Ravi Shankar

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Education

10th grade — **2009 – 2010**
440/500 (91%) — *Ponjesly Public Matriculation School*

12th grade — **2011 – 2012**
1131/1200 (94.25%) — *DVD Higher Secondary School*

Bachelors Degree - Aeronautics — **2012 – 2016**
CGPA: 6.23 — *Madras Institute of Technology*

Experience

Backend Developer Intern — **January, 2016 – May, 2016**
Ref. Giriraj Namachivayam (Product Manager) — *Genome Life Sciences*

- Introduced Rust language to the team, and rewrote a number of Bash and Python scripts in Rust, which showed a drastic improvement in performance.
- Wrote a few utilities in Rust for bulk parallel processing of chromosome and DNA sequence data in FASTQ, SAM and VCF file formats.
- Earned the "game changer" award.

Backend Engineer — **June, 2016 – Present**
Ref. Giriraj Namachivayam (Product Manager) — *Genome Life Sciences*

- Wrote a lot of utilities for backend data analysis pipelines (which also provide realtime frontend updates).
  Notable tools:
  - Spyglass: A species finder which takes DNA sequence(s) and finds known species in O(1) time.
  - Genome Rust Alignment Module (GRAM): A sequence aligner which uses Burrows-Wheeler transform and FM-index to backtrack and map DNA sequences to the reference genome in O(n) time.

Programming skills

Languages: Python, Rust, HTML5, Javascript, CSS, Bash

Technologies: Linux (Ubuntu), Git, Mercurial, Flask, REST, Heroku, PostgreSQL

Open source contributions

- Active contributor and reviewer for the Servo browser engine project, primarily concentrating on the style system, python-based build system, and mentoring the newcomers.
  Notable contributions:
  - Apart from helping users in IRC and Github issues, I've authored more than 100 commits and reviewed more than 200 pull requests for Servo.
  - Implemented code for parsing and serialization of CSS `grid` shorthand and longhand properties.
  - Wrote various handlers for highfive (a bot that responds to Github webhook payloads by welcoming newcomers, assign/tag issues and pull requests, post build failures, etc.) and a "mark and sweep" JSON cleaner for its tests.
  - Created a watcher that tests Servo builds in a dedicated machine, analyzes the logs, maintains a database of "rr" recordings of intermittent failures, and uses the Github API to file issues or comments to notify the people who work on such issues.
  - Wrote a compiler plugin for checking sorted order of declaration statements.
- Occassional contributor to the Rust programming language, its documentation and related tooling.
- Mozillian since the summer of 2015.

Personal projects

- **Highfive**: A Github integration (bot) to provide a friendly welcoming environment for the newcomers to open-source by tracking issues and pull requests, and assigning, labelling or commenting on them (using the Github API).
- **Nucleic acid**: A Rust library to map short DNA sequence reads to the reference genome. It makes use of suffix array to generate the Burrows-Wheeler transform, from which an FM-index is built and used for finding exact matches in O(1) time.
- **Catalog**: A "file-backed" map written in Rust, for maintaining key/value pairs in a file (sorted with respect to their hashes), which uses binary search and file seeking to "get" the values in O(log-n) time.
- **Biographer**: A command-line based private diary written in Python, which allows users to write their everyday stories, view them, or search through them later. It makes use of a simple shifting cipher to encrypt/decrypt the contents. It also contains a Rust library, which uses FFI and parallelization to reduce the searching time by a factor of ≈ 100.
- **Free fall**: A terminal based 2D-ASCII game written in Rust, where the users try to save a jumper from hitting the cliffs. The game makes use of the terminal's raw mode and interacts with the Unix C libraries for polling the keystroke inputs and prints thousands of characters frame by frame to indicate motion.

Miscellaneous

- I also play with code and make some cool stuff in my free time:
  - An ASCII Art Generator for JPEG/PNG images which extracts the necessary details for generating the ASCII sketch.
  - A CSS injector that slowly injects a stylesheet into a style element in the DOM and gets rendered in realtime.
  - A method for selective-plotting of volcano plots.
  - A responsive website (for a symposium) without the use of any external libraries.
- Blogger since 2013 at wafflescrazypeanut.wordpress.com and now, at wafflespeanut.github.io.
- Contributor and reviewer of posts at Physics Stack Exchange for two years (2013-2015).
- I'm also an avid gamer, hobby composer and juggler when I'm AFK.