

Sankarshan Mudkavi

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2B Mathematical Physics

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I'm a mathematical physics major at uWaterloo who is curious about how the universe works; I love solving important and hard problems and am constantly on the lookout for opportunities that would allow me to do so. I like to contribute to Open Source, and hack on projects that are fun to build, and which help improve my understanding of the world around me. I also like to play chess, solve puzzles, write poetry, and practice kendo.

Summary of Qualifications

- **Languages**
 - **C, C++**: Workplace experience, personal projects, high school coursework
 - **Python**: Workplace experience, personal projects, coursework
 - **Ruby**: Personal projects, independent coursework
 - **MATLAB, Mathematica**: Workplace experience
 - **Java, JavaScript, HTML, CSS and LaTeX**: Functional use and familiarity
- **Databases**
 - **MySQL, PostgreSQL, MongoDB, Redis**
- **Operating Systems and Web Frameworks**
 - **OSX, Linux, Windows**: Programmed heavily in UNIX environments
 - **Ruby on Rails, Google AppEngine**: Used to deploy live web applications

Work Experience

Associate Security Consultant (Intern), Security Compass, Toronto **Jan - Apr 2014**

- Pentested various client applications on web and mobile platforms using BurpSuite, Wireshark, Metasploit.
- Reverse engineered apps on various mobile platforms and analyzed the source code for security flaws
- Wrote professional secure coding documents, attended CTFs, learnt about the SDLC and cryptography
- Conducted research on security content for web and mobile applications

Research Intern, Syracuse University, NY **May - Aug 2013**

- Researched evolutionary algorithms with applications to multi-objective optimization in wireless sensors
- Modeled mobility and tracking of targets within wireless sensor clusters
- Applied existing evolutionary algorithms to sensor deployment based on problem specifications
- Analysed behavioral patterns to detect deviations by training sensor networks using obtained data
- **Research Papers (under review)**
 - Modified Energy Aware Path Predictive Target Tracking In Embedded Sensor Vision Networks

Projects

- **NumPy**: Currently working on enhancing the NumPy datetime module.
- **Atlasnav**: An optimal route planning web application implemented by a team of four during a hackathon
- **Ballstorm**: An interactive graphical game with a physics engine using the C++ Allegro library
- **Improper time**: A sidescroller game with multiple levels written entirely in Python using the Pyglet library
- **CloG**: A basic web blog using Google AppEngine as a back-end framework as part of CS 253
- **DuckDuckShogi**: A rudimentary functional search engine as part of CS 101
- **Quacker**: A semi-functional Twitter clone website built through the use of the Ruby on Rails tutorial book
- Built code that implemented algorithms used in robotic vehicles as part of CS 373

Education

Candidate for Bachelor of Science

Sept 2012 - Present

- Honours Mathematical Physics, University of Waterloo

Coursework

- PHYS 236: Computational Physics
- CS 373: Programming a Robotic Car (Udacity)
- CS 253: Web Application Engineering (Udacity)
- CS 212: Design of computer programs (Udacity)
- CS 191x: Quantum Computation (Berkeley, edX)

Awards

- University of Waterloo President's scholarship 2012
- Indian National Mathematics Olympiad Scholar 2011

Volunteer Experience

Formula Motorsports, University of Waterloo

Sept - Dec 2012

- Experience with shaping and constructing sheet metal parts
- Gained knowledge of differentials, aerodynamic packages, carbon fibre structures

Wave Robotics, University of Waterloo

2012 - Present

- Used machining tools to construct disk brakes for the autonomous vehicle
- Soldered wires and constructed mounts for the autonomous vehicle

Extracurricular

Science Orientation Leader, University of Waterloo

2013

- Responsible for overnight safety as well as event set up and tear down

Undergraduate Physics Club, University of Waterloo

2012 - Present

- Vice President: Spring 2014
 - Responsible for organization, delegation and smooth functioning of the club
 - Member of the board of the Science Society
- Information officer: Fall 2013
 - Responsible for the dissemination of the information about club to new students
- First year representative: Fall, Winter 2012
 - Reported freshman opinions of the club and physics department to the executive board

Miscellaneous

Interests and Hobbies

- Contributes to numpy (Open Source library) by fixing bugs and writing enhancement modules
- Enjoys reading manga, solving rubik's cubes, doing physics, and writing code
- Likes practicing kendo, playing chess, and writing poetry
- Certified for CPR and First Aid