

CAMERON K. PETERSON

Department of Electrical and Computer Engineering
Brigham Young University
Provo, UT 84602, USA.
cammy.peterson@byu.edu

EDUCATION

Doctor of Philosophy—August 2012

University of Maryland, College Park, MD. Department of Aerospace Engineering. Dissertation: “Motion coordination of multiple autonomous vehicles in a spatiotemporal flowfield.” Derek A. Paley, advisor.

Master of Science—May 2005

Johns Hopkins University, Baltimore, MD. Whiting School of Engineering. Degree in Applied Physics.

Bachelor of Science—May 2000

Brigham Young University, Provo, UT. Major in Applied Physics with a Computer Science Emphasis. Minor in Mathematics.

PROFESSIONAL EXPERIENCE

Assistant Professor—2016-Present

Brigham Young University, Electrical and Computer Engineering Department | Provo, UT

Aerospace Engineer—2004-2016

Johns Hopkins University Applied Physics Laboratory (JHU/APL) | Laurel, MD

Software Engineer—2002-2004

L-3 Communications | Columbia, MD

Software Engineer—2000-2002

TRW | Aurora, CO

PUBLICATIONS

Peer Reviewed Journal Papers:

1. Jain, P., Peterson, C. K., & Beard, R. W. (2022). Encirclement of Moving Targets Using Noisy Range and Bearing Measurements. *Journal of Guidance, Control, and Dynamics*, 1-16.
2. Akagi, J., Morris, T. D., Moon, B., Chen, X., & Peterson, C. K. (2021). Gesture commands for controlling high-level UAV behavior. *SN Applied Sciences*, 3(6), 1-23.
3. Moore, J. J., Bidstrup, C. C., Peterson, C. K., & Beard, R. W. (2021). Tracking Multiple Vehicles Constrained to a Road Network From a UAV with Sparse Visual Measurements. *Frontiers in Robotics and AI*, 8.
4. Gammoh, K., Peterson, C. K., Penry, D., & Chiang, S. W. (2020). A Stochastic Phase-Interpolation Time-to-Digital Converter with Linearization Using a Delay-Locked Loop. *IEEE Transactions on Circuits and Systems I: Regular Papers*.
5. Peterson, C. K., Casbeer, D. W., Manyam, S. G., & Rasmussen, S. (2020).

Persistent Intelligence, Surveillance, and Reconnaissance using Multiple Autonomous Vehicles with Asynchronous Route Updates. *IEEE Robotics and Automation Letters* 5.4 (2020): 5550-5557.

6. Peterson, C. K., & Paley, D. A. (2013). Distributed estimation for motion coordination in an unknown spatially varying flowfield. *Journal of Guidance, Control, and Dynamics*, 36(3), 894-898.
7. Murphy, P. K., Rodriguez, P. A., & Peterson, C. K. (2013). Detection and Recognition of 3-D Targets in Panchromatic and in Synthetic Aperture Radar Imagery Using a Map-Seeking Circuit Algorithm. *Johns Hopkins APL technical digest*, 31(3), 234-253.
8. Peterson, C. K., & Paley, D. A. (2011). Multivehicle coordination in an estimated time-varying flowfield. *Journal of guidance, control, and dynamics*, 34(1), 177-191.
9. Paley, D. A., & Peterson, C. K. (2009). Stabilization of collective motion in a time-invariant flowfield. *Journal of Guidance, Control, and Dynamics*, 32(3), 771-779.

Peer-Reviewed Conference Publications:

1. Eyler, M. C., Anderson, B., Peterson, C. K., Warnick, K., & McLain, T. (2021). Decentralized UAV Tracking with Networked Radar Systems. In *AIAA Scitech 2021 Forum* (p. 1160).
2. Barrett, J. A., Green, T., Peterson, C. K., & Contarino, V. M. (2021). Modeling of Universal Access Transceiver ADS-B Performance Capabilities in High-Density Airspace. In *AIAA Scitech 2021 Forum* (p. 1636).
3. Ellingson, J., Pitts, E., Peterson, C. K., Warnick, K., & McLain, T. (2020, March). Uncertainty Velocity Obstacle Avoidance for SUAS Trajectory Planning in a 2D Plane. In *IEEE Aerospace Conference*. IEEE.
4. Bidstrup, C. C., Moore, J. J., Peterson, C. K., & Beard, R. W. (2019, July). Tracking Multiple Vehicles Constrained to a Road Network from a UAV with Sparse Visual Measurements. In *2019 American Control Conference (ACC)* (pp. 3817-3822). IEEE.
5. Akagi, J., Moon, B., Chen, X., & Peterson, C. K. (2019, June). Gesture Commands for Controlling High-Level UAV Behavior. In *2019 International Conference on Unmanned Aircraft Systems (ICUAS)* (pp. 1023-1030). IEEE.
6. Anderson, B., Ellingson, J., Eyler, M., Buck, D., Peterson, C. K., McLain, T., & Warnick, K. F. (2019, June). Networked Radar Systems for Cooperative Tracking of UAVs. In *2019 International Conference on Unmanned Aircraft Systems (ICUAS)* (pp. 909-915). IEEE.
7. Jain, P., & Peterson, C. K. (2019, June). Encirclement of Moving Targets using Relative Range and Bearing Measurements. In *2019 International Conference on Unmanned Aircraft Systems (ICUAS)* (pp. 43-50). IEEE.
8. Moon, B. G., & Peterson, C. K. (2018, June). Learned Search Parameters For Cooperating Vehicles using Gaussian Process Regressions. In *2018 International*

Conference on Unmanned Aircraft Systems (ICUAS) (pp. 493-502). IEEE.

