# 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 undersea autonomous mobile robotic manipulation for maintenance of undersea structures in collaboration with Boeing, including control, path planning, and autonomous decision making
• 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.