

Alexander James Wallar

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EDUCATION	Ph.D. Electrical Engineering and Computer Science Massachusetts Institute of Technology	Starting September 2015 Cambridge, Massachusetts
	Will be working under the supervision of Dr. Daniela Rus as part of the Distributed Robotics Laboratory working on algorithms for multi-agent surveillance and persistent monitoring.	
	B.Sc. (Honours) Computer Science University of St Andrews	September 2012 – June 2015 St Andrews, Scotland
	Direct entry into second year. First class honours degree (expected). Dissertation Title: Generating Safe Trajectories in Stochastic Dynamic Environments by Leveraging Information About Obstacle Motion.	
	International Baccalaureate Diploma George Mason High School	September 2011 – June 2012 Falls Church, Virginia
	Extended Essay Title: To What Extent Can Numbers of Different Bases be Used to Hide Information Effectively?	
EXPERIENCE	Student Contractor Naval Research Laboratory	January 2015 – Present Washington DC, USA
	Working as part of the Distributed Autonomous Systems Group at the Naval Center for Applied Research in Artificial Intelligence developing algorithms for multi-agent surveillance and persistent monitoring. Also developing middlewares that provide abstractions for controlling multi-agent systems	
	Undergraduate Research Assistant The Catholic University of America	August 2013 – Present Various Locations
	Working as part of the Computational Robotics Laboratory developing algorithms for swarm manipulation that seek to enable a group of unmanned aerial vehicles to provide surveillance over a given region. Also creating path planning algorithms for swarms that generate paths through cluttered dynamic environments for a swarm.	
	Research Intern Naval Research Laboratory	May 2014 – August 2014 Washington DC, USA
	Was selected as part of the Naval Research Enterprise Internship Program. Worked as part of the Distributed Autonomous Systems Group at the Naval Center for Applied Research in Artificial Intelligence and developed algorithms for surveillance of risk sensitive areas by a team of unmanned aerial vehicles.	
	Research Assistant School of Computer Science, University of St Andrews	February 2014 – October 2015 St Andrews, Scotland
	Worked with Dr. Juan Ye to develop computer vision techniques to produce haptic feedback from two dimensional images.	

Research Intern
University of Notre Dame

September 2013 – June 2014
Notre Dame, USA

Was selected as part of the National Science Foundation Research Experience for Undergraduates program. Developed web applications for concussion detection. Also developed a framework for in browser eye tracking and gaze prediction.

High School Research Intern
The Catholic University of America

September 2013 – June 2014
Washington DC, USA

Created an interface for controlling an iRobot Create using voice commands spoken to an Android enabled device. Also developed algorithms for swarm path planning that enabled a group of robots to move from an initial configuration to a goal configuration.

Intern
Embassy of the United States

July 2011 – August 2011
Bucharest, Romania

Worked with the Financial Management Office to provide assistance including managing spreadsheets for payment and shredding papers.

Publications

Peer-reviewed

- [1] D. Sofge, N. Sydney, A. Wallar, and K. Sullivan, “Mobile autonomous navy teams for information surveillance and search (mantiss),” *Naval Research Laboratory Review*, 2015. In press.
- [2] A. Wallar, E. Plaku, and D. Sofge, “Motion planning for surveillance of risk-sensitive areas by a team of unmanned aerial vehicles,” *Transactions Automation Science and Engineering*, 2015. Under review.
- [3] A. Wallar, E. Plaku, and D. A. Sofge, “A planner for autonomous risk-sensitive coverage (parcov) by a team of unmanned aerial vehicles,” in *Swarm Intelligence (SIS), 2014 IEEE Symposium on*, pp. 1–7, IEEE, 2014.
- [4] A. Wallar and E. Plaku, “Path planning for swarms in dynamic environments by combining probabilistic roadmaps and potential fields,” in *Swarm Intelligence (SIS), 2014 IEEE Symposium on*, pp. 1–8, IEEE, 2014.
- [5] A. Wallar and E. Plaku, “Path planning for swarms by combining probabilistic roadmaps and potential fields,” in *Towards Autonomous Robotic Systems*, pp. 417–428, Springer, 2014.

Theses

- [1] D. Sofge, N. Sydney, A. Wallar, and K. Sullivan, “Mobile autonomous navy teams for information surveillance and search (mantiss),” *Naval Research Laboratory Review*, 2015. In press.
- [2] A. Wallar, E. Plaku, and D. Sofge, “Motion planning for surveillance of risk-sensitive areas by a team of unmanned aerial vehicles,” *Transactions Automation Science and Engineering*, 2015. Under review.
- [3] A. Wallar, E. Plaku, and D. A. Sofge, “A planner for autonomous risk-sensitive coverage (parcov) by a team of unmanned aerial vehicles,” in *Swarm Intelligence (SIS), 2014 IEEE Symposium on*, pp. 1–7, IEEE, 2014.

- [4] A. Wallar and E. Plaku, "Path planning for swarms in dynamic environments by combining probabilistic roadmaps and potential fields," in *Swarm Intelligence (SIS), 2014 IEEE Symposium on*, pp. 1–8, IEEE, 2014.
- [5] A. Wallar and E. Plaku, "Path planning for swarms by combining probabilistic roadmaps and potential fields," in *Towards Autonomous Robotic Systems*, pp. 417–428, Springer, 2014.

Posters & Presentations

AWARDS

- Dean's List, University of St Andrews
- Travel Grant, IEEE
- Second place, KCL Tech Society HackKing's Hackathon
- Finalist, Barclays Openminds Hackathon
- First place, J.P. Morgan Code for Good Hackathon
- Second place, University of Edinburgh Security Appathon
- Best Poster Prize, University of Notre Dame
- Third place, University College London Hackin' the City
- Mathematics Achievement Award, George Mason High School
- Principal's Scholar, George Mason High School
- International Baccalaureate Learner Profile Award, American International School of Bucharest
- Most Valuable Player, FIRST Tech Challenge Robotics
- Gracious Professionalism Award, FIRST Robotics Competition
- Inspire Award, FIRST Tech Challenge Robotics
- Rockwell Collins Innovate Award, FIRST Tech Challenge Robotics
- PTC Design Award, FIRST Tech Challenge Robotics