# Jonathan Cangelosi

10752 Oakline Drive
Baton Rouge, LA 70809
+1 (225) 329-3718
jrc20@rice.edu

## 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.