocks for improved positioning," IEEE Vehicular Technology Conference, 2022
- **Best paper award**, "Navigation with differential carrier phase measurements from megaconstellation LEO satellites," IEEE/ION Position, Location, and Navigation Symposium, 2020
- **Best student paper award**, "Deep learning-aided spatial discrimination for multipath mitigation," IEEE/ION Position, Location, and Navigation Symposium, 2020
- **IEEE Walter Fried Award for Best Paper**, "Precise UAV navigation with cellular carrier phase measurements," IEEE/ION Position, Location, and Navigation Symposium, 2018

- **Best student paper award**, "A software-defined receiver architecture for cellular CDMA-based navigation," IEEE/ION Position, Location, and Navigation Symposium, 2016
- **Best paper award**, "Optimal receiver placement for collaborative mapping of signals of opportunity," ION GNSS+ Conference, 2015
- **Best student paper award**, "Constructing a continuous phase time history from TDMA signals for opportunistic navigation," IEEE/ION Position, Location & Navigation Symposium, 2012

Best paper presentation awards
- **Best paper presentation award**, "Blind Doppler tracking and positioning with NOAA LEO satellite signals," ION GNSS+ Conference, 2023
- **Best paper presentation award**, "Acquisition and tracking of Starlink LEO satellite signals in low SNR regime," ION GNSS+ Conference, 2023
- **Best research poster award**, "Opportunistic navigation with multi-constellation LEO satellites," Consortium on Electromagnetics and Radio Frequencies (CERF) Symposium, 2023
- **Best paper presentation award**, "Protecting the skies: GNSS-less aircraft navigation with terrestrial cellular signals of opportunity," ION GNSS+ Conference, 2022
- **Best paper presentation award**, "Observability analysis of opportunistic receiver localization with LEO satellite pseudorange measurements," ION GNSS+ Conference, 2022
- **Best paper presentation award**, "Joint detection and tracking of unknown beacons for navigation with 5G signals and beyond," ION GNSS+ Conference, 2022
- **Best paper presentation award**, "Blind receiver for LEO beacon estimation with application to UAV carrier phase differential navigation," ION GNSS+ Conference, 2022
- **Best demo award runner-up**, "I am not afraid of the GPS jammer: exploiting cellular signals for accurate ground vehicle navigation in a GPS-denied environment," ACM Workshop on Automotive and Autonomous Vehicle Security (AutoSec), 2022
- **Best paper presentation award**, "Universal receiver architecture for blind navigation with partially known terrestrial and extraterrestrial signals of opportunity," ION GNSS+ Conference, 2021
- **Best paper presentation award**, "A machine learning multipath mitigation approach for opportunistic navigation with 5G signals," ION GNSS+ Conference, 2021
- **Best paper presentation award**, "I am not afraid of the jammer: navigating with signals of opportunity in GPS-denied environments," ION GNSS+ Conference, 2020
- **Best paper presentation award**, "Blind opportunistic navigation: cognitive deciphering of partially known signals of opportunity," ION GNSS+ Conference, 2020
- **Best paper presentation award**, "Assessing real 5G signals for opportunistic navigation," ION GNSS+ Conference, 2020
- **Best paper presentation award**, "Assessment of differential carrier phase measurements from broadband LEO satellite signals for opportunistic navigation," ION GNSS+ Conference, 2019
- **Best paper presentation award**, "UAV integrity monitoring measure improvement using terrestrial signals of opportunity," ION GNSS+ Conference, 2019
- **Best paper presentation award**, "Indoor localization based on LTE carrier phase measurements and synthetic antenna array," ION GNSS+ Conference, 2019

- **Best paper presentation award**, "Centimeter-accurate UAV navigation with cellular signals," ION GNSS+ Conference, 2018
- **Best paper presentation award**, "Inertial navigation system aiding with Orbcomm LEO satellite Doppler measurements," ION GNSS+ Conference, 2018
- **Best paper presentation award**, "Distributed signals of opportunity aided inertial navigation with intermittent communication," ION GNSS+ Conference, 2017
- **Best paper presentation award**, "Computationally efficient receiver design for mitigating multipath for positioning with LTE signals," ION GNSS+ Conference, 2017
- **Best paper presentation award**, "Signals of opportunity aided inertial navigation," ION GNSS+ Conference, 2016
- **Best paper presentation award**, "Performance characterization of positioning in LTE systems," ION GNSS+ Conference, 2016
- **Best research poster finalist**, "Navigation with cellular CDMA signals," Southern California Robotics Symposium, 2016
- **Best paper presentation award**, "Observability analysis of opportunistic navigation with pseudorange measurements," AIAA Guidance, Navigation & Control Conference, 2012

Professional service awards
- **IEEE Aerospace and Electronic Systems Society (AESS) outstanding technical panel of the year award**, Navigation systems panel, 2018
- **Institute of Navigation (ION) outstanding peer review recognition award**, 2018

Academic recognition awards
- **Lebanese American University School of Engineering Scholarship**, 2000
- **Lebanese American University School of Engineering Dean's list of distinguished students**, 1999–2001

Student Supervisee Honors & Awards	

- **The Ohio State University (OSU) ElectroScience Laboratory (ESL) Best Ph.D. Dissertation award**, Dr. Mohammad Neinavaie, 2023
- **IEEE Aerospace and Electronic Systems Society (AESS) Robert T. Hill Best Ph.D. Dissertation award**, Dr. Joe Khalife, 2021
- **US Department of Transportation (USDOT) Graduate Student of the Year**, Nadim Khairallah, 2021
- **Melucci Endowed Fellowship,** Mu Jia, 2021
- **Institute of Navigation (ION) Bradford Parkinson award** for best Ph.D. Dissertation, Dr. Kimia Shamaei, 2020
- **Paul and Beverly Holmes Endowed Fellowship,** Ali Abdallah, 2019
- **US Department of Transportation (USDOT) Graduate Student of the Year**, Joshua Morales, 2018
- **University of California, Riverside, Bourns College of Engineering Outstanding Achievement Award**, Souradeep Bhattacharya, 2018
- **University of California, Riverside, Bourns College of Engineering Academic Excellence Award and Dean's Academic Distinction Award**, Christian Ardito, 2018
- **University of California, Riverside, Graduate Student of the Year**, in the National Center for Sustainable Transportation (NCST) University Transportation

Center (UTC), Joe Khalife, 2017
- **30+ Best paper, best student paper, or best paper presentation** awards

Media Visibility	Research featured in dozens of national and international media outlets (Science, BBC, Forbes, The Independent, IEEE Spectrum, ACM, Ars Technica, Science Magazine, GPS World, Inside GNSS, Inside Unmanned Systems, Phys.org, Space.com, EurekAlert.org, Homeland Security News, Military Embedded Systems, Cnet.com, Singularity Hub, Yahoo!, EuropaPress, India TV, among others) and appeared on 6 magazine covers

Industrial Experience

National Instruments Corp., Austin, TX　　　　　　**Oct. 2004 – Dec. 2010**
Research and Development (R&D) Engineer
Product Development:
- Developed software: LabVIEW Control Design & Simulation Module, System Identification Toolkit, and PID & Fuzzy Control Toolkit
- Executed various phases (research, implementation, and testing) of the development cycle of six major and minor releases of software
- Coded multi-platform algorithms for off-line design and simulation and Real-Time (RT) and Field Programmable Gate Array (FPGA) deployment
- Led initiatives to improve quality of software, resulting in automated frameworks guaranteeing numerical robustness and reducing testing time from months to hours

Supervision:
- Guided junior engineers in overseas company branches (China and Brazil)
- Served as an industrial advisor for projects from The Ohio State University, Virginia Tech, California State University, and Brigham Young University

