Ryan LaRose

Ph.D. Student in Computational Mathematics, Science, and Engineering
Michigan State University
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Education

Ph.D., Computational Mathematics, Science, and Engineering, 2017-
Michigan State University

B.S. with Distinction, Mathematics & Physics 2017
University of Michigan, Ann Arbor

Research Interests

Primarily: quantum computing, quantum information, physics of computation
Also: network theory (specifically biological networks), gene regulatory networks

Experience

Michigan State University

University of Michigan, Ann Arbor

- Quantum Information Group led by Dr. Yaoyun Shi 2016-2017
  Quantum chemistry & quantum simulation of fermionic systems
- Academic Mentor 2017
  Academic Success Program and Summer Bridge Scholars program
  Tutoring by appointment: precalculus, calculus I, linear algebra, discrete mathematics, electromagnetism
- Grader, Department of Mathematics 2015-2017
  Math 316—Differential Equations. Fall '15, Winter '16
  Math 450—Advanced Engineering Mathematics. Sum/Fall '16, Winter '17

Michigan Technological University Summer 2016, 2017

- Intern, Sensor and Signal Processing Lab, Michigan Tech Research Institute
  Advanced signal processing & machine learning for subsurface imaging
  GPS/IMU multi-sensor fusion algorithms

Publications

1. Isamel J. Xique, M. P. Masarik, J. W. Burns, R. LaRose, *Novel application of windowed beamforming function imaging for FLGPR*, submitted to SPIE conference on detection and sensing of mines, explosive objects, and obscured targets XXIII, 2017.

Invited Talks

4. *Optical simulation of quantum information.* 11-30-2017
   University of Michigan, Quantum Information Processing Seminar
3. *Physics Inspired Models of Cancer.* 11-29-2017
   Michigan State University, MSU Anti-Cancer Society
2. *Improving positional accuracy using GPS/IMU multi-sensor fusion.* 8-11-2017
   Michigan Tech Research Institute, Intern Presentation
1. *Introduction to digital and analog quantum simulation.* 7-17-2017
   University of Michigan, Quantum Information Processing Seminar

Academic Projects

8. *Eigenvalue Algorithms for Sturm-Liouville Equations.*
   Matlab implementation & paper
   Numerical Linear Algebra, Fall 2017 (MSU)
7. *Cache-optimized matrix transposition.*
   C implementation & paper
   Parallel Computing, Fall 2017 (MSU)
6. *Proof of photons, quantum entanglement, and local realism.*
   Experiment, paper, and presentation
   Advanced Laboratory II, Winter 2017 (UM)
5. *Machine learning: naive Bayes classification of piazza posts.*
   C++ implementation
   Programming and Data Structures, Winter 2017 (UM)
4. *Seam carving algorithm.*
   C++ implementation
   Programming and Data Structures, Winter 2017 (UM)
3. *The chaotic motion of a double pendulum.*
   Experiment, paper, and Matlab simulation
   Advanced Laboratory I, Fall 2016 (UM)
2. *Curvature evolution via harmonic analysis.*
   Matlab simulation & paper
   Advanced Engineering Mathematics, Fall 2016 (UM)
1. *Plasma containment with magnetic bottles.*
   Python simulation & paper
   Electromagnetism I, Fall 2014 (UM)

Professional Activities

1. Assistant organizer, *Frontiers in Computing and Data Science*, Michigan State University, September 17-20, 2017

Professional Affiliations

Member, American Physical Society	2017-
Member, American Mathematical Society	2017-
Member, IEEE	2017-

Volunteer Work

Volunteer, Capital Area Humane Society, Lansing, Michigan	2017-
Member, Michigan State Anti-Cancer Society	2017-
Member, Circle K at the University of Michigan	2016-2017
Tutor, Peace Neighborhood Center, Ann Arbor, Michigan	2016-2017
Volunteer, Vineyard Church Homeless Ministry, Ann Arbor, Michigan	2016-2017

Distinctions

Engineering Distinguished Fellowship, Michigan State University	2017
Phi Beta Kappa, Alpha of Michigan Chapter	2017
Bachelor of Science with Distinction, University of Michigan	2017
Jackier Prize, University of Michigan	2017
University Honors, University of Michigan	2013-2016
LSA Intern Scholarship, College of Lit., Sci., and Arts, University of Michigan	2016
James B. Angell Scholar, University of Michigan	2016
William J. Branstrom Freshman Prize, University of Michigan	2013
Michigan Competitive Scholarship	2013
M-PACT Scholarship, University of Michigan	2013/2016