

Jason T. Isaacs

Computer Science and Information Technology
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— Education

Ph.D. University of California, Santa Barbara, Electrical and Computer Engineering, March 2012
Dissertation: *UAV Data Mule Vehicle Routing Problems In Sparse Sensor Networks*
Adviser: João P. Hespanha

M.S. University of California, Santa Barbara, Electrical and Computer Engineering, June 2008
Major: Control Systems
Minor: Signal Processing

B.S. University of Kentucky, Electrical Engineering, *Summa Cum Laude*, Dec. 1999

B.S. Eastern Kentucky University, Engineering Physics, *Magna Cum Laude*, Dec. 1999

— Teaching Experience

Assistant Professor, August 2015–Present
California State University, Channel Islands, Dept. of Computer Science and Information Technology

— Courses Taught

F2020

COMP 350 Introduction to Software Engineering
COMP 462 Embedded Systems
COMP 491 Capstone Preparation
COMP 499 Capstone Project
COMP 597 Master Thesis
COMP 599 Graduate Seminar

S2020

COMP 350 Introduction to Software Engineering
COMP 470 Mobile Robotics
COMP 491 Capstone Preparation
COMP 499 Capstone Project
COMP 597 Master Thesis
COMP 599 Graduate Seminar
IT 499 Capstone Project

F2019

COMP 350 Introduction to Software Engineering
COMP 491 Capstone Preparation
COMP 499 Capstone Project
COMP 550 Advanced Software Engineering
COMP 597 Master Thesis
IT 491 Capstone Preparation
IT 499 Capstone Project

S2019

COMP 350 Introduction to Software Engineering
COMP 470 Mobile Robotics
COMP 491 Capstone Preparation
COMP 499 Capstone Project
COMP 597 Master Thesis
IT 491 Capstone Preparation

F2018

COMP 121 Introduction to Programming in C
COMP 350 Introduction to Software Engineering
COMP 490 Topics in Computer Science: Computational Biology
COMP 491 Capstone Preparation
COMP 597 Master Thesis

S2018

COMP 350 Introduction to Software Engineering
COMP 490 Topics in Computer Science: Advanced Software Engineering
COMP 491 Capstone Preparation
COMP 499 Capstone Project
COMP 597 Master Thesis

F2017

COMP 350 Introduction to Software Engineering
COMP 491 Capstone Preparation
COMP 497 Directed Study: Embedded Systems
COMP 575 Multi-Agent Systems
COMP 597 Master Thesis
IT 499 Capstone Project

S2017

COMP 462 Embedded Systems
COMP 490 Topics in Computer Science: NASA Swarmathon
COMP 499 Capstone Project
COMP 597 Master Thesis
IT 491 Capstone Preparation
IT 499 Capstone Project

F2016

COMP 150 Introduction to Object Oriented Programming
 COMP 491 Capstone Preparation
 COMP 597 Master Thesis
 IT 491 Capstone Preparation

S2016

COMP 150 Introduction to Object Oriented Programming
 COMP 462 Embedded Systems
 COMP 494 Independent Research
 COMP 590 Advanced Topics In Computer Science

F2015

COMP 150 Introduction to Object Oriented Programming
 COMP 491 Capstone Preparation

— Other Work Experience

Office of Naval Research - Summer Faculty Research Fellow, June 2020 – August 2020
 Naval Surface Warfare Center, Port Hueneme Division.

Co-founder and CEO, August 2016 – Present
 Hueneme Technologies Inc.

Visiting Assistant Researcher, July 2016 – December 2016
 University of California, Santa Barbara, Center for Control, Dynamical-Systems, and Computation

Co-founder, January 2014 – July 2016
 ShadowMaps Inc., Acquired by Uber Inc. in 2016.

Post-doctoral Scholar, March 2012–April 2015
 University of California, Santa Barbara, Center for Control, Dynamical-Systems, and Computation

Research Intern, Summer 2008
 United States Army Research Laboratory

Senior Hardware Development Engineer, January 2000 – August 2006
 Lexmark International Inc.