Leadership:
- Interviewed candidates for software and hardware R&D positions
- Organized on-campus recruiting booths at Engineering Career Fairs of The Ohio State University
- Assisted with organizing National Instruments Conference (NI Week), Austin, TX, August 2005 & 2007; which attracts 3,000+ engineers, educators, and scientists

Teaching Experience

The Ohio State University　　　　　　　　　　　　**Aug. 2022 – present**
　Graduate Courses:
　- ECE 5551: State-Space Control Systems (Fall 2023), 31 students
　- ECE 8201: Satellite-Based & Terrestrial Radio Navigation (Fall 2022), 10 students

University of California, Irvine, CA　　　　　　　**Jan. 2019 – Jun. 2022**
　Undergraduate Courses:
　- MAE 170: Introduction to Control Systems (Winter 2019, 2020, 2022), 165 students
　Graduate Courses:
　- MAE 295: Global Navigation Satellite System Signal Processing & Software-Defined Radio Design (Fall 2019, 2020), 19 students
　- MAE 295: Advanced Detection & Estimation Theory (Spring 2019, 2022), 20 students
　- ECPS 209: CPS Case Studies: Applied Optimal Estimation (Winter 2018), 11 students

University of California, Riverside, CA   **Oct. 2014 – Dec. 2018**
  Graduate Courses:
  - EE 235: Linear Systems Theory (Fall 2014, 2015, 2016, 2017, 2018), 105 students
  - EE 257: Global Navigation Satellite System Signal Processing & Software-Defined Radio Design (Fall 2015, Spring 2018), 16 students
  - EE 260: Advanced Detection & Estimation Theory (Spring 2017), 8 students
  Undergraduate Courses:
  - EE 132: Automatic Control (Spring 2015, 2016, 2017), 200 students

Texas State University, San Marcos, TX   **Jan. – May, 2008 – 2011**
  Undergraduate Courses:
  - MFGE 4376: Control Systems & Instrumentation (Spring 2008, 2009, 2010), 100 students
  - EE 4377: Digital Signal Processing (Spring 2011), 13 students

Journal Publications

[J67] Shahcheraghi, S., & **Kassas, Z.** (2024). A computationally efficient approach for acquisition and tracking of megaconstellation LEO satellite signals. *IEEE Signal Processing Letters*, in preparation.

[J66] **Kassas, Z.**, & Saroufim, J. (2024). LEO PNT frameworks for non-cooperative satellites with poorly known ephemerides: open-loop SGP4, tracking, and differential. *IEEE Aerospace and Electronic Systems Magazine*, submitted.

[J65] Kozhaya, S., & **Kassas, Z.** (2023). On the fundamental tracking performance and design considerations of radio navigation. *IEEE Journal on Selected Areas in Communications*, submitted.

[J64] **Kassas, Z.**, Hayek, S., & Haidar-Ahmad, J., (2023). LEO satellite orbit prediction via closed-loop machine learning with application to opportunistic navigation. *IEEE Aerospace and Electronic Systems Magazine*, submitted.

[J63] **Kassas, Z.**, Neinavaie, M., Khalife, J., Shahcheraghi, S., & Saroufim, J. (2023). The truth is out there: cognitive sensing and opportunistic navigation with unknown terrestrial and non-terrestrial signals. *IEEE Signal Processing Magazine*, submitted (special issue).

[J62] Kozhaya, S., & **Kassas, Z.** (2023). A first look at the OneWeb LEO constellation: beacons, beams, and positioning. *IEEE Trans. on Aerospace and Electronic Systems*, submitted.

[J61] **Kassas, Z.**, Khairallah, N., Khalife, J., Lee, C., Jurado, J., Wachtel, S., Duede, J., Hoeffner, Z., Hulsey, T., Quirarte, R., & Tay, R. (2023). Aircraft navigation in GNSS-denied environments via radio SLAM with terrestrial signals of opportunity. *IEEE Trans. on Intelligent Transportation Systems*, submitted.

[J60] **Kassas, Z.**, Abdallah, A., Shahcheraghi, S., Khalife, J., Lee, C., Jurado, J., Wachtel, S., Duede, J., Hoeffner, Z., Hulsey, T., Quirarte, R., & Tay, R. (2023). I can hear you loud and clear: GNSS-less high altitude aircraft navigation with terrestrial cellular signals of opportunity. *IEEE Trans. on Aerospace and Electronic Systems*, submitted.

[J59] Cianca, E., Dauncey, J., Fasano, G., **Kassas, Z.**, Nel, W., & Ruggieri, M. (2023). Autonomy for sustainability: an AESS vision and perspective. *IEEE Aerospace and*

Electronic Systems Magazine, accepted.

[J58] **Kassas, Z.**, Khairallah, N., & Kozhaya, S. (2023). Ad astra: simultaneous tracking and navigation with megaconstellation LEO satellites. *IEEE Aerospace and Electronic Systems Magazine*, accepted.

[J57] Khairallah, N., & **Kassas, Z.** (2023). Ephemeris tracking and error propagation analysis of LEO satellites with application to opportunistic navigation. *IEEE Trans. on Aerospace and Electronic Systems*, accepted.

[J56] Neinavaie, M., & **Kassas, Z.** (2023). Unveiling Starlink LEO satellite OFDM-like signal structure enabling precise positioning. *IEEE Trans. on Aerospace and Electronic Systems*, accepted.

[J55] Pany, T., Akos, D., Arribas, J., Bhuiyan, M., Closas, P., Dovis, F., Fernandez-Hernandez, I., Fernández-Prades, C., Gunawardena, S., Humphreys, T., **Kassas, Z.**, López Salcedo, J., Nicola, M., Psiaki, M., Rügamer, A., Song, Y., & Won, J., (2024). GNSS software defined radio: History, current developments, and standardization efforts. *NAVIGATION, Journal of the Institute of Navigation*, (71)1, pp. 1–45.

[J54] Neinavaie, M., & **Kassas, Z.** (2024). Cognitive sensing and navigation with unknown OFDM signals with application to terrestrial 5G and Starlink LEO satellites. *IEEE Journal on Selected Areas in Communications*, (42)1, pp. 146–160.

[J53] **Kassas, Z.**, & Abdallah, A. (2023). No GPS no problem: exploiting cellular OFDM-based signals for accurate navigation. *IEEE Trans. on Aerospace and Electronic Systems*, (56)6, 9792–9798.

[J52] Jia, M., Khalife, J., & **Kassas, Z.** (2023). Performance analysis of opportunistic ARAIM for navigation with GNSS signals fused with terrestrial signals of opportunity. *IEEE Trans. on Intelligent Transportation Systems*, (24)10, 10587–10602.

[J51] Nguyen, A., & **Kassas, Z.** (2023). Efficient transmitter selection strategies for improved information gathering of aerial vehicle navigation in GNSS-denied environments. *IEEE Aerospace and Electronic Systems Magazine*, (38)10, pp. 26–39.

[J50] Neinavaie, M., Khalife, J., & **Kassas, Z.** (2023). Cognitive detection of unknown beacons of terrestrial signals of opportunity for localization. *IEEE Trans. on Wireless Communications*, (22)8, pp. 5613–5627.

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[C46] Morales, J., & **Kassas, Z.** (2018). Event-based communication strategy for collaborative navigation with signals of opportunity. *Proc. of Asilomar Conference on Signals, Systems and Computers* (pp. 548–553). Pacific Grove, CA (invited).

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[C28] Khalife, J., & **Kassas, Z.** (2017). Modeling and analysis of sector clock bias mismatch for navigation with cellular signals. *Proc. of American Control Conference* (pp. 3573–3578). Seattle, WA.

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Meeting (pp. 664–669). Monterey, CA.

[C20] Morales, J., & **Kassas, Z.** (2015). Optimal receiver placement for collaborative mapping of signals of opportunity. *Proc. of ION Global Navigation Satellite Systems Conference* (pp. 2362–2368). Tampa, FL.

