

Jeremy D. Castagno

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Curriculum Vitae
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EDUCATION

- | | |
|------|---|
| 2021 | Ph.D., Robotics, University of Michigan
<i>Dissertation Title: Mapping and Real-time Navigation
with Application to Small UAS Urgent Landing. Link</i>
<i>Research Advisor: Ella Atkins</i> |
| 2018 | M.S., Robotics, University of Michigan |
| 2013 | B.S., Chemical Engineering with minor in Computer Science, Brigham Young University |

RECENT WORK EXPERIENCE

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| 2021 - Present | Assistant Professor, Computer Science, Springfield College, Springfield MA
Refreshing Computer Science curriculum and mentoring students |
| 2016 - 2021 | Graduate Student Research Assistant, A2SYS Lab at University of Michigan, Ann Arbor MI
Researched new techniques for creating landing site databases from non-conventional sources
Developed algorithms to extract polygons representing flat surfaces from 3D point clouds |
| 2019 - 2020 | Independent Contractor, National Security Innovation Network (DOD), Ann Arbor MI
Reviewed predictive maintenance methods for DOD assets and interviewed personnel
Wrote white paper proposal for video/audio information extraction using machine learning |
| 2018 - 2020 | Research Intern, NASA Langley, Hampton VA
Gathered experimental data for UAV landing site selection with onboard LiDAR
Researched and developed technology that aids emergency landing for UAVs in cities |
| 2016 - 2016 | Full Stack Web Developer, First Tennessee Financial, Memphis TN
Led development of website establishing new services with enhanced search through NLP
Technology Stack: JavaScript (ES2015), Node.js, Gulp, JSON Web Tokens |
| 2013 - 2015 | Process Control Engineer, Valero Energy Corporation, Memphis TN
Verified several safety systems through simulation and field testing
Led advanced control system upgrade with an estimated savings of 2 million/year |
| 2012 - 2013 | Research Assistant, PRISM Lab at Brigham Young University, Provo UT
Investigated optimal real-time parameter estimation for towed cable system
Programmed MATLAB and C++ interfaces for benchmark laboratory systems |

JOURNAL PUBLICATIONS

1. Sivakanthan S.; **Castagno, J.**, Candiotti, J; Zhou, Jie; Atkins, E; Cooper, R, “Automated Curb Recognition and Negotiation for Robotic Wheelchairs”. *Sensors* 2021, 21, 7810. [Link](#)
2. **Castagno J.**; Romano M.; Kuevor P.; Atkins, E., “Multi-UAV Wildfire Boundary Estimation using a Semantic Segmentation Neural Network”. *Journal of Aerospace Information Systems*. 2021 18:5, 231-249. [Link](#)
3. **Castagno, J.**; Atkins, E. “Polylidar3D - Fast Polygon Extraction from 3D Data”. *Sensors* 2020, 20, 4819. [Link](#)
4. **Castagno, J.**; Atkins, E., “Polylidar – Polygons from Triangular Meshes.” *IEEE Robotics and Automation Letters*, vol. 5, no. 3, pp. 4634-4641, July 2020. [Link](#)
5. **Castagno, J.**; Atkins, E., “Roof Shape Classification from LiDAR and Satellite Image Data Fusion Using Supervised Learning.” *Sensors* 2018, 11, 3960. [Link](#)
6. Sun, L.; **Castagno, J.**; Hedengren, J. D., and Beard, R. W., “Parameter Estimation for Towed Cable Systems Using Moving Horizon Estimation”, *IEEE Transactions on Aerospace and Electronic Systems*, vol. 51, no. 2, pp. 1432-1446, April 2015. [Link](#)

BOOK CHAPTERS

1. **Castagno, J.**; Atkins, E., “Map-Based Planning for Small Unmanned Aircraft Rooftop Landing.” In *Handbook on Reinforcement Learning and Control*, Vamvoudakis, Y. Wan, F. L. Lewis, D. Cansever (Eds.), Springer, 2021. [Link](#)

