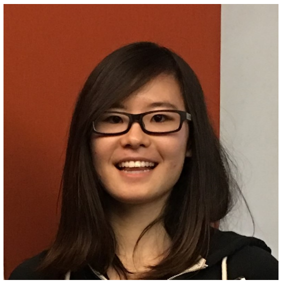

Ruobing Zhao

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OVERVIEW

Ph.D. Candidate at University of California, San Diego
Stochastic Control Theory

EDUCATION

Ph.D. Mechanical Engineering (Dynamics and Controls) 2013-Present
University of California, San Diego
"A Method for Approximating Solutions of Schrödinger Equation Through Stochastic Control"
Dissertation Committee:
William M. McEneaney (Chair), Ruth J. Williams (Co-chair),
Patrick J. Fitzsimmons, Jorge Cortés, Robert R. Bitmead

B.S. Chemical Engineering/Mathematics 2009-2013
University of California, Los Angeles
with Honors

PAPERS

3. W. McEneaney and R. Zhao, "Employing the Staticization Operator in Conservative Dynamical Systems and the Schrödinger Equation", *Submitted to Asian Control Conference 2019.* pdf

2. W. McEneaney and R. Zhao , "Diffusion Process Representations for a Scalar-Field Schrödinger Equation Solution in Rotating Coordinates", *Numerical Methods for Optimal Control Problems, Springer INDAM Series, Vol. 29 (to appear)* pdf

1. W. McEneaney and R. Zhao, "A Diffusion-Based Solution Technique for Certain Schrödinger Equation Dynamical Systems", *Proceedings of European Control Conference* (2018).

TALKS AND PRESENTATIONS

3. SIAM Conference on Control & Its Applications 2017, Pittsburgh, PA
"Hamilton-Jacobi Equations for Two-Point Boundary-Value Problems in Conservative Systems and Dequantized Schrödinger Equations" (with W. McEneaney, P. Dower)

2. SIAM Conference on Control & Its Applications 2017, Pittsburgh, PA
"A Complex-valued Controlled-diffusion Representation for the Schrödinger Equation in a Rotating Frame" (with W. McEneaney)

1. Southern California Control Workshop 2017, Caltech
   "Diffusion Process Approximation for a Solution of the Schrödinger Equation" (with W. McEneaney)

SERVICE

- Reviewer: European Control Conference

HONORS

- 2013-2016 Charles Lee Powell Foundation Graduate Fellowship
- 2018 UCSD Dissertation Writing Fellowship

TEACHING EXPERIENCE

Graduate Level:

- **Optimal Control***
  Topics: Basics of measure theory, probability theory and graph theory, dynamic programming principle, Pontryagin's maximum principle, deterministic and stochastic Hamilton-Jacobi-Bellman equation, finite horizon and infinite horizon problems, value iteration and policy iteration, calculus of variations, conservative dynamical systems, Gauss-Markov processes, viscosity solutions, method of charateristics for solving PDEs, numerical methods
- **Real Analysis for Application**
  Topics: Measure theory and Lebesgue integration, point-set topology, metric space, normed space, inner product space, fixed-point theorems and application in solving integral and differential equations, dual spaces, reflexivity, linear operators, strong and weak convergence, topological vector space, Hahn-Banach Theorem, nonlinear functionals, L^p spaces, Sobolev spaces and other function spacess

Undegraduate Level:

- **Numerical Methods***
  Topics: Taylor's theorem, asymptotic order, error analysis, finite difference for derivative approximation, Euler's method, linear interpolation, numerical integration, boundary value problems, root finding, Newton's method, Lagrange interpolation, spline approximations, Runge-Kutta methods, Monte Carlo method.

* Recommended in 100% of student evaluations in most recent assignments (as of summer 2018)

GRADUATE COURSEWORK HIGHLIGHT

Mathematics: Real Analysis; Probability Theory; Functional Analysis; Convex Analysis
Control Theory: Linear Systems; Linear Control; Nonlinear Systems; Nonlinear Control; Optimal Control; Hybrid Systems
Audited: Stochastic Differential Equations; Game Theory