

Dr. Wyatt McAllister

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RESEARCH INTEREST

I'm excited to chat with teams working on intelligent consumer infrastructure. I'm passionate about autonomous systems, robotics, and data science.

EDUCATION

UNIVERSITY OF ILLINOIS | URBANA-CHAMPAIGN, IL

PH.D. IN ELECTRICAL AND COMPUTER ENGINEERING | AUGUST 2018 - MAY 2020

Distributed Autonomous Systems Lab (DAS Lab)

Advised by Dr. Girish Chowdhary

Department of Electrical and Computer Engineering (ECE)

Cur. Cum. GPA: 4.0 / 4.0

MS IN ELECTRICAL AND COMPUTER ENGINEERING | AUGUST 2016 - MAY 2018

Advised by Dr. Girish Chowdhary

Department of Electrical and Computer Engineering (ECE)

Cum. GPA: 4.0 / 4.0

BS IN ELECTRICAL AND COMPUTER ENGINEERING, HIGHEST HONORS | AUGUST 2014 - MAY 2016

Department of Electrical and Computer Engineering (ECE)

Cum. GPA: 3.92 / 4.0

SKILLS

SOFTWARE

C++, C, Java, MatLab, Python, LATEX, Mathematica, Photoshop, HTML, CSS

HARDWARE

ROS, Open CV, PHP, Eagle CAD PCB

LANGUAGE

Spanish - Professional

PROFESSIONAL EXPERIENCE

HRL LABORATORIES, LLC | SCIENTIST IV | MALIBU, CA | MARCH 2021 – PRESENT

- Researching autonomous air-to-air refueling in collaboration with Boeing, including optimized keypoint selection algorithms for the localization of aircraft in real world scenes via computer vision
- Researching autonomous robotic wire insertion for aircraft manufacturing in collaboration with Boeing, including computer vision segmentation, robotic control, and autonomous decision making
- Worked on autonomous driving systems in collaboration with General Motors, including autonomous decision making with behavior trees and assured autonomy with collision avoidance

RESEARCH

DAS LAB | POSTDOCTORAL RESEARCHER | URBANA-CHAMPAIGN, IL | JUNE 2020 – FEBRUARY 2021

- Helped create a data validation pipeline using DeepSORT and OpenCV to perform detection and tracking of weeds in real agricultural fields to create spatially encoded density models

DAS LAB | GRADUATE RESEARCHER | URBANA-CHAMPAIGN, IL | MAY 2017 – MAY 2020

- Designed a multi-agent planning algorithm for robotic weed killing, with an associated simulation framework including a realistic weed growth model
- Incorporated a real-time weed growth information processing and prediction strategy using Evolving Gaussian Processes (E-GP) model and a Kalman filter, enabling proactive planning

AWARDS

2018	Shun Lien Chuang Memorial Award in ECE	Top 1/503
2016	Highest Honors	GPA >3.8/4.0
2016	John Bardeen Award in ECE	Top 1/2500
2014-2016	Dean's List	Top 20th Percentile

HONOR SOCIETIES

2016	Tau Beta Pi Engineering Honor Society	Top 12th Percentile
2015	Eta Kappa Nu IEEE Honor Society	Top 25th Percentile

TEACHING

UNIVERSITY OF ILLINOIS | URBANA-CHAMPAIGN, IL | AUGUST 2016 - MAY 2018

- Spring 2018: Fields and Waves I (ECE329) with Dr. Lynford Goddard
- Fall 2017: Principles of Experimental Research (ECE446) with Dr. Lynford Goddard
- Fall 2016: Digital Signal Processing (ECE310) with Drs. Yoram Bresler and Stephen Levinson

PUBLICATIONS

- [1] W. McAllister, D. Osipychev, G. Chowdhary, and A. Davis. Multi-agent planning for coordinated robotic weed killing. In *Intelligent Robots and Systems (IROS), 2018 IEEE/RSJ International Conference on*. IEEE, 2018.
- [2] W. McAllister, D. Osipychev, G. Chowdhary, and A. Davis. Agbots: Weeding a field with a team of autonomous robots. *Computers and Electronics in Agriculture*, 163:104827, 2019.
- [3] W. McAllister, J. Whitman, A. Axelrod, J. Varghese, A. Davis, and G. Chowdhary. Agbots 2.0: Weeding denser fields with fewer robots. *Robotics: Science and Systems Foundation*, 2020.
- [4] W. McAllister, J. Whitman, J. Varghese, A. Davis, and G. Chowdhary. Agbots 3.0: Adaptive weed growth prediction for mechanical weeding agbots. *IEEE Transactions on Robotics*, pages 1–13, 2021.