9. Martin, S. R., & Peterson, C. K. (2017, September). Bias estimation for angle-only sensors in distributed multi-target tracking systems. In 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (pp. 4430-4435). IEEE.
10. Peterson, C. K. (2017, August). Dynamic grouping of cooperating vehicles using a receding horizon controller for ground target search and track missions. In 2017 IEEE Conference on Control Technology and Applications (CCTA) (pp. 1855-1860). IEEE.
11. Peterson, C. K., & Barton, J. (2015, March). Virtual structure formations of cooperating UAVs using wind-compensation command generation and generalized velocity obstacles. In 2015 IEEE Aerospace Conference (pp. 1-7). IEEE.
12. Peterson, C. K., & Paley, D. (2011, August). Distributed estimation for motion coordination in an unknown spatiotemporal flowfield. In AIAA Guidance, Navigation, and Control Conference (p. 6481).
13. Peterson, C. K., & Paley, D. A. (2010, August). Multi-vehicle coordination of autonomous vehicles in an unknown flowfield. In Proc. AIAA Conf. Guidance, Navigation, and Control (electronic, number AIAA-2010-7585" August.
14. Peterson, C. K., & Paley, D. (2009, August). Cooperative control of unmanned vehicles in a time-varying flowfield. In AIAA Guidance, Navigation, and Control Conference (p. 6117).

Book Publications:

1. Beard, R. W., McLain, T., & Peterson, C. K., "Introduction to Feedback Control: Using Design Studies", self-pub, 2018.

Non-Reviewed Publications:

1. Derricott, J. C., Willis, J. B., Peterson, C. K., Franke, K. W., & Hedengren, J. D. (2019). Disaster Reconnaissance Using Multiple Small Unmanned Aerial Vehicles. *Mechanical Engineering Magazine Select Articles*, 141(06), S7-S11.
2. Peterson, C. K., Newman, A. J., & Spall, J. C. (2014, June). Simulation-based examination of the limits of performance for decentralized multi-agent surveillance and tracking of undersea targets. In *Signal Processing, Sensor/Information Fusion, and Target Recognition XXIII* (Vol. 9091, p. 90910F). International Society for Optics and Photonics.
3. Peterson, C. K., Murphy, P., & Rodriguez, P. (2011, May). Target classification in synthetic aperture radar using map-seeking circuit technology. In *Algorithms for Synthetic Aperture Radar Imagery XVIII* (Vol. 8051, p. 805113). International Society for Optics and Photonics.
4. Funk, B. K., Castelli, J. C., Watkins, A. S., McCubbin, C. B., Marshall, S. J., Barton, J. D., Newman, A. J., Peterson, C. K., DeSena, J. T., Dutrow, D. A., & Rodriguez, P. A. (2011, May). JEFX 10 demonstration of Cooperative Hunter Killer UAS and upstream data fusion. In *Unmanned Systems Technology XIII* (Vol. 8045, p. 80450E). International Society for Optics and Photonics.

5. Newman, A. J., Martin, S. R., DeSena, J. T., Clarke, J. C., McDerment, J. W., Preissler, W. O., & Peterson, C. K. (2009, May). Receding horizon controller using particle swarm optimization for closed-loop ground target surveillance and tracking. In *Signal Processing, Sensor Fusion, and Target Recognition XVIII* (Vol. 7336, p. 73360M). International Society for Optics and Photonics.

AWARDS, HONORS & RECOGNITIONS

2021 Brigham Young University Inspiring Learning Experiential Learning Award

2019 Best Paper Award, International Conference on Unmanned Air Systems

2019 Brigham Young University Faculty Women's Association Mentoring Award

Recipient of JHU/APL National Security Sector (NSAD) Bravo Team Award and Force Projection Sector (FPS) Special Achievement Award (SAA) for support as swarming subject matter expert at the Unified Quest Anti-Access/Area Denial workshop, held at the Army War College, Carlisle, PA.

Awarded JHU/APL Hart Prize for IRAD Excellence in the Development Category for contribution to Large Volume Fire task on "Offensive Operations in A2/AD Environments" FY13 Internal Research and Development (IRAD) project

Received JHU/APL FPS SAA for contributions to Closed-Loop ISR with Track Tag Identify Locate (TTIL) and Full Motion Video (FMV) IRAD project.

