

# Jonathan Cangelosi

Houston, TX  
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## EDUCATION

**Rice University**, Houston, TX

Ph.D. in Computational and Applied Mathematics, *expected* May 2025.

M.A. in Computational and Applied Mathematics, December 2022.

**Louisiana State University**, Baton Rouge, LA

B.S. in Mathematics, December 2019.

B.S. in Computer Science, December 2019.

## RESEARCH INTERESTS

Optimal control, trajectory optimization, surrogate modeling, model reduction

## TEACHING EXPERIENCE

**Undergraduate:** Lead tutor at the Center for Academic Success; tutored math and computer science courses spanning across the curriculum.

**Graduate:** Teaching assistant for an undergraduate course on numerical methods for PDEs. Responsibilities include holding a weekly recitation session and office hours. Also gave a few guest lectures. Currently pursuing the Certificate of Teaching Excellence at Rice, which includes a practicum and a portfolio.

## RESEARCH EXPERIENCE

**Research Assistant**, Rice University

Advisor: Dr. Matthias Heinkenschloss

Studying trajectory optimization for hypersonic vehicles under AFOSR Grant FA9550-22-1-0004.

## SERVICE

**AWM Math Nights Volunteer**, Rice University

Assisted undergraduate students in applied mathematics courses such as calculus, matrix analysis, and numerical methods for PDEs.

**Graduate Seminar Organizer**, Rice University

Arranged research talks for graduate students in the department.

### **Kernel Methods Reading Group, Rice University**

Gave lectures and demonstrations on kernel methods from both theoretical and practical perspectives for interested undergraduate and graduate students.

### **Undergraduate mentorship, Rice University**

Mentored an undergraduate student studying feedback control systems.

## PRESENTATIONS

### **Technical paper presentation at AIAA SciTech 2024, Hyatt Regency Center, Orlando**

Title: Simultaneous Design and Trajectory Optimization for Boosted Hypersonic Glide Vehicles

Co-author: Jacob Needels, Stanford University

### **Minisymposium presentation at SIAM-TXLA 2023, University of Louisiana at Lafayette**

Title: Adaptive Gaussian Process Modeling for Trajectory Simulation with Model Inexactness

### **Poster presentation at SIAM-TXLA 2022, University of Houston**

Title: Trajectory Optimization of Hypersonic Vehicles via a Radau Pseudospectral Method

## PUBLICATIONS

### **An Adaptive Surrogate Model Refinement (ASMR) Framework for Simulation and Optimization of Dynamical Systems**

PhD thesis. Work in progress. Expected completion date: May 2025.

### **Sensitivity-Driven Adaptive Surrogate Modeling for Optimization of Dynamical Systems**

Technical paper (tentative title). Work in progress.

### **Sensitivity-Driven Adaptive Surrogate Modeling for Simulation of Dynamical Systems**

Technical paper (tentative title). Work in progress.

### **Simultaneous Design and Trajectory Optimization for Boosted Hypersonic Glide Vehicles**

Technical paper. Published by AIAA SciTech 2024.

### **Trajectory Optimization of Hypersonic Vehicles via a Radau Pseudospectral Method**

Master's thesis. Published by Rice University 2023.

## SKILLS

Programming, with particular expertise in Python, including numpy, scipy, IPOPT, Jax, and Pyomo.