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[C9] Pesyna, K., **Kassas, Z.**, Bhatti, J., & Humphreys, T. (2011). Tightly-coupled opportunistic navigation for deep urban and indoor positioning. *Proc. of ION Global Navigation Satellite Systems Conference* (pp. 3605–3617). Portland, OR.

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[C5] MacCleery, B., & **Kassas, Z.** (2008). New mechatronics development techniques for FPGA-based control of electromechanical systems. *Proc. of IFAC World Congress* (pp. 4434–4439). Seoul, South Korea.

[C4] **Kassas, Z.**, & Dunia, R. (2008). A unified approach for classroom and laboratory control systems education. *Proc. of IFAC World Congress* (pp. 14618–14623). Seoul, South Korea.

[C3] **Kassas, Z.**, & Dunia, R. (2006). Discretization of MIMO systems with nonuniform input and output fractional time delays. *Proc. of IEEE Conference on Decision and Control* (pp. 2541–2546). San Diego, CA.

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Magazine Articles

[M11] **Kassas, Z.**, Kozhaya, S., Saroufim, J., Kanj, H., & Hayek, S. (2023, July/August). A look at the stars: navigation with multi-constellation LEO satellite signals of opportunity. *Inside GNSS Magazine*, (18)4, pp. 38–47 (cover article).

[M10] **Kassas, Z.** (2023, April). Securing PNT for highly automated transportation systems. *Institute of Navigation Newsletter*, (33)2, pp. 14-15 (invited).

[M9] **Kassas, Z.**, Neinavaie, M., Khalife, J., Khairallah, N., Haidar-Ahmad, J., Kozhaya, S., & Shadram, Z. (2021, November/December). Enter LEO on the GNSS stage: navigation with Starlink satellites. *Inside GNSS Magazine*, (16)6, pp. 42–51 (cover article).

[M8] **Kassas, Z.**, Abdallah, A., & Orabi, M. (2021, January/February). Carpe signum: seize the signal – opportunistic navigation with 5G. *Inside GNSS Magazine*, (16)1, pp. 52–57.

[M7] Dovis, F., Ruotsalainen, L., Toledo-Moreo, R., **Kassas, Z.**, & Gikas, V. (2020, July). Recent advancement on the use of global navigation satellite system-based positioning for intelligent transport systems. *IEEE Intelligent Transportation Systems Magazine*, pp. 6–9 (special issue).

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signals. *Inside GNSS Magazine*, 14(4), pp. 56–65 (cover article).

[M4] **Kassas, Z.**, Closas, P., & Gross, J. (2019, May). Navigation systems for autonomous and semi-autonomous vehicles: Current trends and future challenges. *IEEE Aerospace and Electronic Systems Magazine*, 34(5), pp. 82–84 (invited).

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[M1] **Kassas, Z.** (2013, June). Collaborative opportunistic navigation. *IEEE Aerospace and Electronic Systems Magazine*, (28)6, pp. 38–41 (student research highlight).

Book Chapters	[BC3] **Kassas, Z.** (2021). Navigation from low Earth orbit – Part 2: models, implementation, and performance. In J. Morton, F. van Diggelen, J. Spilker, Jr., & B. Parkinson (Eds.), *Position, Navigation, and Timing Technologies in the 21st Century*, (Ch. 43, pp. 1381–1412). Hoboken, NJ: Wiley-IEEE.

[BC2] **Kassas, Z.** (2021). Navigation with cellular signals of opportunity. In J. Morton, F. van Diggelen, J. Spilker, Jr., & B. Parkinson (Eds.), *Position, Navigation, and Timing Technologies in the 21st Century*, (Ch. 38, pp. 1171–1223). Hoboken, NJ: Wiley-IEEE.

[BC1] Layne, J., Eilders, M., **Kassas, Z.**, & Ozguner, U. (2003). A hospitability map approach for estimating a mobile target location. In S. Butenko, R. Murphey, & P. Pardalos (Eds.), *Recent Developments in Cooperative Control and Optimization* (pp. 117–124). Norwell, MA: Kluwer Academic Publishers.

Patents	[P21] **Kassas, Z.**, Kozhaya, S., & Kanj, H. (2023). Blind beacon estimation, Doppler tracking, and opportunistic positioning with multi-constellation unknown LEO satellites. U.S. Patent Application No. 63/498,189.

[P20] **Kassas, Z.**, & Neinavaie, M. (2023). Cognitive opportunistic navigation with Starlink LEO satellites: on-demand and always-on OFDM reference signals. U.S. Patent Application No. 63/457,372.

[P19] **Kassas, Z.**, & Neinavaie, M. (2022). Systems and methods for positioning and navigation with low Earth orbit satellite signals. U.S. Patent Application No. 63/393,501.

[P18] **Kassas, Z.**, & Abdallah, A. (2022). Systems and methods for determining cellular downlink observables and navigation. U.S. Patent Application No. 63/355,890.

[P17] **Kassas, Z.**, & Abdallah, A. (2022). Systems and methods for user equipment based 5G navigation and downlink bandwidth operations. U.S. Patent Application No. 63/315,719.

[P16] **Kassas, Z.**, Khalife, J., & Neinavaie, M. (2021). Systems and methods for acquisition and tracking of unknown LEO satellite signals. U.S. Patent Application No. 63/210,595.

[P15] **Kassas, Z.**, & Khalife, J. (2021). Systems and methods for differential and non-differential navigation with cellular signals. U.S. Patent Application No. 63/155,048.

[P14] **Kassas, Z.**, Neinavaie, M., & Khalife, J. (2020). Systems and methods for blind opportunistic navigation, cognitive deciphering of partially known signals of opportunity, and blind Doppler estimation from LEO satellite signals. U.S. Patent Application No. 63/087,591.

[P13] **Kassas, Z.**, Khalife, J., & Neinavaie, M. (2020). Navigation with differential carrier phase measurement from low Earth orbit satellites. U.S. Patent Application No. 63/047,796.

[P12] **Kassas, Z.**, & Shamaei, K. (2020). Systems and methods for opportunistic time of arrival estimation for opportunistic localization with 5G signals. U.S. Patent Application No. 63/026,360.

[P11] **Kassas, Z.**, & Shamaei, K., (2020). Systems and methods for TOA and DOA acquisition and tracking for signal of opportunity positioning. U.S. Patent Application No. 63/013,638.

[P10] **Kassas, Z.**, & Shamaei, K. (2019). Sub-meter accurate navigation and cycle slip detection with LTE carrier phase measurements. U.S. Patent Application No. 62/930,298.

[P9] **Kassas, Z.**, Abdallah, A., & Shamaei, K. (2019). Indoor localization system with LTE code and carrier phase measurements and an IMU. U.S. Patent Application No. 62/913,078.

[P8] **Kassas, Z.**, & Abdallah, A. (2019). Synthetic aperture navigation with LTE signals. U.S. Patent Application No. 62/913,074.

[P7] **Kassas, Z.**, Khalife, J., & Abdallah, A. (2019). Receiver design for Doppler positioning with low Earth orbit satellites and differential carrier phase measurements. U.S. Patent Application No. 62/834,317.

[P6] **Kassas, Z.**, Morales, J., & Khalife, J. (2019). Simultaneous tracking and navigation using LEO satellite signals. U.S. Patent Application No. 62/834,313.

[P5] **Kassas, Z.**, Maaref, M., & Khalife, J. (2018). Lane-level navigation system for ground vehicles with lidar and cellular signals. U.S. Patent Application No. 62/721,967.

[P4] **Kassas, Z.**, & Morales, J. (2016). Signals of opportunity aided inertial navigation system. U.S. Patent Application No. 62/398,413.

[P3] **Kassas, Z.**, Shamaei, K., & Khalife, J. (2016). SDR for navigation with LTE signals. U.S. Patent Application No. 62/398,403.