— Honors and Awards

NASA Swarmathon Physical Competition, Best Technical Report, \$200, April 2018
 California State University, Channel Islands, CIS Interdisciplinary Course Development Grant, \$1500, February 2018
 California State University, Channel Islands, IRA Grant (NASA Swarmathon), \$33,806, January 2018
 California State University, Channel Islands, IRA Grant (Grace Hopper Celebration), \$11,210, January 2018
 California State University, Channel Islands, SURF Faculty Fellow, \$6500, November 2017
 California State University, Channel Islands, Lottery Fund Internal Grant, \$1,514, November 2017
 California State University, Channel Islands, RSCA Internal Grant, \$1980, May 2017
 NASA Swarmathon Physical Competition, 3rd Place, \$1000, April 2017

NASA Swarmathon Physical Competition, Best Technical Report, \$200, April 2017
Distributed Research Experiences for Undergraduates (DREU) Mentor, \$500, March 2017
California State University, Channel Islands, IRA Grant (NASA Swarmathon), \$26,420, February 2017
California State University, Channel Islands, Minigrant Internal Grant, \$9000, February 2017
California State University, Channel Islands, SURF Faculty Fellow, \$5000, February 2017
California State University, Channel Islands, CIS Minigrant Internal Grant, \$850, November 2016
California State University, Channel Islands, CIS Minigrant Internal Grant, \$500, November 2016
NASA Swarmathon Physical Competition, Stipend and Hardware Totaling \$6000, August 2016
California State University, Channel Islands, Minigrant Internal Grant, \$9000, March 2016
California State University, Channel Islands, RSCA Internal Grant, \$6500, March 2016
California State University, Channel Islands, Lottery Fund Internal Grant, \$3500, November 2015
Best Demo (runner-up), ACM MobiCom, September 2014
Best Paper Award, ACM MobiCom S3 Workshop Wireless of the Students, by the Students, for the Students, September 2014
Best Demo, Goleta Entrepreneurial Magnet (GEM) Summer Accelerator, September 2014
Grand Prize, UCSB Technology Management Program, New Venture Competition, May 2014
Best Presentation in Session, American Control Conference, July 2011
School For Scientific Thought Teaching Fellowship, California Nanoscale Institute, May 2010
Doctoral Scholar Fellowship, UCSB Graduate Division, September 2006-September 2010

— Selected Talks

Panelist Speaker for Our Free Will vs. Artificial Intelligence, IEEE Buenaventura Section Spring Mixer, August 1, 2018

Swarm Robotics At CSUCI, Moorpark College Computer Science Club, May 9, 2018

NASA Swarmathon: Taking Swarm Robotics To Mars, IEEE Buenaventura Speaker Series, October 11, 2017

Swarmathon to Mars, CSU Sonoma State, 46th Computer Science Colloquium, Rohnert Park, California, April 27, 2017

Panelist Speaker for the 3rd Annual Symposium, Association of Unmanned Vehicle Systems International (AUVSI), Camarillo, California, October 21, 2016.

Introduction to the AVES Lab, Channel Islands Chapter of Association of Unmanned Vehicle Systems International (AUVSI), Camarillo, California, September 13, 2016

Dynamic Vehicle Routing over a Sparse Sensor Network, INFORMS 2011, Charlotte, North Carolina, November 15, 2011

Information-Based Optimal Navigation, 18th IFAC World Congress Workshop on Multiple Vehicle Motion Planning, Navigation, and Control - Theory and Practice, Milan, Italy, August 28, 2011

Dynamic Vehicle Routing over a Sparse Sensor Network, 20th Southern California Nonlinear Control Workshop, U. C. Riverside, May 13, 2011

Optimal TDOA Sensor Placement For Uncertain Source Locations, 17th Southern California Nonlinear Control Workshop, Caltech, May 22, 2009

