



# Avi Vajpeyi

## Education

08/14–05/18 **B.A. Physics and Computer Science**

[The College of Wooster](#)

*Cumulative GPA: 4.0*

*Awards:* Dean's List, Karl Compton Endowed Scholarship, Donald/Rebecca Curtis Scholarship, Joseph Albertus Culler Prize in Physics, Elias Compton First-Year Prize

## Contact

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## Research

06/16–08/16 **LIGO Undergrad Research—Binary Black Hole Detection** [LIGO Caltech](#)

- Conducted study on the “Use of the Bayes Factor to Improve the Detection of Binary Black Hole Systems.”
- Wrote Python code and edited scripts to calculate the Bayes Factor for noise events in LIGO strain data from the 2015 observation run.
- Gained an understanding of the physics used in Gravitational Wave Astronomy and control systems.
- Presented research findings at LIGO Caltech.

06/15–06/16 **NSF Physics Research—Avalanching Bead Piles** [The College of Wooster](#)

- Conducted study on the “The Statistics of an Avalanching Bead pile.”
- Analyzed the effect of drop height and cohesive forces between beads on avalanche behaviors.
- Tracked particles with C++ and Matlab code.
- Gained understanding and experience in electronic systems, LabVIEW, Mathematica, IgorPro and data analysis.
- Attended the 2015 Material Science and Technology conference to further understand the dynamics of granular matter.
- Presented the research at the March 2016 American Physical Society conference in the form of a poster. Additionally, presented work at the College of Wooster with a poster and a Multimedia Presentation.

08/16–Now **Software Engineering Assistant—GitKeeper** [The College of Wooster](#)

- Created python scripts for an automated grading system.

01/16–05/16 **Independent Research—Chaotic Scattering in a Complex Topography**

- Created an OS X application with Objective-C to study “Chaotic Scattering for a Sliding Mass in a Complex Topography”
- Discovered a new method of looking at Chaotic Scattering with valleys, in place of hills and studied the chaotic effects on a particle entering the scattering region.
- Analyzed the effects of small, incremental changes in the system parameters to the chaotic nature of the system.
- Studied different numerical integration techniques, and did a case study on the Runge-Kutta 4 method and contrasted it with the Euler-Cromer technique.
- Compared the results with those obtained from the traditional hill-scattering systems.

## Programming

C/C++ ★★★★★

Obj-C ★★★★★

Python ★★★★★

Java/C# ★★★★★

Matlab ★★★★★

Mathmtica ★★★★★

1 star ~500 lines

## Recent Courses

General Relativity  
Computational Physics  
Algorithm Analysis  
User Interface Design  
Prog Languages  
Comp Organisation

## Non Academic Interests

Rock Climbing  
Varsity Track Team  
Taekwondo  
Math Modeling  
Puerto Rican Salsa  
Programming Puzzles

## Links

[github.com/avivajpeyi](https://github.com/avivajpeyi)  
[unity.com/avivajpeyi](https://unity.com/avivajpeyi)  
[linkedin.com/in/vajpeyi](https://linkedin.com/in/vajpeyi)

## Places Lived

New York City, USA  
Kolkata, India  
Darjeeling, India  
Wooster, OH, USA

### 06/15–06/16 **Sophomore Research—Code Reading**

[The College of Wooster](#)

- Collected data from peer reviewed articles to analyze code reading patterns in novice programmers.
- Reviewed design strategies and created programs to study how individuals can better understand code.
- Created exercises to teach C language.

## Teaching and Grading Experience

### Languages

English ★★★★★

Hindi ★★★★★

### 08/16 - 12/16 **Modern Physics Lab Assistant**

Help students with setting up and running lab experiments. Assist with scientific writing and presentation of data. Present tutorials on software such as LaTeX and data analysis tools such as IgorPRO. Some of the experiments are the Millikan Electron Charge, Einstein Photoelectric Effect and Rutherford Scattering experiments.

### 08/15 - 12/15 **Experiential Entrepreneurship - Leadership for a Better World**

Support the development of student leadership through the Social Change Model of Leadership Development program.

### 08/15 - 12/15 **Data Structures and Algorithms Teaching Assistant**

Support the development of software development skills including testing and documentation in OOP, with a focus on C++. Maintained lab and office hours.

### 08/15 - 12/15 **Computer Science Grader**

Responsible for grading 15 assignments a week in introductory C programming.