[P2] **Kassas, Z.**, Khalife, J., & Shamaei, K. (2016). SDR for navigation with cellular CDMA signals. U.S. Patent Application No. 62/294,758.

[P1] **Kassas, Z.**, & Lewis, J. (2012). Multi-channel algorithm infrastructure for programmable hardware elements. U.S. Patent No. 8,122,238. Washington, DC: U.S. Patent and Trademark Office.

Invited Subject Matter Expert	2023	Department of Defense, Signals of Opportunity Working Group, US Naval Observatory, Washington, DC (*Invited Speaker*)
	2022	National Space-Based Positioning, Navigation, and Timing (PNT) Advisory Board, Redondo Beach, CA (*Invited Speaker*)
	2022	US Government Accountability Office (GAO), GPS Interference in the Transportation Sector, Virtual (*Invited Panelist*)
	2022	US Department of Transportation, Positioning, Navigation, and Timing (PNT) Stakeholder Roundtable, Washington, DC (*Invited Panelist*)
Invited Presentations	2024	Munich Satellite Navigation Summit, Munich, Germany (*Invited Speaker & Panelist*)
	2024	Munich Aerospace Forum, Munich, Germany (*Invited Speaker*)
	2024	IEEE Undergraduate Student Chapter, The Ohio State University, Columbus, OH (*Invited Speaker*)
	2024	Transportation Research Board Annual Meeting, Washington, DC (*Invited Speaker & Panelist*)
	2023	NSF Workshop on The Convergence of Smart Sensing Systems, Applications, Analytic and Decision Making, Alexandria, VA (*Invited Speaker & Panelist*)
	2023	Workshop on Space Cybersecurity and Resilience, University of Colorado, Colorado Springs (*Invited Speaker*)
	2023	IEEE Aerospace and Electronic Systems Society, Online Webinar: No GPS, No Problem: Exploiting Signals of Opportunity for Resilient and Accurate Autonomous Navigation in GPS-Denied Environments (*IEEE AESS Distinguished Lecture*)
	2023	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "Autonomous navigation for ground, seaborne, and airborne vehicles," Denver, CO (*Invited Session*)
	2023	Department of Electrical and Computer Engineering, The Ohio State University, Columbus, OH (*IEEE AESS Distinguished Lecture*)
	2023	IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, Workshop on Mega Constellation Satellite Network for 6G, Toronto, Canada (*Keynote Speaker*)
	2023	IEEE/ION Position, Location, and Navigation Symposium, Session: "Frontiers of GNSS," Monterey, CA (*Invited Session*)
	2023	Department of Mechanical and Aerospace Engineering, West Virginia University, Morgantown, WV (*IEEE AESS Distinguished Lecture*)
	2023	Department of Aerospace Engineering & Mechanics, University of Minnesota, Twin Cities, Minneapolis, MN (*IEEE AESS Distinguished Lecture*)
	2023	6G Summit, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia (*Distinguished Speaker*)
	2022	International Global Navigation Satellite Systems Conference, Sydney, Australia (*Plenary Speaker*)
	2022	International Global Navigation Satellite Systems Conference, Session: "PNT in Low Earth Orbit," Sydney, Australia (*Panelist*)
	2022	International Global Navigation Satellite Systems Conference, Session: "5G," Sydney, Australia (*Panelist*)
	2022	IEEE Low Earth Orbit (LEO) Satellites & Systems Workshop, Virtual (*Invited Speaker*)

2022	ITS America, Webinar: "The New Infrastructure: Physical + Digital Helps Enable Positive Citizen Outcomes," (*Invited Speaker & Panelist*)
2022	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "Autonomous Navigation for Ground, Seaborne, and Airborne Vehicles," Denver, CO (*Invited Speaker & Panelist*)
2022	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "Beyond GNSS: Emerging Trends in LEO-Based and Terrestrial Signals of Opportunity for PNT," Denver, CO (*Invited Speaker & Panelist*)
2022	IFAC Symposium on Advances in Automotive Control, Columbus, OH (*Keynote Speaker*)
2022	GPS World Magazine, Online Webinar: "A Galaxy Far, Far Away? Why LEO PNT is Closer to Reality Than You Think" (*Invited Speaker*)
2022	IEEE Vehicular Technology Conference, Workshop on Mission Critical Communications, Helsinki, Finland (*Keynote Speaker*)
2022	Aerospace Corporation, El Segundo, CA (*Distinguished Speaker*)
2022	Munich Satellite Navigation Summit, Munich, Germany (*Invited Speaker & Panelist*)
2021	GPS World Magazine, Online Webinar: "Measuring PNT Performance in Challenged Environments" (*Invited Speaker*)
2021	Department of Mechanical Engineering, Tufts University, Medford, MA (*Seminar*)
2021	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "AI-Enabled Navigation in Smart Cities," St. Louis, MO (*Invited Speaker*)
2021	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "On the Road to Automated Vehicles," St. Louis, MO (*Invited Speaker & Panelist*)
2021	Lebanese American University, Byblos, Lebanon (*Seminar*)
2021	National Institute of Standards and Technology (NIST), Public Safety Broadband Stakeholder Meeting, Virtual (*Invited Speaker*)
2021	International Technical Symposium on Navigation and Timing, Toulouse, France (*Invited Speaker*)
2021	ASCE International Conference on Transportation and Development, Virtual (*Invited Speaker & Panelist*)
2021	Safety and Security for Connected Autonomous Vehicles, University of California, Irvine, Virtual (*Invited Speaker & Panelist*)
2021	Air Force Research Laboratory, Wright-Patterson Air Force Base, OH, Virtual (*Seminar*)
2021	US–EU GPS–Galileo Working Group C, Resilience Subgroup, Virtual (*Invited Speaker*)
2020	Workshop on Spectrum Challenges and Opportunities for 6G and Navigation, Stanford University, Stanford, CA (*Invited Speaker & Panelist*)
2020	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "PNT for AI-Enabled Autonomous Systems: The Good, the Bad, and the Ugly," St. Louis, MO (*Invited Speaker & Panelist*)
2020	National Institute of Standards and Technology (NIST), Public Safety Broadband Stakeholder Meeting, Virtual (*Invited Speaker*)
2020	International Conference on Information Technology: New Generations, Las Vegas, NV (*Keynote Speaker*)
2020	University of California, Irvine, CA (*Invited Speaker & Panelist*)

