Curriculum Vitæ

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Personal Information

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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 Mechanical Engineering — *Jun 2010*
- **University of California, Santa Barbara** — Santa Barbara, CA
  BS Physics — *Jun 2010*
  - Thesis: *Experimental and theoretical study of pattern identification in physical systems with circular symmetry*

Awards and Honors

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

Skills

Languages: Python, Java, SQL
Machine Learning: SparkML, scikit-learn, TensorFlow
Data: Spark, Hadoop, Postgres
Data Engineering: Oozie, Airflow, Kafka, Flume
Dev Tools: Jupyter Notebooks, Bash, Git, Sublime Text
Python Stack: Pandas, matplotlib, SQLAlchemy, Flask

Work Experience

- **Runtastic (acquired by Adidas)** — Linz, Austria
  Data Engineer — *Oct 2018–Present*
  - Maintain and improve the data pipeline which feeds analytics dashboards and analysts
  - Streaming with Flume and Kafka
- **Allstate** — Menlo Park, CA
  Data Scientist — *Jul 2016–Sep 2018*

- Guide and support ongoing partnership with the Stanford Intelligent Systems Laboratory
- Prepare internal datasets for business analysts
- Ad hoc scripting, analysis, and problem solving

- **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 for improved 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
  - Presented topics in Astrophysics and Cosmology at the level of the general public and explained concepts without relying on mathematical or scientific constructs

- **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** *May 2015–Jul 2016*
  - Coded a deep residual convolution network in Keras/TensorFlow for multi-label classification for the Yelp Kaggle competition
- **Master's Thesis: Faraday Waves** Santa Barbara, CA
  Krechetnikov Fluid Physics Lab *Dec 2013–Jun 2014*
  - Designed and built a new experiment to study the surface patterns of vibrating containers of water (Faraday waves)
  - Incorporated a recent image processing technique for cheap 3D high speed mm-resolution measurement over a surface area of $225\,\mathrm{cm}^2$
  - Sourced $20k in lab equipment including a Labworks 75lb shaker, 2 accelerometers, and 2 Parker actuators all interfacing with a NI PCIe DAQ and LabVIEW VI running on a dedicated computer
  - Designed a bespoke experimental apparatus using SolidWorks to study Faraday Waves and produced a set of engineering drawings, validation tests, and documentation as part of my thesis
  - Personally fabricated a prototype in the college machine shop and had the final design parts CNC machined
- **X-Ray Microscopy** Argonne National Lab
  Bionanoprobe, Advanced Photon Source, Sector 21 *Nov 2011*
  - Measured the thermal drift of the optics stage of the BioNanoProbe using simple image correlation with Matlab
- **Arctic Sea Ice Modeling** Northwestern University
  Prof. Mary Silber, Dept. of Applied Mathematics *Sep 2011–Jan 2012*
  - Derived from first principles and coded arctic sea ice models 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 the 3D data, and searched for patterns using my theory of pattern identification
  - Published a peer-reviewed article[3] 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. B. Wulfe, S. Chintakindi, S.C. Choi, R. Hartong-Redden, A. Kodali, M.. Kochenderfer. *Real-time Prediction of Intermediate-Horizon Automotive Collision.* CoRR. 2018.
2. R. Hartong-Redden. *Experimental apparatus for the study of Farady waves on time-dependent domains.* Master's thesis, University of California, Santa Barbara, 2014.
3. E. Hadjiyska, G. Hughes, P. Lubin, S. Taylor, R. Hartong-Redden, and J. Zierten. *The transient optical sky survey data pipeline.* New Astronomy, 2013.
4. R. Hartong-Redden and R. Krechetnikov. *Pattern identification in systems with S(1) symmetry.* Physical Review E, 2011.
5. 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.
6. 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.