Awarded JHU/APL Hart Prize for IRAD Excellence in the Development Category for contribution to task on "Tactical Resource Information Manager (TRIM)" FY06 IRAD project

INVITED PRESENTATIONS

1. Peterson, C. K., "Multi-Agent Path Planning Using Gaussian Process Regression", Utah State University, Electrical and Computer Engineering Department, Logan, UT, March 2022.
2. Peterson, C. K., "Cooperation of Multiple Agent System given Competing Objectives", Air Force Research Laboratory, Aerospace Directorate, Dayton, OH, May 2019.
3. Peterson, C. K., "Optimization of Multiple Objectives using Cooperating Autonomous Vehicles", University of Utah, Salt Lake City, UT, April 2018.
4. Peterson, C. K., "Motion Coordination Algorithms for Multiple Autonomous Vehicles", Brigham Young University, Provo, UT, November 2015.
5. Peterson C. K., "Swarming technology", Johns Hopkins University, SAIS graduate students, Laurel, MD April 2015.
6. Peterson C. K., "Applications of combined consensus and information filter", Johns Hopkins University, Laurel, MD, April 2015.
7. Peterson C. K., "Swarming threats: 2030-2040", Unified Quest Anti-Access/Area Denial Workshop, Army War College, Carlisle PA, March 2015.

CONFERENCE PRESENTATIONS

8. McDonald, M. N, Peterson, C. K., & Tree, D. R., "Steering Colloids using Chemical Gradients", APS March Meeting, American Physics Society, Chicago, IL., March 2022.
9. Peterson C. K., Casbeer, D. W., Manyam, S. G., & Rasmussen, S. (2020). Persistent Intelligence, Surveillance, and Reconnaissance using Multiple Autonomous Vehicles with Asynchronous Route Updates. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Remote Access, October 2020.
10. Peterson C. K., "Dynamic grouping of cooperating vehicles using a receding horizon controller for ground target search and track missions." Control Technology and Applications (CCTA), 2017 IEEE Conference on. Mauna Lani, HI, August 2017.
11. Peterson C. K. and Paley, D. A., "Distributed estimation for motion coordination in an unknown spatiotemporal flowfield", AIAA Guidance Navigation and Control Conference, Portland, OR, August 2011.
12. Peterson C. K., "Target classification in synthetic aperture radar using map-seeking circuit technology", Precision Engagement Technical Interchange Meeting, Laurel, MD, February 2011.
13. Peterson C. K. and Paley, D. A., "Multi-vehicle coordination in an unknown flow field", AIAA Guidance Navigation and Control Conference, Toronto, Canada, August 2010.
14. Peterson C. K., Murphy, P. K., Rodriguez, P., "Classification of targets in SAR using map seeking circuit technology", SPIE Defense, Sensing, and Security Symposium, Orlando, FL, April 2010.
15. Castelli J. and Peterson C. K., "JEFX 10 cooperative hunter killer UAS and upstream data fusion", SPIE Defense, Sensing, and Security Symposium, Orlando, FL April 2010.
16. Peterson C. K., "Multi-vehicle coordination in a time-varying flowfield", Northeast Control Conference, Baltimore, MD, April 2010.
17. Peterson C. K. and Paley, D. A., "Cooperative control of unmanned vehicles in a time-varying flowfield", AIAA GNC Conference, Chicago, Illinois, August 2009.

TEACHING EXPERIENCE

2022

- ECEN 191: New Student Seminar
- ECEN 774/ME 734: Nonlinear System Theory

2021

- ECEN 191: New Student Seminar
- ECEN 671: Math of Signals and Systems
- ECEN 773/ME 733: Linear System Theory

2020

- ECEN 191: New Student Seminar
- ECEN 483/ME 431: Design of Control Systems

- ECEN 774/ME 734: Nonlinear System Theory

2019

- ECEN 773/ME 733: Linear System Theory
- ECEN 671: Math of Signals and Systems

2018

- ECEN 774/ME 734: Nonlinear System Theory
- ECEN 483/ME 431: Design of Control Systems

2017

- ECEN 773/ME 733: Linear System Theory
- ECEN 483/ME 431: Design of Control Systems

PROFESSIONAL SOCIETIES

AIAA Member

IEEE Member

SWE Senior Member

PROFESSIONAL SERVICES & COMMITTEES

Reviewer:

AIAA Journal of Guidance, Navigation, and Control

AIAA Journal of Aerospace Information Systems

IEEE Transactions on Vehicular Technology

IEEE Transactions on Network Science and Engineering

IEEE Transactions on Aerospace and Electronic Systems

IEEE Control Systems Letters

International Journal of Robotics and Automation

ASME Letters in Dynamic Systems and Control

Outreach Activities:

STEM Programs

Judge for Maryland FIRST Robotics competition, Boy Scouts of America STEM/ Nova awards counselor, elementary school science fair judge and career day presenter, USA Science and Engineering Festival Expo volunteer.

College Intern Mentor

Mentor for college interns at APL during summer 2015 and 2016. Ensured they had meaningful tasks to accomplish, understood the problem domain, and participated in enriching work activities.

Local Inspiration for Future Engineers (LIFE) Faculty Advisor

Advisor for the college of engineering outreach club whose objective is to visit middle and high school students, encouraging them to participate in STEM activities.