### 08/15 - 12/15 **Center for Diversity and Inclusion - Global Engagement TA**

Responsible for stimulating in-class discussions on a wide range of social and cultural topics and supporting professor in class management.

### Online Courses

-Unity Game Physics  
-Developers Course  
for Unity

## Projects

### 11/16–Now **Study of UI in Videogames**

Created and A/B tested an FPS zombie survival game with two other students to test how the user interface affects user experience and behavior.

### 03/16–04/16 **Depth First Search Maze Solver**

Built a maze using equivalence classes and the Union-Find algorithm. The maze and its path were visualized with GLUT and OpenGL.

### 09/16–10/16 **Trajectory Calculations for Spacecrafts**

Collaborated on a project to plot rocket trajectories to nearby planets.

### 03/16 - 06/16 **Simulation of Cancer Growth**

Simulated random walks on the surface of spheres to model cancer growth.

### 03/16 - 04/16 **Finite Quantum Well Applet**

Created an applet for the time-dependant Schrodinger Wave Equation.

## Work Experience

08/15 - Now **Resident Assistant**

Manage a college residence hall of about 25 undergraduate students.

- Enforce campus policies to create a safe, orderly, and enjoyable living environment for the residents.
- Run floor meetings and conduct frequent room drop-ins to discuss developments, events, and concerns to keep students up-to-date on all pertinent information.
- Conduct programs on diversity, chemical abuse, personal development, relationships, security, and academic performance.
- Manage administrative tasks including room condition reports, maintenance requests, incident reports, and the room change process.

08/15 - Now **Scot Lanes**

Manage client access to bowling alley and routine maintenance of lanes.

08/14 - 06/16 **Security and Protective Services**

Support campus security at the school perimeter and its buildings.

## Activities & Leadership

08/15 - Now **Varsity Men's Track and Field, D-III**

Compete in short distance sprint events – specifically the 60m and 200m events.

10/16 - 10/16 **The University Physics Competition**

Collaborated on a research competition on the best way to send nuclear waste to the sun and the asteroid belt using Objective-C. The program used gravity assists and Kepler's Laws of Planetary motion to help plot the path of the rocket and the planets.

4/16 - now **OHIO Hackathon**

Worked on designing an equipment-loaning application for the Ohio State hackathon with three friends.

4/16 - 4/16 **President: Table Tennis Club**

Responsible for developing and maintaining the budget for the club, and organizing practice sessions for members.

- 1/15 - 08/16 **Co-Chair : South Asia Committee**  
Organize and coordinate social events to engage the college community in South Asian culture, traditions, and current affairs. Responsible for developing student-retention strategies by strengthening the South Asian community at the college.
- 1/15 - 1/16 **Vice Chair : Student Services, Student Gov.**  
Student governing body focused on improving the quality of student life by upholding the rights of students without discrimination of any flavor.
- 3/15 - 3/15 **Honourable Mention, Math Modeling Competition**  
A 96-hour high-pressure international contest for undergraduate student-teams from over 900 institutions. The contest challenged students to clarify, analyze, and propose solutions to open-ended problems. Placed in the top 30% of the contestants and the three-member team was awarded an honorable mention for our paper on the eradication of Ebola.

## Honors & Awards

- 2016 **Dean's List** Scholarship  
*Placed on the Dean's List in all semesters. Awarded the Dean's Scholarship, an award made to students on the basis of overall academic achievement, extracurricular involvement, leadership, and personal merit.*
- 2015 **Joseph Alberts Culler Prize in Physics** Recognition  
*This prize recognises excellence in the field of physics. It is awarded to the first or second year student who has attained the highest rank in general college physics.*
- 2015 **Elias Compton Freshman Prize** Recognition  
*This prize recognises academic excellence in the first-year class. It is awarded to the student who has achieved the highest standing in scholarship during the first year.*
- 2013 **Science Fair** Competition  
*Awarded the first prize in the Darjeeling Science Fair demonstrating the physics behind a submarine with a handmade working model.*
- 2012 **Mountaineering Course** Completion  
*Awarded an 'A' Grade in the Himalayan Mountaineering Institute's course in mountaineering*
- 2012 **Duke of Edinburgh Award** Award  
*Received the first level award for academic merit, community involvement, social service and leadership skills.*

## Certifications

- 02/2013 **National Student Leader**  
*Certified Student Leader at the National Conference on Student Leadership, Washington, D.C.*

*Dec 15th, 2016*

*Avi Vajpeyi*