— Professional Service

Technical Reviewer

IEEE Symposium on Signal Processing and Information Technology ◊ Mathematical Problems in Engineering ◊ IEEE Conference on Decision and Control ◊ IFAC World Congress ◊ IFAC Workshop on Distributed Estimation and Control in Networked Systems ◊ International Conference on Control, Automation, Robotics and Vision ◊ IEEE Transactions on Wireless Communications ◊ American Control Conference ◊ IEEE Transactions on Signal Processing ◊ IEEE Transactions on Control Systems Technology ◊ IEEE Sensors Journal ◊ International Conference on Intelligent Robots and Systems ◊ Robotics and Autonomous Systems ◊ Journal of Optimization Theory and Applications ◊ Unmanned Systems Journal ◊ Autonomous Robots ◊ Wireless Communications and Mobile Computing ◊ Sensors ◊ Robotics and Automation Letters ◊ NSF Panelist

Session Chair

55th IEEE Conference on Decision and Control, "Kalman Filtering"

18th IFAC World Congress, "New Approaches in Control Education"

— Professional Affiliations

Senior Member of Institute for Electrical and Electronics Engineers (IEEE) ◊ IEEE Control Systems Society (IEEE CSS) ◊ IEEE Robotics and Automation Society (IEEE RAS) ◊ Association of Unmanned Vehicle Systems International (AUVSI)

— Outreach

Pierce College Industry Advisory Board, Pierce College, 2019-present

Computer Science Program Outreach Coordinator, CSU Channel Islands, 2015-present

Summer Robotics Challenge Mentor, University of California, Santa Barbara, 2010-2013

Santa Barbara High School Robotics Course Instructor, Santa Barbara High School, 2012

School for Scientific Thought Robotics Course Instructor, University of California, Santa Barbara, 2010

Family Ultimate Science Exploration (FUSE) Mentor, 2009-2010

— Publications

Peer Reviewed Journal Articles

- [1] D. A. Copp, J. T. Isaacs, and J. P. Hespanha. Programming, Robotics, and Control for High School Students. *ASEE Advances in Engineering Education*. (To appear).
- [2] D. J. Klein, S. Venkateswaran, J. T. Isaacs, J. Burman, J. P. Hespanha, and U. Madhoo. Source Localization in a Sparse Acoustic Sensor Network using UAVs as Information Seeking Data Mules. *ACM Transactions on Sensor Networks*, 9(3), August 2013.

- [3] J. T. Isaacs, J. P. Hespanha. Dubins Traveling Salesman with Neighborhoods: A Graph-Based Approach. *Algorithms*, 6(1): 84–99, February 2013.
- [4] C. E. Laird, B. A. Harmon, C. A. Wilson, D. L. Hunter, and J. T. Isaacs. Low energy response calibration of the BATSE large area detectors onboard the Compton Observatory. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 566(2): 433–441, October 2006.

