Omkar H. Ramachandran

https://shadowwarden.github.io/
omkar.ramachandran@colorado.edu | (720)-361-9999

EDUCATION

UNIVERSITY OF COLORADO - BOULDER

BA in Physics
Expected May 2018| Boulder, CO
Minor in Applied Mathematics
Minor in Astronomy

IISER THIRUVANANTHAPURAM

BS-MS program in Physics
August 2013 - May 2015|
Thiruvananthapuram, India
DST-INSPIRE Fellowship awardee
Transferred to the CU Boulder

DAV SENIOR SECONDARY SCHOOL

Grad. May 2013| Chennai, India
Top 0.1% in the AISSCE exam in Computer Science Top 1% overall in the nationwide AISSCE exam

COURSEWORK

GRADUATE

Gravitational Theory
Earth Sciences I: Seismology
Computational Plasma Physics

UNDERGRADUATE

Introduction to Plasma Physics
Nuclear and Particle Physics
Chaos in Dynamical Systems
Modelling in Applied Mathematics
High Performance Scientific Computing
Advanced Computer Graphics

SKILLS

PROGRAMMING

Over 10000 lines:
C • C++ • FORTRAN • Python
Over 5000 lines:
LaTeX• CLisp • PHP • Matlab
Familiar:
Haskell • Perl • Java
HPC Skills:
CUDA • MPI • OpenMP

LINKS

Github:// shadowwarden
Quora:// Omkar-Ramachandran

EMPLOYMENT

CU BOULDER: RESEARCH COMPUTING | Student Intern

September 2016 – Present | Boulder, CO

- Duties include system administration, consulting with clients on installing and optimizing workflow, writing technical documentation and running workshops.
- Set up and configured Open XDMoD for the cluster and wrote scripts for convenient querying of the SLURM scheduler.
- Benchmarked scientific packages on the Summit supercomputer including SW4, SPECFEM and OpenStudio.
- In charge of early testing and installation on the Summit GPU nodes.

CU BOULDER: DEPT. OF EDUCATION | Learning Assistant

Jan 2016 – May 2016 | Boulder, CO

- Worked as a Learning Assistant for the Modern Physics for Engineers course at CU Boulder (PHYS 2130). Duties included grading of homeworks, running office hours in the Physics helproom and facilitating in-class discussion
- Attended a seminar course on Math and Science education (EDUC 4610)

RESEARCH

DEPT. OF PHYSICS, CU BOULDER | Undergrad Research

August 2016 – Present | Boulder, CO

- Worked with Dr. Vladimir Zhdankin on developing a module for the Particle in Cell code Zeltron that allows for momentum sampling from a Maxwell Juttner distribution.
- Set up and optimized Zeltron on the Summit Supercomputer

IIA BANGALORE | Winter Research Internship

Dec 2014 – Jan 2014 | Bangalore, India
Worked with Dr. P. Sreekumar on analysing spectral data from the Crab Nebula

PONDICHERRY UNIVERSITY | Summer Research Internship

April 2014 – August 2014 and April - August 2015 | Pondicherry, India
Worked with Dr. Rajneesh Bhutani on writing a Finite Element simulation of a Ductile Shear Zone. Was later parallelized and extended to include arbitrary geometries.

IIT MADRAS | Summer Research Internship

May 2012 – June 2012 | Chennai, India
One of 40 students across high schools in Chennai selected for the Research Science Initiative program at IIT Madras. Worked with Dr. Edamana Prasad on analysing the fluorescence spectrum for gels of different concentrations.

SOFTWARE PROJECTS

GRPATHTRACER | Fast GPU based rendering of a Black Hole

Numerical raytracing of a Schwarzchild Black Hole done on CUDA - and later paralelized further with OpenMP. Presently working on numerically simulating a rotating Kerr black hole and using Jacobi functions instead of direct timestepping of light rays

KARDINAL | Fast Lisplike programming language in C

Wrote a fast stack-based parser for a turing complete lisplike programming language. Preliminary analysis shows that Kardinal is twice as fast as Lua with approximately half the overhead