





# Ross B. Alexander

## CONTACT INFORMATION

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## RESEARCH OBJECTIVES

Graduate research is focused on statistical machine learning, reinforcement learning, decision theory, autonomous driving, and human-centered autonomous systems.

## EDUCATION

**M.S. Aeronautics & Astronautics**, Stanford University, Palo Alto, CA **06/2021**  
*Supported by 3-year Stanford Graduate Fellowship in Science & Engineering (SGF)*  
**B.S. Aerospace Engineering** (Honors), Texas A&M University, College Station, TX **05/2019**

## ACADEMIC EXPERIENCE

**Graduate Researcher** **03/2020 – Present**  
Stanford Intelligent Systems Lab (SISL), Stanford University  
*Decomposition Methods for Object Detection on Occluded Sidewalk*, (Ongoing)  
Principal Investigator (PI) – Mykel Kochenderfer, Ph.D.  
Supervisor – Ransalu Senanayake, Ph.D.

## PROFESSIONAL EXPERIENCE

**Machine Learning & Simulation Intern** **05/2019 – 08/2019**  
CFD Research Corporation, Huntsville, AL  
**Hypersonics Intern** **05/2018 – 08/2018**  
CFD Research Corporation, Huntsville, AL  
**Computational Analyst Intern** **05/2017 – 08/2017**  
Corvid Technologies, Mooresville, NC

## TEACHING EXPERIENCE

*Stanford University*  
**Artificial Intelligence** (SPCS-SI & SPCS-II), Instructor **06/2020, 08/2020**  
Two-week courses for Stanford Pre-Collegiate Studies (SPCS) Summer Institutes (SI) and International Institutes (II). Overview of methods in modern artificial intelligence; development of mathematical and programming proficiency in machine learning and optimization, including supervised learning, unsupervised learning, and reinforcement learning techniques.  
*Texas A&M University*  
**Advanced Numerical Simulation** (AERO 430), Teaching Assistant **01/2018 – 05/2019**  
Numerical and analytical simulation of physical problems in sciences and engineering using applied methods; developing and using numerical techniques for physical problems described by nonlinear algebraic equations, ordinary and partial differential equations.  
**Engineering Mathematics II** (MATH 152), Teaching Assistant **01/2017 – 05/2017**  
Differentiation and integration techniques and their applications (area, volumes, work), improper integrals, approximate integration, analytic geometry, vectors, infinite series, power series, Taylor series, computer algebra.  
**Engineering Mathematics** (ENGR 289), Teaching Assistant **08/2016 – 12/2016**  
Study of functions, graphs of polynomial and rational functions, radical functions, exponential and logarithmic functions, inequalities, trigonometric functions, fundamental identities, right triangles, trigonometric equations.

## HONORS & AWARDS

### *Stanford University*

**Stanford Graduate Fellowship in Science & Engineering (SGF)** (2019-2022)

### *Texas A&M University*

**Dean's Honor Roll** (Spring 2016, Fall 2016, Spring 2017, Spring 2018, Fall 2018)

**Larry J. McQuien '76 "Take Flight" Award** (2018-2019)

**Donna and Dub Jett '68 Aerospace Engineering Scholar** (2017-2018)

**Hugh G. Robinson Endowed Opportunity Award** (2015-2019)

**Mildred & Willy F. Bohlmann, Jr. '50 President's Endowed Scholar** (2015-2019)

### *Other Awards*

**General James H. Doolittle Scholar** (05/2019), Communities Foundation of Texas (CFT)

**Charles Hoult Award for Modeling & Simulation** (06/2017), Experimental Sounding Rocketry Assoc.


**Eagle Scout** (08/2014), Boy Scouts of America

## SKILLS







**Languages** – Expert in MATLAB. Proficient in Julia, Python, Bash, LaTeX.

**Operating Systems** – Proficient in macOS, Linux/Unix, Windows.

## PRE-PRINT PUBLICATIONS

1.  A. L. Kaminsky, **R. B. Alexander**, S. H. Hong, Y. Wang, K. Pant, K. Flynn, and R. Thompson, "A surrogate-assisted genetic algorithm for design of guided weapons with stochastic Monte Carlo evaluation," draft submitted to AIAA SciTech Conference, 2021.

## PUBLICATIONS (UNREFEREED)

6.  **R. B. Alexander**, "Active learning for efficiently constructing surrogate models," final project for CS 361: Engineering Design Optimization graduate course at Stanford University, 2020.
5.  **R. B. Alexander** and J. S. Ling, "Multi-segment dynamic pricing for airline tickets using model-free reinforcement learning," final project for CS 238: Decision Making Under Uncertainty graduate course at Stanford University, 2019.
4.  **R. B. Alexander** and A. L. Kaminsky, "Optimization of guided weapon designs with a stochastic objective function using a genetic algorithm," report produced for CFD Research Corporation during summer internship, 2019.
3.  **R. B. Alexander**, J. M. Caesar, R. C. Doddanavar, and J. Q. Doll, "Integrated flight modeling: trajectory analysis and hybrid engine performance," in Spaceport America Cup Conference, 2018.
2.  **R. B. Alexander**, "Correlation study of CFD turbulence modeling approaches for an axisymmetric missile concept," report produced for Corvid Technologies during summer internship, 2017.
1.  **R. B. Alexander**, "CFD analysis and optimization of flow deflector geometry for a supersonic free jet," in Spaceport America Cup Conference, 2017.

## PRESENTATIONS

4. *Integrated Flight Modeling: Trajectory Analysis and Hybrid Engine Performance*, 2019 Texas A&M University Student Research Symposium, College Station, TX, March 2019
3. *Design, Development, and Testing of a Hybrid Sounding Rocket*, Southwest Aerospace Symposium (AIAA North Texas Chapter), Arlington, TX, September 2018
2. *Integrated Flight Modeling: Trajectory Analysis and Hybrid Engine Performance*, 2018 Spaceport America Cup Conference, Las Cruces, NM, June 2018
1. *CFD Analysis and Optimization of Flow Deflector Geometry for a Supersonic Free Jet*, 2017 Spaceport America Cup Conference, Las Cruces, NM, June 2017

## PROFESSIONAL SERVICE

### Journal referee

**IEEE RA-L**, IEEE Robotics & Automation Letters

**2020 – Present**

**JAIR**, Journal of Artificial Intelligence Research

**2020 – Present**

**Member**, Association for the Advancement of Artificial Intelligence (AAAI)

**2019 – Present**

**Member**, Institute of Electrical and Electronics Engineers (IEEE)

**2019 – Present**

**Member**, American Institute of Aeronautics and Astronautics (AIAA)

**2018 – Present**