

Optics 105

EDUCATION

Masters of Science in Applied Physics, University of Oregon, Eugene OR, September 2018 (Anticipated)
GPA: 3.7

Focus: Optical Physics

Bachelors of Arts in Physics, Willamette University, Salem OR, May 2016
GPA in major 3.81

Senior thesis: Modeling Pulsating Stars: How non-linear coupled oscillators can help to understand modes of stellar pulsation

Research Experience

Student Researcher, Willamette University, Dr. Richard Watkins, Salem, Oregon, August 2015 - May 2016

- Investigated pulsating variable stars, a kind of star which changes in brightness considerably in time spans ranging from 1 to 70 days due to the star expanding and contracting, by studying published articles and previous research on the subject matter
- Modeled the modes of pulsating variable stars as coupled-nonlinear oscillators using differential equations Numerical approximation techniques
- Implemented Python programs which incorporated functions from the code packages NumPy and SciPy to gather data on the simulated star by recording how changing initial parameters for hundreds of different values of the differential equations changed the amplitudes of the modes of the star
- Presented findings to Willamette University physics faculty as a PowerPoint presentation and a written thesis
- Maintained detailed descriptions of the progress made on the project in a notebook which allowed for easy access to past incites and questions

Research Assistant, Willamette University, Dr. Regina Jorgenson, Salem, Oregon, September 2014 - May 2015

- Researched DLA's (Damped Lyman Alpha system's), which are concentrations of Neutral hydrogen detected in the spectra of quasars (a very bright object in space), by reviewing over ten scholarly articles
- Programed basic code in Python in order to learn the language by implementing simple programs and learn techniques for analyzing data about DLA's
- Prepared a research proposal (a written paper and an oral 15 minute PowerPoint presentation) to the Physics faculty of Willamette University

Volunteer Experience

Physics and Math Tutor, Chemeketa Community College, Salem, Oregon, October 2016 to January 2017

- Facilitated study of course material through questioning techniques and guided example problems for up to a dozen students a day
- Encouraged the use of academic resources to improve study habits of students by inquiring about their respective academic strengths and weaknesses
- Completed regular and advanced tutor training in order to qualify for level one and then level two tutor certification
- Reviewed math and physics concepts through differential equations and introductory physics respectively in order to prepare for tutoring sessions

Speaker, Bootstrappers, Toastmasters International, Salem, Oregon, June 2016 to January 2017

- Authored and presented 10 speeches in preparation for club meetings in order to achieve competent communicator status in six months, a process which normally takes one and a half to two years

- Organized improvised speaking events to help challenge and improve the speaking abilities of other club members
- Evaluated speeches of others to give constructive criticism by commenting on how factors like the organization and the content of the speech and body language affected the speech's overall effectiveness

Work Experience

Surveyor, Lockwood Research, Salem, Oregon,

April 2017- May 2017

- Collected information about when and where up to 15 passengers would enter and exit a Cherriots bus, which is Salem's public transit system
- Calculated how many people were on a bus route (up to thirty people at once) at any given bus stop by adding or subtracting how many people got on or off at stop respectively
- Explained to passengers the job duties of a surveyor and where and how to investigate further by calling Cherriots customer service

Skills Include: All Microsoft Office programs: Proficient

LaTeX: Proficient

Programming- Python and Matlab: Intermediate

Ipython SciPy and NumPy (Python code libraries): Intermediate

C++, Java and IDL: Some experience

ACTIVITIES

- Camera operator and video editor for Toastmasters club project, September 2016 to January 2017

HONORS AND AWARDS

Mary Collins Scholarship

Dean's List

Level 2 Tutor Certification, College Reading and Learning Association

Competent Communicator Certification, Toastmasters