Peer Reviewed Conference Proceedings

- [5] A. Bharaswadkar, V. Vakilian, B. Thoms, and J. T. Isaacs. Congestion Strategies for Clustered Central Place Foraging. Accepted to *International Conference on Automation, Robotics and Applications, ICARA*, February 2021.
- [6] J. T. Isaacs, N. Dolan-Stern, M. Getzinger, E. Warner, A. Venegas, and A. Sanchez. Central Place Foraging: Delivery Lanes, Recruitment and Site Fidelity. In *Proceedings of the IEEE International Conference on Autonomous Robot Systems and Competitions, ICARSC*, April 2020.
- [7] M. Shaw, G. Dilly, K. Meeker, and J. T. Isaacs. Quantifying Intertidal Zone Species Using Semantic Segmentation. In *Proceedings of the IEEE International Symposium on Signal Processing and Information Technology*, December 2018.
- [8] M. U'Ren and J. T. Isaacs. Obstacle Detection and Traversal with Noisy Range Sensors. In *Proceedings of the IEEE SoutheastCon*, April 2018.
- [9] N. Dolan-Stern, K. Scrivnor, and J. T. Isaacs. Multimodal Central Place Foraging. In *Proceedings of the IEEE International Conference on Robotic Computing (IRC)*, January 2018.
- [10] J. T. Isaacs, K. O. Ezal, and J. P. Hespanha. Local Carrier-Based Precision Approach and Landing System. In *Proceedings of the 55th IEEE Conference on Decision and Control*, December 2016.
- [11] A. T. Irish, J. T. Isaacs, D. Iland, J. P. Hespanha, E. M. Belding, and U. Madhow. Demo: ShadowMaps, the Urban Phone Tracking System. In *Proceedings of the ACM International Conference on Mobile Computing and Networking*, September 2014.
- [12] A. T. Irish, D. Iland, J. T. Isaacs, J. P. Hespanha, E. M. Belding, and U. Madhow. Using Crowdsourced Satellite SNR Measurements for 3D Mapping and Real-Time GNSS Positioning Improvement. In *Proceedings of the ACM Workshop on Wireless of the Students, by the Students, for the Students*, September 2014.
- [13] J. T. Isaacs, F. Quitin, L. R. Garcia Carrillo, U. Madhow, and J. P. Hespanha. Quadrotor Control for RF Source Localization and Tracking. In *Proceedings of the 2014 International Conference on Unmanned Aircraft Systems*, May 2014.
- [14] J. T. Isaacs, C. Magee, A. Subbaraman, F. Quitin, K. Fregene, U. Madhow, and J. P. Hespanha. GPS-Optimal Micro Air Vehicle Navigation in Degraded Environments. In *Proceedings of the 2014 American Control Conference*, June 2014.
- [15] A. T. Irish, J. T. Isaacs, F. Quitin, J. P. Hespanha, and U. Madhow. Belief Propagation Based Localization and Mapping Using Sparsely Sampled GNSS SNR Measurements. In *Proceedings of the 2014 IEEE International Conference on Robotics and Automation*, June 2014.
- [16] J. T. Isaacs, A. T. Irish, F. Quitin, U. Madhow, and J. P. Hespanha. Bayesian Localization and Mapping Using GNSS SNR Measurements. In *Proceedings of the IEEE/ION Position Location and Navigation Symposium*, May 2014.
- [17] A. T. Irish, J. T. Isaacs, F. Quitin, J. P. Hespanha, and U. Madhow. Probabilistic 3D Mapping based on GNSS SNR Measurements. In *Proceedings of the 2014 IEEE International Conference on Acoustics, Speech, and Signal Processing*, April 2014.

- [18] S. Venkateswaran, J. T. Isaacs, K. Fregene, R. Ratmansky, B. M. Sadler, J. P. Hespanha, and U. Madhow. RF Source-Seeking by a Micro Aerial Vehicle using Rotation-Based Angle of Arrival Estimates. In *Proceedings of the 2013 American Control Conference*, June 2013.
- [19] J. T. Isaacs, S. Venkateswaran, J. P. Hespanha, U. Madhow, J. Burman, and T. Pham. Multiple Event Localization in a Sparse Acoustic Sensor Network Using UAVs as Data Mules. In *Proceedings of the 3rd International Workshop on Wireless Networking & Control for Unmanned Autonomous Vehicles: Architectures, Protocols and Applications*, December 2012.
- [20] J. T. Isaacs, D. J. Klein, and J. P. Hespanha. A Guided Internship For High School Students Using iRobot Create. In *Proceedings of the 18th IFAC World Congress*, September 2011.
- [21] J. T. Isaacs, D. J. Klein, and J. P. Hespanha. Algorithms for the Traveling Salesman Problem with Neighborhoods Involving a Dubins Vehicle. In *Proceedings of the 2011 American Control Conference*, July 2011.
- [22] D. J. Klein, J. J. Schweikl, J. T. Isaacs, and J. P. Hespanha. On UAV Routing Protocols for Sparse Sensor Data Exfiltration. In *Proceedings of the 2010 American Control Conference*, June 2010.
- [23] J. T. Isaacs, D. J. Klein, and J. P. Hespanha. Optimal Sensor Placement For Time Difference of Arrival Localization. In *Proceedings of the 48th IEEE Conference on Decision and Control*, December 2009.

United States Patents

- [24] A. T. Irish, J. T. Isaacs, F. Quitin, J. P. Hespanha, U. Madhow. Systems and methods for GNSS SNR probabilistic localization and 3-D mapping. *US Patent Number US-10495464-B2*, December 2019.
- [25] A. T. Irish, J. T. Isaacs, and U. Madhow. System and method for localization and tracking using GNSS location estimates, satellite SNR data and 3D maps. *US Patent Number US-10656282-B2*, May 2020.