Lennart Rudolph

Contact Information

lrudolph@hmc.edu https://lrudolph1.github.io/

Education

Harvey Mudd College, Claremont, CA **Sept. 2012 - May 2016**
B.S. Physics
- Concentration in Physics with Computers
- Senior Capstone: *Atomistic Simulations of White Dwarf Dynamics*

Relevant Courses (click for course descriptions)

Computer Science: Algorithms, Data Structures and Program Development, High-Performance Computing, Computability and Logic, Principles of Computer Science, Introduction to Computer Science
Physics: Computational Methods in Physics, Statistical Mechanics & Thermodynamics
Mathematics: Discrete Mathematics, Intermediate Probability, Differential Equations and Linear Algebra II, Fourier Series & Boundary Value Problems

Skills

Proficient in: `C++`, Mathematica, LaTeX
Exposure to: Go, Java, Racket, `C`, Python, Prolog, GNU make, git, subversion, CUDA, MPI, OpenMP, `MATLAB`, SolidWorks
Languages: English, German

Project Experience

Atomistic Simulations of White Dwarf Dynamics (LLNL) **Sept. 2015 - May 2016**
- Worked on a white dwarf project for the Lawrence Livermore National Laboratory's (LLNL) High Performance Computing Innovation Center as a member of a joint computer science-physics clinic team
- Ran molecular dynamics simulations on the Vulcan Blue Gene Q supercomputer using LLNL's dynamic domain decomposition multi-physics particle dynamics code (ddcMD)

Wormhole Simulation (HMC) **Apr. 2015 - May 2015**
- Used Mathematica and concepts from general relativity to implement a ray-traced interpolation map for the light from a wormhole (see my GitHub for the code and examples)

Work Experience

Software Engineering Intern (BigNerve) **May 2015 - Dec. 2015**
- Worked on the backend API for BigNerve's DailyNerve website as a part-time intern
- Focused on integrating PayPal Express Checkout with the existing codebase by beginning my own implementation in `Go`

Assistant to System Administrator (HMC) **May 2015 - Aug. 2015**
- Created new disk images for over sixty engineering department computers and installed solid state drives into these machines; wrote and edited batch scripts to optimize tasks
- Occasionally assisted the college's Computer Information Services department with help-desk support tickets

Other Experience

Physics Research Student **Jan. 2014 - May 2014**
- Developed a SolidWorks model of a vacuum chamber for an ion trapping experiment
- Worked with Radia for Mathematica to simulate magnetic fields in the chamber

Physics Grader (HMC) **Jan. 2014 - May 2014**
- Graded homework for a section of Mechanics & Wave Motion

Homework Hotline Tutor (HMC) **Sept. 2012 - May 2013**
- Tutored student callers in mathematics and science from the elementary school level to the AP level
- Tutored up to AP Physics, AP Calculus BC, AP Statistics, and AP Chemistry.

Other Courses (click for course descriptions)

Physics: General Relativity & Cosmology, Electromagnetic Fields, Quantum Mechanics, Theoretical Mechanics, Quantum Physics, Electromagnetic Theory & Optics, Mechanics & Wave Motion, Gravitation, Special Relativity, Optics Lab, Electronics Lab, Modern Physics Lab, Physics Lab
Mathematics: Multivariable Calculus, Probability and Statistics, Intro to Differential Equations, Intro to Linear Algebra, Calculus, Putnam Seminar.