CONFERENCE PROCEEDINGS

1. **Castagno, J.**; Ochoa, C.; and Atkins, E., “Comprehensive Risk-based Planning for Small Unmanned Aircraft System Rooftop Landing.” *International Conference on Unmanned Aircraft Systems* (2018). [Link](#)
2. McDonough, K.; **Castagno J.**; Player, J., Atkins, E.M. “RANGR: Risk Aware Navigation and Guidance for Resilience”. *AUVSI Xponential* (2018)
3. **Castagno, J.**; Atkins, E., “Automatic Classification of Roof Shapes for Multicopter Emergency Landing Site Selection.” *AIAA Aviation Conference* (2018). [Link](#)

ORAL PRESENTATIONS

1. **Castagno J.**; Atkins, E., “Polylidar – Polygons from Triangular Meshes.” *IEEE/RSJ International Conference on Intelligent Robots and Systems* (2020). Acceptance Rate: 47%. [Link](#)
2. Atkins, E.; **Castagno, J.** “Rooftop Landings for Safe Urban Drone Operations.” *Amazon Re:MARS* (2019). Invited Speaker. [Link](#)

ACADEMIC TEACHING EXPERIENCE

Advanced Programming Concepts, CISC 288 (Spring '22)

Taught essential software development skills including using Linux, Bash, version control, scripting, project structure, and software testing/profiling.

Robotics: Past, Present, and Future, HNRS 192 (Spring '22)

Developed a course that introduces the foundational topics of robotics: sensing, acting, and reasoning.

Data structures and their Algorithms, CISC 275 (Spring '22)

Developed lectures and labs to help students understand the subject through coding and data structure visualization.

Introduction to Computer Science with C++, CISC 175 (Fall '21)

Developed a new C++ course with live coding sessions during class.

Database Development and Management, CISC 315 (Fall '21)

Students learn database design and create their own “app” backed by a real database for their final project

Workshop Instructor, Multidisciplinary Design Program – Introduction to Machine Learning (Winter '18)

Developed and taught interactive modules in multi-hour settings. [Link](#)

HONORS AND AWARDS

1st Prize Winner for NSIN Hackathon with \$15,000 Contract (2019)

1st Prize Winner for AFRL Swarm and Search AI Challenge with \$27,000 prize (2019)

Innovation Award Winner for AFRL Swarm and Search AI Challenge (2019)

University of Michigan Rackham Merit Fellowship (2016-2021)

BYU Alvina Soffel Barrett Scholarship (2011-2013)

BYU General Engineering Scholarship (2010)

COMMUNITY SERVICE AND OUTREACH

Panelist (2020), First Robotics, Ann Arbor MI

Presenter (2018), Career Fair, Ann Arbor MI

Cub Scouts Leader (2016), Lessons for pre-teens, Ann Arbor MI

Valero Juvenile Justice Mentor Program (2012), Mentor for truant students, San Antonio TX

Engineers Without Borders (2012), Led an engineering team creating low cost water filters, Cusco Peru

Volunteer Representative (2008-2010), Missionary for The Church of Jesus Christ of Latter-day Saints, India

PROFESSIONAL MEMBERSHIPS AND SERVICE

Member of American Institute of Aeronautics and Astronautics (AIAA)

Member of Institute of Electrical and Electronics Engineers (IEEE)

Reviewer for: IEEE Transactions on Intelligent Transportation Systems, IEEE Robotics and Automation Letters, AIAA

Journal of Aerospace Information Systems, MDPI Sensors, MDPI Remote Sensing

MEDIA COVERAGE

“A2Sys Lab takes first in firefighting drone competition”, in [University of Michigan Robotics](#)

“Swarm and Search AI winners recognized during visit of HMS Queen Elizabeth”, in [Wright-Patterson AFB](#)