Nicholas D. Haynes

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Summary

PhD candidate with a deep mathematical background. Experience generating, storing, analyzing, and explaining large datasets. Passionate about finding order in complex systems.

Education

PhD, Physics — **Expected Graduation: May 2018**
Duke University

MS, Applied mathematics — **Graduated: May 2013**
University of Dayton

BS, Magna cum laude — **Graduated: August 2011**
University of Dayton
Majors: Physics, Philosophy

Experience

Graduate research assistant, Duke University — **May 2013 – Present**

- Studying the fundamental dynamics of networks built with programmable digital logic hardware and applications for high-speed machine learning
- Successful in building proof-of-principle recurrent neural networks in hardware
- High-throughput analysis of ~100s GB experimental data using Open Science Grid
- Results presented in 2 peer-previewed publications and 6 conference posters

Contractor, U.S. Air Force Research Laboratory — **October 2009 – May 2013**

- Characterized novel optical materials being developed for next-generation laser platforms
- Employed a mix of experimental, theoretical, and computational techniques
- Presented results in 3 peer-reviewed journals and at 2 international conferences

Instructor, Introductory Calculus, University of Dayton — **August 2012 – December 2012**

- Sole instructor responsible for a section of MTH 148 (Calculus I for bio-science students)
- Developed lectures, designed and graded assessments, and assigned final grades

Technical Skills

Programming and development
Python (+ numpy, scipy, scikit-learn, pandas), C++, SQL and relational databases, MapReduce + Hadoop + Spark, Verilog, git, Bash and *nix environment, Amazon Web Services, Docker

Data analysis and machine learning
Classification, regression, clustering, time series analysis, feature selection and engineering, parallelization and high-throughput computing

Selected Coursework

Math and statistics
Mathematical statistics I, II; Linear algebra; Numerical analysis I, II; Random processes; Mathematical finance and stochastic calculus; Real analysis

Computer science
Algorithms and data structures; Artificial intelligence; Data-intensive computing systems

Awards and Fellowships

- Lindau meeting of Nobel laureates, young scientist participant (2015)
- Wireless Intelligent Sensor Networks fellowship (2013 – 2015)
- Rocco M. Donatelli Award to the Senior with the Strongest Record in the Humanities and the Sciences (2011)
- Sigma Pi Sigma Award of Merit to Senior in Physics (2011)
- Award of Excellence to the First Outstanding Senior in Philosophy (2011)
- Eagle Scout Award (2003)