# Andrew Hard
*Résumé*

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## EDUCATION

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|---|---|
| 2016 | **Doctor of Philosophy** in Physics<br>*University of Wisconsin*, Madison WI, USA<br>Thesis: *Search and discovery with the resonant $\gamma\gamma$ final state at ATLAS*<br>Advised by Prof. Sau Lan Wu |
| 2010 | **Bachelor of Arts** in Physics, Honors<br>*University of Chicago*, Chicago IL, USA<br>Advised by Prof. Edward Blucher |

## EXPERIENCE

**2019 - Present**  **Senior Software Engineer**, *Google*

**2017 - Present**  **Software Engineer**, *Google*
- Researched generative text models with federated learning and differential privacy
- Published work on federated training for recurrent neural language models
- Developed multi-word prediction networks for Gboard with TensorFlow, C++, Python

**2011 - 2016**  **Graduate Research Assistant**, *Department of Physics, University of Wisconsin*
- Discovered Higgs boson, performed first measurements of mass, couplings, and spin
- Statistical expert, created new Monte Carlo method to reduce CPU usage by $1000\times$
- Optimized physics searches with TB-scale datasets using machine learning techniques
- Contributed significantly to 21 papers & notes, author on 250+ ATLAS publications

**2014**  **Graduate Teaching Assistant**, *Department of Physics, University of Wisconsin*
- Led discussions and labs on classical mechanics, electrodynamics, thermodynamics
- Designed supplemental exercises and summary notes that boosted exam performances

**2010 - 2011**  **CERN Technologist**, *Enrico Fermi Institute, University of Chicago*
- Developed & maintained calibration software package using Python and MySQL

**2009 - 2010**  **Undergraduate Research Assistant**, *Enrico Fermi Institute, University of Chicago*
- Developed particle detector simulation in C++ with ROOT and Geant4 libraries

## SKILLS

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| **Scientific** | Physics, Statistics, Simulation, Numerical Methods, Data Structures, High Throughput Computing, Databases, Machine Learning, Public Presentation |
| **Programming** | C++, Python, Java, Go, LaTeX, Unix/Linux shell scripting, ROOT, Matlab, SQL, TensorFlow |
| **Languages** | English (native), French (basic oral and written communication) |

## VOLUNTEERING & OUTREACH



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|---|---|
| Newtonian physics demonstration for Chicago Public Library | 2016 |
| US voter outreach & registration at CERN | 2016 |
| Discussed research & funding with U.S. lawmakers in Washington D.C. | 2014, 2015 |
| Created GIF visualizations of Higgs boson discovery data | 2013 |
| Visited classrooms at the Chattanooga School for the Arts & Sciences | 2012 |

## AWARDS

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| 2015 | **Teaching Assistant Rookie of the Year**, *Department of Physics, University of Wisconsin* |
| 2013, 2014 | **Lightning Round Winner**, *US LHC User's Association Annual Meeting* |