# Ravi Shankar

+91 9551208590 • wafflespeanut@gmail.com • wafflespeanut

## 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*

## Projects

**Aircraft Design Project** **December, 2014 – 2015**
*Prof. Jayaraman* *Madras Institute of Technology*

- Studied and calculated the various parameters required for designing a 420-seater "jumbo jet" aircraft.
- Wrote a number of Python scripts for automating the data collection and plotting, which reduced a great deal of time for the fellow undergrads.

**Residual Strength Estimation of Stiffened Composites** **January, 2016 – April, 2016**
*Prof. Arumugam* *Madras Institute of Technology*

- Fabricated a number of ordinary and stiffened composite laminates using the hand lay-up method.
- Conducted various tensile, compressive and acoustic tests on those laminates and studied about their strength and failure modes, especially how they behave in the presence of a hole.

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

- Introduced the 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 (FastQ+, Varchek+, MapQ+) in Rust for parallel processing of large quantities of chromosome and DNA sequence data (in FASTQ, VCF and SAM formats).

## Experience:

**Junior Bioinformatics Programmer** **June, 2016 – Present**
*Giriraj Namachivayam (Product Manager)* *Genome Life Sciences*

- Wrote an utility which collects known species data from various references and tries to predict the species from the given DNA sequence in O(1) time or O(log-n) time depending on the space-time tradeoff.
- Wrote a few more utilities for validation and analysis of biological data.
- Earned the "Game changer" award for Q1 and Q2.

## Programming skills

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

**Technologies**: Git, Mercurial

## Open source contributions

Mozilla

- Contributor and reviewer for the Servo browser engine project for about an year, primarily concentrating on the python code used by the build system and mentoring the newcomers.
  *Notable contributions:*
  - Wrote a compiler plugin for checking sorted order of declaration statements.
  - Wrote various handlers for highfive (a bot which 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.
- Occassional contributor to the Rust programming language, its documentation and related tooling.
- Mozillian since the summer of 2015.

Personal projects

- **Highfive**: A complete rework of all the webhook event handlers from Servo's highfive for efficiency. It now supports sharing the load between multiple bots, and offers configuration for individual repositories, events and their corresponding handlers.
- **Catalog**: A "file-backed" map for maintaining key/value pairs in a file (sorted with respect to their hashes), which uses binary search and file seeking to "get" the value for the given key in O(log-n) time, which is always in the range of a millisecond.
- **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 $\approx 100$.
- **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.
- **Flight '16**: A responsive website written in pure HTML/JS/CSS (for our dept. symposium) without the use of any external libraries. Since most of the audience were 2G users, it's optimized in such a way that the desktop version consumes atmost 5 MB, and the mobile version consumes barely 1.5 MB, which brings the loading time to a few hundred milliseconds.

## Miscellaneous

- Conducted introductory hands-on sessions for Python in college
- Blogger since 2013 on wafflescrazypeanut.wordpress.com and now, at wafflespeanut.github.io
- Active contributor and reviewer of posts at Physics Stack Exchange for two years (2013-2015).
- I also play the Indian flute, try to compose music, and juggle when I'm AFK.