

# ERIC HOFESMANN

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## EDUCATION

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**College of Charleston**  
BS in Physics  
BS in Computer Science  
Minor in Mathematics

*August 2013 - May 2017*  
  
Overall GPA: 4.0 / 4.0

## RESEARCH EXPERIENCE

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**Characterizing Complexity Evolution of Gamma-Ray Burst Pulses** *August 2016 - Present*  
*Senior Thesis at the College of Charleston*

- Examined correlations in complex GRB pulses according to common residual structures
- Used the fiducial timescale to scale pulses in terms of asymmetry, amplitude, and duration.
- Fit an interpolated and summed complex pulse to a single Norris pulse model using an Occam's Razor technique and examined the residuals

**Medical Imaging Using Machine Learning** *June 2016 - Present*  
*Undergraduate Research Assistant at the College of Charleston*

- Brain fingerprinting using Diffusion Tensor Imaging was achieved by passing white matter connectivity data through a deep neural network.
- A backtrack technique was created to determine the most statistically significant features using the trained network weights.
- Feature selection and optimization skills were vital during this experiment.
- A convolutional network was used in conjunction with the dense neural network for result analysis.

**BATSE Gamma-Ray Burst Prompt Emission Pulse Catalog** *January 2015 - Present*  
*Undergraduate Research Assistant at the College of Charleston*

- Examined GRB pulses using Bayesian statistical techniques and a nonlinear least squares fitting routine
- Analyzed GRB pulse properties to determine the underlying structure of the pulses
- Classified and organized pulses in a catalog of GRB prompt emission pulses using IDL

**NASA Student Solar Spectrograph Competition** *August 2013 - May 2014*  
*Competition held at the University of Montana*

- Conceived research goal to determine the chemical composition of Venus and Jupiter
- Designed and built a spectrometer by hand using spherical mirrors, a CCD, and a competition supplied diffraction grating

## TEACHING EXPERIENCE

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**Center for Student Learning Math Lab**  
*Mathematics Tutor*

*August 2015 - Present*  
*College of Charleston*

- Worked with other students in the areas of Calculus, Discrete Mathematics, and Statistics.

## TECHNICAL STRENGTHS

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<b>Proficient Computer Languages</b>	Python, Java, IDL
<b>Basic Computer Languages</b>	C, Scheme, Matlab
<b>Software &amp; Tools</b>	GitHub, Mathematica, Inkscape, Multisim, LaTeX
<b>Operating Systems</b>	Windows, Linux, Mac
<b>Languages</b>	Bilingual in German and English

## POSTERS AND PRESENTATIONS

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**Redefining a Gamma-Ray Pulse** *April 14 2016*  
*College of Charleston School of Science and Mathematics Poster Session*

- A catalog of GRB pulses is being upgraded and improved to redefine pulses on the basis of their spectrotemporal characteristics: bursts that were previously thought to contain multiple pulses have been determined to contain single pulses with prominent substructures.

**Varying Forms of Gamma-Ray Bursts** *April 16 2015*  
*College of Charleston School of Science and Mathematics Poster Session*

- In the process of constructing a GRB pulse catalog, we have found that there are some GRB light curves that defy current modeling procedures and yet share common characteristics.

**NASA Student Solar Spectrograph Competition** *May 14 - 16, 2014*  
*University of Montana*

- Design and Build Presentation detailed the engineering process behind the spectrometer build
- Outreach Presentation detailed our outreach which consisted of teaching elementary school children about the physics behind spectroscopy
- Science Presentation detailed the research goals, scientific methods, and results

## AWARDS AND SCHOLARSHIPS

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- Achieved the Presidents List Highly Distinguished Faculty Honors Award at the College of Charleston for a high GPA in Fall 2013, Spring 2014, Fall 2014, Spring 2015, Fall 2015, and Spring 2016.
- Won best presentation award at the NASA Student Solar Spectrograph Competition against six teams
- Received Palmetto Fellows and Zoe Sanders Merit Scholarships

## RELEVANT COURSES

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### Core Computer Science Courses

Data Structures and Algorithms  
Operating Systems  
Software Engineering  
Computer Organization and Assembly Language  
Programming Language Concepts  
User Interface Development

### Relevant Physics and Math Courses

Calculus 1, 2, 3 and Linear Algebra  
Discrete Structures and Statistical Methods  
Introduction to Electronics  
Experimental Physics  
Electricity and Magnetism  
Quantum Mechanics

## REFERENCES

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Dr. Brent Munsell, Computer Science Advisor, munsellb@cofc.edu

Dr. Jon Hakkila, Physics Advisor, hakkilaj@cofc.edu