2020	Information Theory and Applications Workshop, University of California, San Diego, CA (*Invited Speaker*)
2019	Institute of Navigation (ION), Online Webinar: LTE Receiver Design and Multipath Analysis for Navigation in Urban Environments" (*Invited Speaker*)
2019	IEEE Vehicular Technology Conference, Honolulu, HI (*Invited Speaker & Panelist*)
2019	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "The Spectrum of Autonomy in Navigation," Miami, FL (*Invited Speaker & Panelist*)
2019	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "PNT Security and Robustness," Miami, FL (*Invited Speaker & Panelist*)
2019	ION Cognizant Autonomous Systems for Safety Critical Applications Conference, Miami, FL (*Keynote Speaker*)
2019	National Institute of Standards and Technology (NIST), Public Safety Broadband Stakeholder Meeting, Chicago, IL (*Invited Speaker*)
2019	Naval Surface Warfare Center, Corona, CA (*Seminar*)
2019	University of California, Irvine, CA (*Invited Speaker & Panelist*)
2019	École de Technologie Supérieure (ÉTS), Montreal, Canada (*Seminar*)
2018	Asilomar Conference on Signals, Systems and Computers, Session: "Signal Processing for GNSS and/or Localization with Terrestrial Networks," Pacific Grove, CA (*Invited Session*)
2018	ION Global Navigation Satellite Systems Conference (ION GNSS+), Session: "Autonomous Cyber-Physical Systems – The Way Ahead," Miami, FL (*Invited Speaker*)
2018	Naval Surface Warfare Center, Corona, CA (*Seminar*)
2018	IFAC Networked & Autonomous Air & Space Systems Workshop, Session: "UAV Estimation & Control," Santa Fe, NM (*Invited Speaker in Plenary Session*)
2018	European Navigation Conference, Gothenburg, Sweden (*Plenary Speaker*)
2018	IEEE Wireless Communications and Networking Conference, Session: "Localization in Current and Emerging Networks," Barcelona, Spain (*Invited Session*)
2018	Department of Aeronautics & Astronautics, University of Washington, Seattle, WA (*Seminar*)
2018	Department of Aerospace Engineering Sciences, University of Colorado Boulder, CO (*Seminar*)
2018	Department of Electrical & Computer Engineering, University of California, Santa Barbara, CA (*Seminar*)
2018	ION Cognizant Autonomous Systems for Safety Critical Applications Workshop, Reston, VA (*Keynote Speaker*)
2017	Department of Mechanical & Aerospace Engineering, University of California, San Diego, CA (*Seminar*)
2017	Position, Navigation, & Time (PNT) Symposium, Stanford University, Stanford, CA (*Invited Speaker*)
2017	Texas Wireless Summit, Wireless Networking & Communications Group (WNCG), The University of Texas at Austin, TX (*Invited Speaker & Panelist*)
2017	Department of Aerospace Engineering & Engineering Mechanics, The University of Texas at Austin, TX (*Seminar*)
2017	Naval Surface Warfare Center, Corona, CA (*Seminar*)

2017	European Signal Processing Conference, Session: "Positioning In Challenging Environments," Kos Island, Greece (*Invited Session*)
2017	GPS World Magazine, Online Webinar: "UAVs: From Flying Drones to Doing Business" (*Invited Speaker*)
2017	Department of Electrical & Computer Engineering, University of California, Riverside, CA (*Seminar*)
2017	Department of Mechanical, Materials & Aerospace Engineering, Illinois Institute of Technology, Chicago, IL (*Seminar*)
2017	Department of Electrical Engineering, University of California, Los Angeles, CA (*Seminar*)
2017	Department of Electrical & Computer Engineering, The Ohio State University, Columbus, OH (*Seminar*)
2017	Department of Electrical & Computer Engineering, Carnegie Mellon University, Silicon Valley, CA (*Seminar*)
2017	Department of Electrical Engineering & Computer Science, University of California, Irvine, CA (*Seminar*)
2016	Society of Women Engineers, University of California, Riverside, CA (*Invited Speaker*)
2016	Department of Electrical Engineering & Computer Science, Ohio University, Athens, OH (*Seminar*)
2016	Department of Electrical & Computer Engineering, Air Force Institute of Technology, Wright-Patterson Air Force Base, OH (*Seminar*)
2016	Department of Electrical & Computer Engineering, The Ohio State University, Columbus, OH (*Seminar*)
2016	Department of Aeronautics & Astronautics, University of Washington, Seattle, WA (*Seminar*)
2016	ION Southern California Section, John Deere, Torrance, CA (*Seminar*)
2016	Department of Aeronautics & Astronautics, Stanford University, Stanford, CA (*Seminar*)
2015	Department of Electrical Engineering, University of South Florida, Tampa, FL (*Seminar*)
2015	Department of Electrical & Computer Engineering, University of California, Santa Barbara, CA (*Seminar*)
2015	Department of Electrical & Computer Engineering, University of California, Riverside, CA (*Seminar*)
2015	Naval Research Laboratory, Washington, D.C. (*Seminar*)
2014	Department of Aerospace Engineering & Mechanics, University of Minnesota, Twin Cities, Minneapolis, MN (*Seminar*)
2014	Department of Electrical & Computer Engineering, American University of Beirut, Lebanon (*Seminar*)
2014	Department of Electrical & Computer Engineering, University of California, Riverside, CA (*Seminar*)
2013	IEEE Global Conference on Signal & Information Processing, Session: "Software Defined and Cognitive Radios," Austin, TX (*Invited Session*)
2013	The Aerospace Corporation, El Segundo, CA (*Seminar*)
2013	Northrop Grumman Electronic Systems, Woodland Hills, CA (*Seminar*)
2013	Charles Stark Draper Laboratory, Cambridge, MA (*Seminar*)
2013	Robotics & Autonomous Vehicles Summit, National Instruments Week Conference, Austin, TX (*Invited Speaker*)

2013	Academic Forum, National Instruments Week Conference, Austin, TX (*Invited Speaker*)
2012	The University of Texas at Austin, Electrical & Computer Engineering Graduate Lecture Series, Austin, TX (*Invited Panelist),*
2012	Texas Wireless Summit, Austin, TX (*Invited Session*)
2012	National Science Foundation Wireless Internet Center for Advanced Technology (NSF-WICAT), Virginia Tech, Blacksburg, VA (*Invited Session*)
2008	Department of Electrical & Computer Engineering, American University of Beirut, Lebanon (*Seminar*)
2007	Mechatronics Symposium, National Instruments Week Conference, Austin, TX (*Invited Speaker*)
2007	Air Force Research Laboratory, Wright-Patterson Air Force Base, OH (*Seminar*)
2007	L–3 Communications, Cincinnati, OH (*Seminar*)
2007	Belcan Engineering, Cincinnati, OH (*Seminar*)
2007	Center for Automotive Research, The Ohio State University, Columbus, OH (*Seminar*)
2005	Department of Electrical & Computer Engineering, The Ohio State University, Columbus, OH (*Seminar*)

Committees and Panels

- **Chair**, *IEEE Aerospace and Electronic Systems Society, Navigation Systems Panel* (2023 – present)
- **Panelist**, *IEEE Aerospace and Electronic Systems Society, Vision and Perspectives Panel* (2021 – present)
- **Panelist**, *IEEE Vehicular Technology Society, AdHoc Committee on Mission Critical Communications* (2021 – present)
- **Selection committee**, *ION Bradford Parkinson Award for Best Ph.D. Dissertation* (2022, 2018)
- **Selection committee**, *ION GNSS+ Conference Best Student Paper Award* (2022, 2021)
- **Vice chair**, *IEEE Aerospace and Electronic Systems Society, Navigation Systems Panel* (2021 – 2023)
- **Panelist**, *IEEE Aerospace and Electronic Systems Society, Navigation Systems Panel* (2017 – 2021)
- **Council member-at-large**, *Institute of Navigation (ION)* (2019 – 2021)
- **Selection committee**, *IEEE Senior Membership Advancement*, Austin, TX (2013)

Review Panels

2023	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Alexandria, VA
2022	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Alexandria, VA
2022	**Review panelist**, *National Science Foundation (NSF), Computer and Network Systems (CNS)* , Alexandria, VA
2021	**Review panelist**, *National Science Foundation (NSF), Smart and Connected Communities (S&CC)*, Alexandria, VA
2021	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Alexandria, VA

	2019	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Alexandria, VA
	2019	**Review panelist**, *National Science Foundation (NSF), Secure and Trustworthy Cyberspace (SaTC)*, Alexandria, VA
	2019	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Alexandria, VA
	2018	**Review panelist**, *National Science Foundation (NSF), Smart and Autonomous Systems (S&AS)*, Alexandria, VA
	2018	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Alexandria, VA
	2018	**Review panelist**, *National Science Foundation (NSF), Computer and Network Systems (CNS)*, Alexandria, VA
	2018	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Alexandria, VA
	2017	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Alexandria, VA
	2017	**Review panelist**, *National Science Foundation (NSF), Computer and Network Systems (CNS)*, Arlington, VA
	2017	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Arlington, VA
	2017	**Review panelist**, *National Science Foundation (NSF), Smart and Autonomous Systems (S&AS)*, Arlington, VA
	2016	**Review panelist**, *National Science Foundation (NSF), Computer and Network Systems (CNS)*, Arlington, VA
	2016	**Review panelist**, *National Science Foundation (NSF), Cyber-Physical Systems (CPS)*, Arlington, VA

