Lennart Rudolph

Contact Information

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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 Coursework (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, Compilers and Languages (in progress), Operating System Concepts (in progress), Software Engineering (in progress)
Physics: Computational Methods in Physics, Statistical Mechanics & Thermodynamics
Mathematics: Discrete Mathematics, Intermediate Probability, Differential Equations & Linear Algebra II, Fourier Series & Boundary Value Problems, Single & Multivariable Calculus, and Probability & Statistics

Skills

Most frequently used languages: Go, `C++`
Exposure to: Mathematica, LaTeX, Google App Engine, git, GNU make, Java, Racket, `C`, Python, Prolog, subversion, CUDA, MPI, OpenMP, `MATLAB`, SolidWorks

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

API Developer (BigNerve) **May 2016 - present**

- I write and maintain Golang code for BigNerve's DailyNerve backend web API
- I implemented basic Google Cloud SQL integration, added support for pagination of JSON responses, implemented a basic attack-prevention lockout policy, improved search functionality, and worked with the frontend developers to create or update endpoints and JSON responses as necessary

API Developer Intern (BigNerve) **May 2015 - Dec. 2015**

- I worked on the backend web API for BigNerve's DailyNerve website as a part-time intern and 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 Coursework (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