

NATHANIEL R. STICKLEY

Software Engineer - Astrophysicist - Data Scientist

Talents

The ability to...

- quickly learn programming languages, APIs, frameworks, & tools.
- work independently without supervision or external motivators.
- quickly understand complex systems and abstract concepts.
- clearly communicate abstract concepts and nuanced technical material.
- construct mathematical models and other logical abstractions.
- quickly identify the root causes of technical problems.

Technical Skills

Fundamentals

OOP

Research

3D Mathematics

Algorithm Design

Numerical Analysis

Physics

Numerical Simulation

Data Analysis

Astronomy

Multithreading

Data Visualization

Statistics

Optimization

Image Processing

Teaching

Languages

C++11

Bash / Shell

MATLAB / Octave

Python

JavaScript

Scheme (Guile)

Frameworks & Libraries

Apache Mesos

UnitTest++

Matplotlib

Apache Spark

Qt Framework

Boost

libHDFS

NumPy

OpenMP

Applications & Utilities

GNU Binutils

Git

Qt Creator

GCC

LLVM/Clang

Doxygen

GNU Debugger (GDB)

Valgrind Suite

Docker

Operating Systems

GNU/Linux System Administration

Familiarity with Linux system calls / system programming

Apache Mesos (distributed system kernel)

Education

Doctor of Philosophy in Physics

University of California, Riverside

Dec 2013

Master of Science in Applied & Engineering Physics

George Mason University

May 2008

Bachelor of Science in Physics

James Madison University

May 2003

Experience

Department of Physics & Astronomy, UC Riverside

Assistant Project Scientist

Jun 2014 – present

- Created StratOS, a Big Data platform that allows scientists to easily perform large-scale data analysis using pre-existing analysis software.
- Built a computing cluster for testing StratOS and other Big Data tools.
- Created an Amazon Machine Image (AMI) and scripts for deploying StratOS in Amazon's Elastic Compute Cloud (EC2).
- Greatly improved the performance, scalability, robustness, and fidelity of the photometric redshift estimation pipeline for SPHEREx (spherex.caltech.edu).

Experience (continued)	Department of Physics & Astronomy, UC Riverside <i>Graduate Student Researcher / Visiting Assistant Researcher</i>	2011 – 2014
	<ul style="list-style-type: none"> • Developed GSNAP: An advanced analysis and visualization tool for galaxy simulations (www.GSNAP.org), depending only upon C++11 and the Qt Framework. • Performed galaxy merger simulations on supercomputers. • Analyzed the dynamical evolution of galaxy merger simulations. • Built a 24-core GNU/Linux workstation to perform computational work on campus. • Trained workstation users to effectively use SMP and NUMA hardware. • Created the website, astro.ucr.edu, for astrophysics faculty, students, and postdocs. • Mentored an undergraduate computer engineering student. 	
	<i>Assistant Instructor</i>	Summer 2011
	<ul style="list-style-type: none"> • Taught <i>Physics For Scientists and Engineers, part I</i> (classical mechanics). • Supervised three teaching assistants. 	
	<i>Teaching Assistant</i>	2008 – 2011
	School of Computational Sciences and Informatics, George Mason University <i>Graduate Research Assistant</i>	2007 – 2008
	<ul style="list-style-type: none"> • Generalized the Rice Convection Model (a computational model of Earth's inner magnetosphere) by accounting for the hemispheric asymmetry of the ionosphere. • Implemented a prototype of the generalized model in MATLAB. 	
	Oakton High School, Fairfax County Public Schools <i>Physics Teacher</i>	2005 – 2007
	<ul style="list-style-type: none"> • Taught standard High School Physics and Conceptual Physics. • Evaluated the progress of approximately 100 students each year. 	
Grants	Author of Hubble Space Telescope Theory Program AR-12626 Paid for two years of tuition and salary as a graduate student researcher.	Funded, 2011 – 2013
Awards	Dissertation Year Program Fellowship Award <i>Graduate Division, UC Riverside</i> Provided a stipend, tuition, and fees for two academic quarters.	2012 – 2013
	Benjamin C. Shen Memorial Award <i>Department of Physics & Astronomy, UC Riverside</i> For “Outstanding Fourth-Year Graduate Student.” (\$500)	2012
	Robert T. Poe Memorial Graduate Scholarship Award <i>Department of Physics & Astronomy, UC Riverside</i> For “Outstanding Graduate Research by a Second-Year Graduate Student.” (\$500)	2010