Conference Organization

	2024	**Special session co-organizer**, "Multi-modal Fusion for Assured Positioning, Navigation, and Timing (PNT)," *International Conference on Information Fusion*, Venice, Italy
	2023	**Special session co-organizer and co-chair**, "Autonomous Navigation for Ground, Seaborne, and Airborne Vehicles," *ION Global Navigation Satellite System Conference* , Denver, CO
	2023	**Co-organizer and co-chair**, *IEEE Vehicular Technology Conference: Workshop on Mission Critical Communications*, Florence, Italy
	2023	**Program chair**, *IEEE/ION Position, Location and Navigation Symposium*, Monterey, CA
	2022	**Special session co-organizer**, "Estimation and Fusion for Navigation," *International Conference on Information Fusion*, Linköping, Sweden
	2022	**Co-organizer and co-chair**, *IEEE Vehicular Technology Conference: Workshop on Mission Critical Communications*, Helsinki, Finland
	2022	**Special session organizer**, "AI and Advanced Technologies for Next Generation GNSS," *Munich Satellite Navigation Summit*, Munich, Germany
	2021	**Track chair**, "Algorithms and Methods," *ION Global Navigation Satellite System Conference*, Saint Louis, MO
	2021	**Special session co-organizer**, "AI-Enabled Navigation in Smart Cities," *ION Global Navigation Satellite System Conference*, Saint Louis, MO

2021	**Special session co-organizer and co-chair**, "Resilient and Secure Navigation for Highly Automated Transportation Systems," *IEEE International Conference on Intelligent Transportation Systems*, Indianapolis, IN
2020	**Special session organizer and chair**, "PNT for AI-Enabled Autonomous Systems: The Good, the Bad, and the Ugly," *ION Global Navigation Satellite System Conference*, Saint Louis, MO
2020	**Program chair**, *IEEE/ION Position, Location and Navigation Symposium*, Portland, OR
2020	**Special session organizer and chair**, "Signal Processing for Sensing, Information Fusion, and Situational Awareness in Autonomous Systems," *International Conference on Acoustics, Speech, and Signal Processing*, Barcelona, Spain
2019	**Co-organizer and co-chair**, *IEEE Vehicular Technology Conference: Workshop on Reliable Ubiquitous Navigation in Smart Cities*, Honolulu, HI
2019	**Special session co-organizer and co-chair**, "Navigating Smart and Connected Cities," *ION Global Navigation Satellite System Conference*, Miami, FL
2019	**General chair**, *ION Cognizant Autonomous Systems for Safety Critical Applications Conference*, Miami, FL
2018	**Special session co-organizer and co-chair**, "Autonomous Cyber-Physical Systems – The Way Ahead," *ION Global Navigation Satellite System Conference*, Miami, FL
2018	**Track chair**, "Applications to Automated, Semi-Autonomous, and Fully-Autonomous Systems," *IEEE/ION Position, Location and Navigation Symposium*, Monterey, CA
2018	**Organizer and general chair**, *ION Cognizant Autonomous Systems for Safety Critical Applications Workshop*, Reston, VA

Professional Service	2024	**Committee member**, "Reducing Cybersecurity Risks," *US DOT Future of Transportation Summit*, Washington, D.C.
	2024	**Session co-chair**, "Beyond GNSS: Emerging Trends in LEO-Based and Terrestrial Signals of Opportunity for PNT," *ION GNSS+ Conference*, Baltimore, MD
	2023	**Session chair**, "Localization and Direction Finding," *IEEE Vehicular Technology Conference*, Florence, Italy
	2023	**Technical program committee member**, *IEEE Vehicular Technology Conference*, Florence, Italy
	2022	**Session co-chair**, "Indoor Navigation and Positioning," *ION GNSS+ Conference*, Denver, CO
	2022	**Session co-chair**, "Position, Navigation and Timing Security in Highly Automated Vehicles," *IFAC Symposium on Advances in Automotive Control*, Columbus, OH
	2022	**Session chair**, "Positioning 1," *IEEE Vehicular Technology Conference*, Helsinki, Finland
	2022	**International program committee member**, *IFAC Symposium on Advances in Automotive Control*, Columbus, OH
	2022	**Technical program committee member**, *IEEE Vehicular Technology Conference*, Helsinki, Finland

2022	**Session chair**, "Autonomous Driving Security 2," *ACM Workshop on Automotive and Autonomous Vehicle Security*, San Diego, CA
2022	**Session co-chair**, "Radionavigation with Terrestrial and LEO Signals," *ION International Technical Meeting*, Long Beach, CA
2021	**Technical program committee member**, *IEEE Military Communications Conference*, San Diego, CA
2021	**Associate editor**, *American Control Conference*, New Orleans, LA
2021	**Technical program committee member**, *IEEE Vehicular Technology Conference*, Helsinki, Finland
2021	**Session co-chair**, "Radionavigation Beyond Medium Earth Orbit GNSS," *ION International Technical Meeting*, San Diego, CA
2020	**Technical program committee member**, *IEEE Vehicular Technology Conference*, Victoria, Canada
2019	**Session chair**, "Aerial Vehicle Autonomy 2," *ION Cognizant Autonomous Systems for Safety Critical Applications Conference*, Miami, FL
2019	**Session chair**, "Localization Techniques," *IEEE Vehicular Technology Conference*, Kuala Lumpur, Malaysia
2018	**Session chair**, "Active Safety and Autonomous Driving," *European Navigation Conference*, Gothenburg, Sweden
2018	**Session co-chair**, "Autonomous Navigation," *ION International Technical Meeting*, Reston, VA
2017	**Session co-chair**, "Multisensor Navigation in Challenging Environments," *ION Global Navigation Satellite System Conference*, Portland, OR
2017	**Session co-chair**, "Autonomous Robots II," *American Control Conference*, Seattle, WA
2017	**Associate editor**, *American Control Conference*, Seattle, WA
2017	**Session co-chair**, "Autonomous Navigation," *ION International Technical Meeting*, Monterey, CA
2016	**Session co-chair**, "Collaborative and Networked Navigation," *IEEE/ION Position, Location and Navigation Symposium*, Savannah, GA
2016	**Session co-chair**, "Multi-Sensor Fusion," *ION International Technical Meeting*, Monterey, CA
2013	**Session co-chair**, "Sensor Systems for GNC II," *AIAA Guidance, Navigation, & Control Conference*, Boston, MA
2011	**Session co-chair**, "Control Applications," *IFAC World Congress*, Milan, Italy

Journal Editorship

- **Senior editor**, *IEEE Transactions on Intelligent Transportation Systems*, (2023 – present).
- **Associate editor**, *IEEE Transactions on Aerospace and Electronic Systems*, (2016 – present).
- **Senior editor**, *IEEE Transactions on Intelligent Vehicles*, (2021 – 2023).
- **Associate editor**, *IEEE Transactions on Intelligent Transportation Systems*, (2019 – 2023).
- **Guest editor**, *IEEE Intelligent Transportation Systems Magazine, Special issue on Recent Advances in the Use of GNSS-based Positioning for Intelligent Transport Systems*, (2018 – 2019).

