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   **06/2021**
Supported by 3-year Stanford Graduate Fellowship in Science & Engineering (SGF)
B.S. Aerospace Engineering (Honors), Texas A&M University   **05/2019**

ACADEMIC
EXPERIENCE

Graduate Researcher   **03/2020 – Present**
Stanford Intelligent Systems Lab (SISL), Stanford University

> **Decomposition Methods for Object Detection on Occluded Sidewalk**   **03/2020 – Present**
> PIs – Mykel Kochenderfer, Ph.D. (Stanford)
>   Umair Ibrahim (Ford Motor Company)
> Supervisor – Ransalu Senanayake, Ph.D. (Stanford)

> **Adaptive Intervention Strategies for Control of Epidemics on Graphs**   **06/2020 – Present**
> PIs – Mykel Kochenderfer, Ph.D. (Stanford)
>   Rajmonda Caceres, Ph.D. (MIT Lincoln Laboratory)

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   **June 2020, August 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   **Fall 2018, Spring 2018-2019**
> 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   **Spring 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 **Fall 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 – Proficient in Julia, Python, MATLAB, 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**