

Timothy James Baker

1050 Wall Street Unit 10E | Ann Arbor, MI, 48105 | (856) 628-7242 | bakertim@umich.edu

Summary

Fourth-year Ph.D. student with a research focus on stochastic computing and a passion for teaching. Currently, working on a thesis that pushes the boundaries of stochastic computing theory while pursuing professional development opportunities in preparation for a career in academia. Seeking a post-doc position following completion of the Ph.D. program.

Education

2017 – Present	Ph.D. in Computer Science and Engineering (in progress) <i>Stochastic Computing Systems Error Analysis and Applications</i> Advisor: John Patrick Hayes	University of Michigan Ann Arbor, MI
2017 – 2019	M.Sc. in Computer Science and Engineering Focus on artificial intelligence, machine learning and probability theory	University of Michigan Ann Arbor, MI
2013 – 2017	B.Sc. in Physics and in Computer Science Focus on quantum mechanics, computer hardware and artificial intelligence	Rowan University Glassboro, NJ

Research Work and Publications

Peer-Reviewed Conference Papers

2021	“Bayesian Accuracy Analysis of Stochastic Circuits” Timothy Baker and John Hayes. <i>Proceedings of International Conference of Computer Aided Design (ICCAD).</i>
2020	“The Hypergeometric Distribution as a More Accurate Model for Stochastic Computing” Timothy Baker and John Hayes. <i>Proceedings of Design, Automation and Test in Europe (DATE).</i>
2019	“Impact of Autocorrelation on Stochastic Computing Accuracy” Timothy Baker and John Hayes. <i>Proceedings of IEEE Computer Society Annual Symposium on VLSI (ISVLSI).</i>

Posters and Presentations

2019	“Continuous Decoding of Myoelectric Signals Using Time Latent Variable Models” Timothy Baker , Scott Ensel, Juyong Jung, Chung Hoon Hong, Bruce Park. Poster, Deep Learning Poster Session, University of Michigan..
2017	“The Radio-Frequency Spectrum of a Localized Impurity in a Bose-Einstein Condensate” Timothy Baker and Hong Ling. Poster, New Jersey Space Grant Consortium Symposium, Rutgers University.
2015	“Background Estimates of Radiative Muon Capture for the Mu2e Experiment” Timothy Baker , Ramiro Torres, Glenn Horton-Smith and Timothy Bolton. Poster & Presentation, Research Symposium, Kansas State University.

Timothy James Baker

1050 Wall Street Unit 10E | Ann Arbor, MI, 48105 | (856) 628-7242 | bakertim@umich.edu

Teaching Experience

- 2017 – Present* **Graduate Student Instructor** EECS Department, University of Michigan, Ann Arbor, MI
Facilitating a productive learning environment by developing homework assignments and exams, leading discussion (recitation) lessons, hiring and managing graders and serving as a first point of contacts with students through email, office hours and exam review sessions.
Courses: EECS 203: Discrete Math (Fall'17), EECS 270: Intro. Logic Design (Win'18), and EECS: 478: Logic Circuit Synthesis (Win'19, Win'20).
- 2014 – 2017* **Learning Assistant** Physics Department, Rowan University, Glassboro, NJ
Helped to provide a quality classroom environment by tending to student questions, helping to plan lectures and providing feedback to professors of introductory physics courses.
Courses: Intro. to Mechanics, Intro. to Electricity and Magnetism, and Modern Physics.
- 2014 – 2017* **Tutor** Physics Department, Rowan University, Glassboro, NJ
Improved student performance by using active learning techniques to develop student understanding and confidence with material. Promoted teamwork and a higher quality drop-in tutoring environment by working collaboratively with other tutors to answer difficult questions posed by students.

Miscellaneous

Languages and Packages

Python – Numpy/Scipy, Matplotlib, Pytorch, OpenAI Gym
C++ – OpenMP, MPI

Graduate Coursework

Probability and Random Processes	Deep Learning
Parallel Computing	Reinforcement Learning
Logic Circuit Synthesis and Optimization	Hardware for Machine Learning
Machine Learning	Advanced Artificial Intelligence

Honors and Awards

- 2017* Excellence in Physics Medallion Award, Rowan University.
- 2017* Summa Cum Laude, Physics and Computer Science, Rowan University.
- 2016 – 2017* Fellow of the New Jersey Space Grant Consortium funded by NASA.
- 2015* Judges Award – Third Place Poster, Kansas State University Research Symposium.