RUI (RAY) QU

Curriculum Vitae

Houston, TX — rq10@rice.edu — (919) 904-9996 — ray-qu.com

EDUCATION

Ph.D. in Computational and Applied Mathematics
Aug 2022 - May 2027 (expected)
Rice University
Department of Computational Applied Mathematics and Operations Research
Advisor: Dr. Jesse Chan
GPA: 4.0/4.0.

B.S. in Statistics and Analytics; B.S. in Mathematics (with Highest Distinction)
Aug 2018 - Aug 2021
The University of North Carolina at Chapel Hill
Department of Statistics and Operations Research; Department of Mathematics
GPA: 3.96/4.0.

RESEARCH INTERESTS

Reduced Order Modeling, Numerical Methods for PDEs, Mathematical Physics

EXPERIENCE/EMPLOYMENT

Chan Research Group, Rice University Department of CMOR
Jan 2023 - Present
PI: Dr. Jesse Chan
Position: Graduate Research Assistant
Description: Extending reduced order modeling of nonlinear conservations laws from finite volume methods to discontinuous Galerkin methods with new hyper-reduction techniques.

Group of Applied Mathematics and Plasma Physics (T-5), Los Alamos National Laboratory
June 2024 - Aug 2024
PI: Dr. Svetlana Tokareva
Position: Graduate Research Assistant
Description: Applied model order reduction to stochastic finite volume methods for uncertain quantification in high-dimensional stochastic PDE systems.

Physical Math Lab, UNC-Chapel Hill Department of Mathematics
Oct 2019 - Aug 2022
PI: Dr. Pedro Sáenz
Position: Undergraduate/Postbac Research Assistant
Description: Conducted theoretical research and performed numerical experiments to investigate active spin-waves such as precession and shock waves within hydrodynamic spin lattices (HSLs).

PUBLICATIONS

Refereed Journal Article

(in prep) Entropy stable reduced order modeling of nonlinear conservation laws using discontinuous Galerkin methods. **Ray Qu**, Akil Narayan, Jesse Chan.

Thesis

(in prep) Entropy stable reduced order modeling of nonlinear conservation laws using discontinuous Galerkin methods. **Ray Qu**. Master's Thesis, Rice University.

AWARDS AND HONORS

2024 MORe Participation Award
2024 Alan Weiser Memorial Travel Award
2018 UNC Summer Graduation Scholarship

CONFERENCE AND INVITED TALKS

Talks

Entropy stable reduced order modeling of nonlinear conservation laws using DG methods
Date: July 2024
16th World Congress on Computational Mechanics (Vancouver, Canada)

Entropy stable reduced order modeling of nonlinear conservation laws using DG methods
Date: Mar 2024
Finite Element Rodeo (Houston, TX)

Entropy stable reduced order modeling of nonlinear conservation laws using DG methods
Date: Feb 2024
Rice CMOR Graduate Seminar (Houston, TX)

Posters

Entropy stable reduced order modeling of nonlinear conservation laws using DG methods
Date: Nov 2023
SIAM TX-LA 6th Annual Meeting (Lafayette, LA)

Entropy stable reduced order modeling of nonlinear conservation laws using DG methods
Date: Oct 2023
Rice RTG-NASC Annual Workshop (Houston, TX)

Attendee

Date: Mar, 2023
Finite Element Rodeo (College Station, TX)

Date: Nov, 2022
SIAM TX-LA 5th Annual Meeting (Houston, TX)

TEACHING EXPERIENCE

CMOR 304 Differential Equations (Fall 2024)
Rice University, Teaching Assistant

CMOR 527 Discontinuous Galerkin Methods (Spring 2024)
Rice University, Grader

CMOR 302 Matrix Analysis (Fall 2023)
Rice University, Teaching Assistant

CAAM 382 Stochastic Models (Spring 2023)
Rice University, Grader

CAAM 378 Intro to OR and Optimization (Fall 2023)
Rice University, Grader

SERVICE TO DEPARTMENT

2023-2024 Rice CMOR Grad Seminar Chair
Hosted CMOR weekly grad seminar talks from graduate students, undergraduate students, and faculty members.

Member, Research Training Group in Numerical Mathematics and Scientific Computing (RTG-NASC)
Actively participating different activities in the research training group.

PROFESSIONAL SKILLS

Coding
Julia, Java, Python, C++, MATLAB, R.

COURSEWORK

Research Relevant Coursework

Rice CMOR 526 Finite Element Methods
Rice CAAM 553 Advanced Numerical Analysis
Rice CAAM 542 Discontinuous Galerkin Methods
Rice CAAM 536 Numerical Methods for PDEs

Other Coursework

Rice CAAM 571 Linear and Integer Programming
Rice CAAM 554 Systems of Equations and Unconstrained Optimization
UNC MATH 594 Nonlinear Dynamics
UNC MATH 548 Combinatorial Math
UNC STOR 614 Advanced Optimization
UNC STOR 556 Advanced Methods of Data Analysis