

# Curriculum Vitæ

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## Rory Hartong-Redden

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## Education

- **University of California, Santa Barbara** Santa Barbara, CA  
*MS Mechanical Engineering* Dec 2014  
– Thesis: *Experimental apparatus for the study of Faraday waves on time-varying domains*
  - **Northwestern University** Evanston, IL  
*Physics PhD Candidate* Sep 2010–Mar 2012
  - **University of California, Santa Barbara** Santa Barbara, CA  
*BS Physics & BS Mechanical Engineering* Jun 2010  
– Thesis: *Experimental and theoretical study of pattern identification in physical systems with circular symmetry*
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## Awards and Honors

- Graduated with honor in both degrees, GPA: 3.7/4.0
  - Dean's List 11/12 quarters
  - Member: Tau Beta Pi engineering honor society
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## Skills

<b>Languages:</b> Python, MATLAB	<b>Machine Learning:</b> Neural Networks, Trees
<b>Data:</b> SQL, HDF5	<b>Dev Tools:</b> Git, Heroku, PyCharm, AWS
<b>Python Stack:</b> Conda, Keras, matplotlib, NumPy, Pandas, PyTables, scikit-learn, SQLAlchemy	

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## Work Experience

- **Startup.ML** San Francisco, CA  
*Machine Learning Fellow* Dec 2015–Apr 2016  
– Developed a production FinTech data pipeline for currency trading using industry-standard machine learning methods  
– Investigating how Reinforcement Learning can be leveraged to revolutionize algorithmic trading
  - **Harold Washington College** Chicago, IL  
*Adjunct Faculty* Feb 2015–May 2015  
– Gave 2 lectures a week for a descriptive astronomy course  
– Incorporated the latest discoveries in astronomy and the new *Cosmos* into my lessons
  - **University of California, Santa Barbara** Santa Barbara, CA  
*Teaching Assistant* Dec 2012–Jun 2014  
– Introduced machining concepts on the mill and lathe to students in the engineering machine shop  
– Supervised students as they built parts for the class project with zero accidents
  - **Northwestern University** Evanston, IL  
*Teaching Assistant* Sept 2010–Mar 2012  
– Prepared quizzes and held office hours to answer questions one-on-one for introductory physics
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## Projects

- **Kaggle** San Francisco, CA  
May 2015–Present
  - Coded a deep residual convolution network in Keras/TensorFlow for multi-label classification for the Yelp Kaggle competition [yelp\_kaggle repository]
- **Software Development** San Francisco, CA  
May 2015–Present
  - Currently working through *Bayesian Methods for Hackers*
  - Studying best practices for object-oriented programming in Ruby and Python
  - Deployed a Twitter clone in Rails on Heroku by following the *Ruby on Rails Tutorial*
- **Master’s Thesis: Faraday Waves** Santa Barbara, CA  
*Krechetnikov Fluid Physics Lab* Dec 2013–Jun 2014
  - Incorporated a recent image processing technique for cheap 3D high speed mm-resolution measurement over a surface area of  $225\text{ cm}^2$  [profilometry repository]
- **X-Ray Microscopy** Argonne National Lab  
*Bionanoprobe, Advanced Photon Source, Sector 21* Nov 2011
  - Used the image analysis tools in MATLAB to measure the thermal stability of a new instrument
- **Arctic Sea Ice Modeling** Northwestern University  
*Prof. Mary Silber, Dept. of Applied Mathematics* Sep 2011–Jan 2012
  - Coded models of arctic sea ice in MATLAB for the study of climate change
- **Programmable Flow Generator** Goleta, CA  
*LaunchPoint Technologies* Sep 2009–Jun 2010
  - Contributed modeling expertise on team of fellow engineering students working on a fluidic loop
- **Bachelor’s Thesis: Drop Splash Experiment** Santa Barbara, CA  
*Krechetnikov Fluid Physics Lab, Dept. of Mechanical Engineering* Jul 2009–Oct 2010
  - Investigated the physics of splashes that occur when a liquid droplet impacts a wetted surface
  - Performed stereo triangulation in MATLAB, reduced the 3D data, and searched for patterns using my theory of pattern identification [drop\_splash repository]
  - Published a peer-reviewed article<sup>3</sup> on the experimental and theoretical advances I developed that may have solved a 100-year puzzle in fluid dynamics
- **Transient Optical Sky Survey** Santa Barbara, CA  
*Lubin Lab, Dept. of Physics* Sep 2008–Jun 2009
  - Collaborated on the MATLAB/C data pipeline that processed 1GB of images per night

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## Publications

1. R. Hartong-Redden. *Experimental apparatus for the study of Farady waves on time-dependent domains*. Master’s thesis, University of California, Santa Barbara, 2014.
  2. E. Hadjiyska, G. Hughes, P. Lubin, S. Taylor, R. Hartong-Redden, and J. Zierten. *The transient optical sky survey data pipeline*. New Astronomy, 2013.
  3. R. Hartong-Redden and R. Krechetnikov. *Pattern identification in systems with  $S(1)$  symmetry*. Physical Review E, 2011.
  4. R. Hartong-Redden and R. Krechetnikov. *Experimental and theoretical study of pattern identification in physical systems on circular domains*. Annual Meeting of the APS Division of Fluid Dynamics, 2010.
  5. R. Hartong-Redden. *Experimental and theoretical study of pattern identification in systems with  $O(2)$  symmetry*. Bachelor’s thesis, University of California, Santa Barbara, 2010.
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