Peer-Review Activities	**Journals** • IEEE Transactions on Aerospace and Electronic Systems • IEEE Transactions on Intelligent Transportation Systems • IEEE Transactions on Intelligent Vehicles • IEEE Transactions on Wireless Communications • IEEE Transactions on Signal Processing • IEEE Journal of Selected Topics in Signal Processing • IEEE Journal on Selected Areas in Communications • IEEE Aerospace and Electronic Systems Magazine • IEEE Intelligent Transportation Systems Magazine • IEEE Vehicular Technology Magazine • NAVIGATION, Journal of the Institute of Navigation • IEEE Control Systems Letters • SPIE Journal of Applied Remote Sensing

Conferences
- IEEE/ION Position, Location, and Navigation Symposium
- IEEE Vehicular Technology Conference
- ION GNSS+ Conference
- IEEE Intelligent Vehicles Symposium
- IEEE International Conference on Acoustics, Speech, and Signal Processing
- IEEE Military Communications Conference
- IEEE Wireless Communications and Networking Conference
- ION International Technical Meeting
- IEEE Conference on Control Technology and Applications
- European Signal Processing Conference
- AIAA Guidance, Navigation, and Control Conference
- American Control Conference
- IEEE Multiconference on Systems and Control
- IFAC World Congress

Professional Memberships	• Institute of Electrical and Electronics Engineers (IEEE), Fellow • Institute of Navigation (ION), Fellow • IEEE Aerospace and Electronic Systems Society, IEEE Intelligent Transportation Systems Society, IEEE Signal Processing Society, IEEE Communications Society, IEEE Vehicular Technology Society

University Committees	**The Ohio State University** **Department of Electrical & Computer Engineering**

- Promotion & Tenure Committee, 2023 – present
- Recruiting & Financial Aid Committee, 2023 – present
- Personnel Committee, 2022 – 2023

ElectroScience Laboratory

- Personnel Committee, 2022 – present

College of Engineering

- Research Committee, 2023 – present

University of California, Irvine
Department of Mechanical & Aerospace Engineering

- Faculty Search Committee, 2019 – 2020
- Graduate Studies Committee, 2018 – 2019

Campus

- Campus Selection Committee for proposal submission to the Department of Defense Research and Education Program (REP) for Historically Black Colleges and Universities/Minority Serving Institutions (HBCU/MI), 2021

University of California, Riverside
Campus

- Cluster Hiring in Autonomy, Robotics, and Dynamics Committee, 2016

Bourns College of Engineering

- Research & Instructional Infrastructure Committee, 2016

Department of Electrical & Computer Engineering

- Colloquium Series Co-organizer (2016 – 2017, 2017 – 2018)
- Undergraduate Curriculum Committee, 2016
- Outreach, Recruitment, & Publicity Committee, 2015
- Department Webpage Redesign Committee, 2015

Visiting Faculty Hosted
- Prof. Laura Ruotsalainen (University of Helsinki, Finland), 2023
- Prof. Jiwon Seo (Yonsei University, South Korea), 2020 – 2021

Postdoctoral Researcher Supervision
- Dr. Forough Gourabi, 2023 – 2024
- Dr. Zeinab Shadram, 2021 – 2022 (*Job upon conclusion: PHY Wireless*)
- Dr. Joe Khalife, 2020 – 2021 (*Job upon conclusion: Apple*)
- Dr. Mahdi Maaref, 2017 – 2020 (*Job upon conclusion: oneNav*)

Ph.D. Student Supervision
- Faezeh Mooseli
- Artun Sel
- Joe Saroufim
- Samer Watchi Hayek
- Shaghayegh Shahcheraghi
- Sharbel Kozhaya
- Dr. Mohammad Neinavaie, Dissertation: "Cognitive sensing and navigation with unknown terrestrial and LEO satellite signals," 2023 (*Job upon graduation: Apple*)
- Dr. Kimia Shamaei, Dissertation: "Exploiting cellular signals for navigation: 4G to 5G," 2020 (*Job upon graduation: Apple*)
- Dr. Joe Khalife, Dissertation: "Precise navigation with cellular signals: Receiver design, differential and non-differential frameworks, and performance analysis," 2020 (*Job upon graduation: Postdoctoral researcher, University of California, Irvine*)
- Dr. Joshua Morales, Dissertation: "Inertial radio SLAM: Standalone and collaborative architectures," 2020 (*Job upon graduation: StarNav*)

Visiting Ph.D. Student Supervision	• Halim Lee (Yonsei University, South Korea), 2020 – 2021
M.S. Student Supervision	• Will Barrett • Nadim Khairallah, Thesis: "Towards opportunistic navigation with LEO satellites: Adaptive clock estimation and closed-loop ephemeris tracking," 2022 (*Job upon graduation: SpaceX*) • Alexander Nguyen, Thesis: "Aerial vehicle navigation with terrestrial signals of opportunity: Performance analysis and transmitter selection," 2022 (*Job upon graduation: Air Force Research Laboratory*) • Ali Abdallah, Thesis: "Indoor navigation with cellular signals utilizing synthetic aperture for multipath mitigation," 2022 (*Job upon graduation: Google*) • Sonya Ragothaman, Thesis: "Path Planning for Autonomous Ground Vehicles using GNSS and Cellular LTE Signal Reliability Maps and GIS 3–D Maps," 2018 (*Job upon graduation: The Aerospace Corporation*) • Jesse Garcia, Thesis: "Autonomous Surface Vehicle Measurement Location Planning for Optimal Underwater Acoustic Transponder Localization," 2018 (*Job upon graduation: Naval Information Warfare Center Pacific, San Diego*) • Ralph Sabbagh, non-thesis, 2023 (*Job upon graduation: Ph.D. student, University of California, Irvine*) • Jamil Haidar Ahmad, non-thesis, 2022 (*Job upon graduation: ASML*) • Mohamad Orabi, non-thesis, 2022 (*Job upon graduation: oneNav*) • Trier Mortlock, non-thesis, 2021 (*Job upon graduation: Ph.D. student, University of California, Irvine*) • Christian Ardito, non-thesis, 2020 (*Job upon graduation: MaXentric Technologies*)
B.S. Thesis Supervision	• Carlos Acebes Cebrián, Double B.S. Thesis in Aerospace Systems Engineering and Telecommunication Systems Engineering: "Opportunistic Navigation with Iridium Next LEO Satellites," 2020 (*Job upon graduation: Indra Sistemas*)
Undergraduate Student Researcher Supervision	[30] Jonathan Low (Jan. 2022 – Mar. 2022) [29] Shiming Xu (Sep. 2021 – Mar. 2022), [28] Eddie Huang (Jan. 2020 – Mar. 2022), [27] Oleon Hariharan (Apr. 2021 – Dec. 2021), [26] Vivek Hatte (Apr. 2021 – Jun. 2021), [25] Giles Pierre Nunez Carlos (Apr. 2021 – Jun. 2021), [24] Raphael Feliciano (Oct. 2020 – Jun. 2021), [23] Andrew Zhao (Oct. 2020 – Jun. 2021), [22] Sharbel Kozhaya (Jul. 2020 – Aug. 2020), [21] Qitai (Neo) Meng (Oct. 2019 – Jun. 2020), [20] Yanhao Yang (Oct. 2019 – Jun. 2020), [19] Xinyi Taylor Zhang (Jun. 2019 – Mar. 2020), [18] Zainab Ashai (Apr. 2019 – Mar. 2020), [17] Bhavani Panda (Apr. 2019 – Dec. 2019), [16] Aishwarya Bhandari (Apr. 2019 – Dec. 2019), [15] Michael Maher (Oct. 2019 – Dec. 2019), [14] MyLinh Nguyen (Apr. 2019 – Sep. 2019), [13] Labiba Saleh (Jun. 2019 – Sep. 2019), [12] Mohamad Orabi (Jun. 2019 – Aug. 2019), [11] Naji Tarabay (Jun. 2019 – Aug. 2019), [10] Brandon Lam (Apr. 2019 - Jun. 2019), [9] Jerry Lee (Jan. 2019 – Jun. 2019), [8] Kyle Semelka (Apr. 2018 – Jun. 2019), [7] Chester Lau (Jul. 2018 – Apr. 2019), [6] Souradeep Gogol Bhattacharya (Oct. 2015 – Jun. 2018), [5] Christian Ardito (Mar. 2018 – Jun. 2018), [4] Sonya Ragothaman (Apr. 2016 – Sep. 2016), [3] Jesse Garcia (Apr. 2016 – Sep. 2016), [2] Gustavo Correa (Jul. 2017 – Dec. 2017), [1] Farah Khalife (Jun. 2015 – Aug. 2015)

