Sankarshan Mudkavi

515E Sunnydale Place
Waterloo, ON, Canada N2L 4S9
2B Mathematical Physics

www.smudkavi.com smudkavi@uwaterloo.ca (226) 600-6809

I am a mathematical physics major at uWaterloo who is curious about how the universe works; I love solving important and hard problems and I am constantly on the lookout for opportunities that would allow me to do so. I like to contribute to Open Source software, hack on projects that are fun to build, and those 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++** : Used for its speed and extensive stdlib
  - **Python**: Worshipped for its readability and awesome libraries
  - **Java**: Picked up because C does not always cut it for the industry
  - **Javascript**: Admired for the amazing power of asynchronous callbacks
  - **Ruby**: Used in personal projects for the amazing scaffolding of the rails engine
  - **MATLAB, Mathematica**: Workplace experience
  - **HTML, CSS** and **LaTeX**: Functional use and familiarity
- ***Databases and Key Value Stores***
  - **MySQL, PostegresQL, MongoDB, Redis, HBase, HDFS**
- ***Tools***
  - **OSX, Linux, Windows**: Programmed heavily in UNIX environments
  - **Node.js, Ruby on Rails, Google AppEngine**: Used to deploy live web applications
  - **Apache hadoop, hive, sqoop, azkaban**: Currently used to handle massive amounts of data at work
  - **Git, vim, sublime text**: Let the emacs vs. vim flame wars begin

Work Experience

Data Engineer, Paytm, Kitchener **Current**

- Autonomously operating as a third of the data engineering team, working remotely and loving it.
- Currently implementing data pipelines for continuous integration of massive amounts of data.
- Concurrently designing a data based model for user churn and reacquisition.

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 enchancing the NumPy datetime module.
- **Atlasnav**: An optimal route planning web-app written in python (django) and javascript by a team of four
- **Ballstorm**: 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**: 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**: Semi-functional twitter clone website built through the use of the Ruby On Rails tutorial book

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**

- President: Fall 2014
  - Responsible for organization, delegation and smooth functioning of the club
  - Member of the board of the Science Society
- Vice President: Spring 2014
  - Responsible for organization, delegation and smooth functioning of the club
- 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