High School Student Supervision	[2] Frank Li (Jun. 2019 – Aug. 2019), [1] Shintaro Mori (Jun. 2017 – Jun. 2018)

Senior Design Project Co-supervision

- "CubeSat" Taekyoo Won, Elias Andraos, Andraos Arain, Sarah Catania Orozco, Edwin Christhuraj, Manasi Deshpande, Adam Adam, Aileen Juang, Jimmy Juarez, Tasmima Khan, Tasmima Koo, Tyler Lee, Bryan Matel, Krish Mehta, Shreejan Mistry, Adrian Osorio, Gabrielle Palar, Gabrielle Phan, Kendrick Phan, Kendrick Prata, Sherlock Qin, Erik Ren, Diego Rodriguez Orozco, Brianna Sandoval, Alexandria Shin, Enson Su, Raineir Tabano, Yi-Ju Tsai, Gary Villar, Grazelle Viloria, Duong Vu, April Wu, Mengjie Xie, Catherine Zhang, Jun. 2022
- "Unmanned Floating Vehicle," Eli Tsao, Chaz Fazio, Reece Rivera, Wessam Elmasri, Mar. 2022
- "Autonomous Target Robot," Erik Sandelin, Huy Ho, Sary Aranki, Megan Uozumi, Anthony Atz, Mar. 2022
- "CubeSat," Taekyoo Won, Suleyman Varlibas, Piunik Haghnazarian, Kelby Custodio, James Bohne, Anthony Castillo, Mohamed Abdelwahab, Angel Alarcon, Alarcon Chen, Edwin Christhuraj, Sarah Catania Orozco, Tyler Cook, An Thanh Dang, Andrew Kettle, Jaeven Laron, Tyler Lee, Alexei Lorion, Adrian Osorio, Elijah Reed, Jason Sanchez, Sergio Sandoval, Alexandria Shin, Arianne Agno, Hafsah Arain, Oscar Castro, Manasi Deshpande, Aileen Juang, Xavier Lian, Weixin Lin, Andrew Nguyen, Aditi Pai, Micah Raney, Erik Ren, Diego Rodriguez Orozco, Brianna Sandoval, Enson Su, Adel Tani, Junyang Zhang, Jun. 2021.
- "CubeSat," Taekyoo Won, Armen Ter Avetisyan, Sergio Sandoval, Baldwin Ngo, Edwin Christhuraj, Syed Hassan, Akash Idnani, Jaeven Laron, Adrian Osorio, Caleb Smith, Anthony Drabeck, Fadi Samaan, Jun. 2020.
- "Mobile Simulated Buoy Hub II," Shyam Patel, Joseph Parra, Haniel Youlesivanson, Jeffery Vuong, and Alexander Kim, Mar. 2020.
- "Mobile Simulated Buoy Hub I," Taylor Filemon, Chunguang Yang, Jiayi Wu, and Christopher Navarro, Mar. 2020.
- "Unmanned Surface Vehicle with Auto Attach/Detach Data Connectors," Lorjean Sagabaen, Alexander Janbo, Dennis Chua, Yuchen Geng, and James Le, Mar. 2020.
- "Autonomous Target Scoring Drone II," Leo Leal, Kian Farsany, June Chen, and Zachary Agness, Mar. 2020.
- "Trilateral FM Signal Locator," Yiran Xu, Gary Zhou, and Zhi Qiu, Mar. 2020.
- "Wideband Spectrum Monitor," Brian Dang, Mark Tullen, Jesus Lopez, and Vincent Villacorta, Mar. 2020.
- "Rogue RF Signal Detector Drone," Yehuda Rousso, Erick Magana, and Che-Wei Chang, Mar. 2020.
- "Drone Leader-Follower II," Andy Vu, Lawrence Dizon, David Phan, and Hugh Fong, Mar. 2020.
- "Autonomous Target Robot II," Olga Shigapova, Don Isbell, and Carmine Choi, Mar. 2020.
- "Drone Leader-Follower I," Ameer Hussain, Amauri Villegas, Phillip Flores, and Jacob Hurley, Mar. 2020.
- "Autonomous Target Robot I," Alex Yamamura, Brandon Kuo, Simon Lee, and William Hartono, Mar. 2020.
- "Autonomous Target Scoring Drone I," Sukhmanjit Kaur, Eric Rodriguez, Bert Yu,

and Bibek Adhikari, Mar. 2020.
- "Auto-Adjusting P2P Microwave Link," David Tiao, Wilfredo Paraiso, and Wilfredo Paraiso, Mar. 2020.
- "Rogue RF Signal Detector Drone," Sem Diaz, Edwin Torres, and Matthew Scudder, Mar. 2019.
- "Trilateral FM Signal Locator," Sean Pickman and Alan Nguyen, Mar. 2019.
- "Wideband Spectrum Monitor," Daniel Aleman, Robert Almeida, and Karla Penney, Mar. 2019.
- "Autonomous Target Robot," Coulter Mulvihill, Henry Hua, and Xinyi Wu, Mar. 2019.
- "Auto-Adjusting P2P Microwave Link," Anthony Valverde, Alex Roissier, and Robert Wells, Mar. 2019.
- "Autonomous Target Scoring Drone," Morgan Lytle, Kevin Le, and Alec Pflaume, Mar. 2019.
- "Autonomous Aerial Position Tracking System," Gurkaran Randhawa, Jack Maynard, and Estevan Valencia, Mar. 2019.
- "Autonomous Target Robot," Taylor Che, Samuel Choi, and Francisco Munoz, Mar. 2018.
- "Rogue Radio Frequency (RF) Signal Detector," Francisco Raygoza, Isai Rocha, and Victor Medel, Mar. 2018.
- "Auto-Adjusting P2P Microwave Link," Shane Owens, Jesse Layman, and Curtis Smith, Mar. 2018.
- "Autonomous Target Scoring Drone," Jiaming Zhou and Gerardo Hernandez, Mar. 2018.
- "Trilateral FM Signal," Wang Hu, Rongjia Zhang, and Xin Ke, Mar. 2018.
- "Localization of RF Transmission Using Phased Arrays," Albert Liu and Matthew Lumantas, Mar. 2018.
- "Wideband Spectrum Monitor," Christian Ardito and Bradley Evans, Mar. 2018.

M.S. Thesis Committees
- Jiarui Liu, "Analysis of EV Charging Load Based on Household Driving Data in California," Jul. 2015.

Ph.D. Dissertation Defense Committees
- Russell Whiton, "Due, Where's my Car? - Cellular Navigation for Autonomous Vehicles," Lund University, Sweden, Apr. 2024
- Joshua Critchley-Marrows, "A Return to the Stars in an Age of Navigation Uncertainty – A Treatise on the Use of Celestial Bodies for Resilient Positioning, Navigation and Timing," University of Sydney, Australia, Feb. 2024
- Yiming Chen, "A New Approach for Computationally Efficient and Reliable Carrier Integer Ambiguity Resolution in GPS/INS," University of California, Riverside, USA, Dec. 2014.
- Sheng Zhao, "Realtime, Decimeter Accuracy Navigation Using Sliding Window Estimator and Autonomous Vehicle Trajectory Tracking Control," University of California, Riverside, USA, Dec. 2014.

Outreach
Creator of "Game of Drones," an annual competition for middle and high school students to inspire students to pursue science, technology, engineering, and mathematics (STEM) fields. Since 2016, Game of Drones has engaged nearly 300 students.