Akshay Deodhar | Resume

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Academic Background

- **College of Engineering, Pune** — **Pune, India**
  Computer Engineering (Hons), CGPA: 9.68 — *2017–Present*
- **Fergusson College** — **Pune, India**
  Science, HSC 92.4% — *2015–2017*
- **BVB's Paranjape Vidya Mandir** — **Pune, India**
  Schooling, SSC 95.2% — *2005–2015*

Work Experience

- **COEP Satellite Team** — **Pune**
  Attitude Determination and Control Subsystem — *November 2017–Present*
  - Team works on design and development of a solar sailing satellite. Team' previous satellite **Swayam** was successfuly launched by ISRO in June 2016, and communicated with several groundstations.
  - I contribute to the team as a programmer who develops simulations, write code for orientation calculation and control algorithms, which will later be ported to the satellite.
  - Additionally, I interview students interested in joining, and mentor freshmen or sophomores who have just joined the team.

Projects

- **Trillian**
  A command-line chess game with a minmax AI and alpha-beta pruning — *Fall 2018*
  Data Structures and Algorithms Project
  - Command line chess game in C with a minmax AI. Bot makes a decent move in 0.5 seconds, beats novices, solves puzzles.
  - Uses an efficient data structure that I designed which allows fast move calculation and generation.
  - 3000+ lines of modular code and a readable main game loop.
  - Savegames compatible with the standard Forsyth Edwards format.
- **RankRecommend**
  A rooted-pagerank based link recommendation system, with a specific application to github follow recommendation *Spring 2019*
  Principles of Programming Languages Project
  - Flask app builds neighbourhood graph of github user by scraping github using Requests and BeautifulSoup.
  - Generates follow recommendations based on the Rooted Pagerank metric. NetworkX used for graph operations, solves for pagerank eigenvector using Numpy
  - Displays recommendations by generating webpage dynamically with Jinja. Bootstrap used for frontend.
- **Orbit trajectory simulator for a solar sailing satellite**
  A continuous-thrust orbit propagator for analysis of solar sail orienations — *March 2018–July 2019*
  COEP Satellite Team
  - Developed a Python module which interacts with NASA's General Mission Analysis Tool.
  - Module calculates optimal sail orientations, and corresponding solar thrust working in conjugation with GMAT's propagator to determine the trajectory.
  - Carried out verification of the simulation using analytical methods and available literature.

Code for course projects available at github.com/bri9k, simulation code not public.

Skills

- **Programming:**
  - Proficient : C, Python
  - Familiar: Scheme, x86 Assembly, Bash, C++, m4
- **Tools:** Git, gdb, Linux utilities, LaTeX, Gnuplot, Make, Vim, Markdown, GMAT
- Technical documentation, numerical methods, orbital mechanics
- **Languages:** English, Marathi, Hindi

Publications

- **Attitude control using 3 axis magnetorquers and pitch axis reaction wheel for solar sailing satellite COEPSAT-2**
  69th International Astronautical Congress (IAC), Bremen, Germany
- **Analysis of solar sailing as a means of orbit maneuvering for nanosatellites in low earth orbit**
  70th International Astronautical Congress (IAC), Washington DC, USA

Achievements

- Have a perfect grade in *all* Computer Science courses I have completed
- Selected for ACM India's compiler construction summer school
- Secured rank 106 in Maharashtra State Common Entrance Test among 300 thousand candidates
- Secured All India Rank 10177 in IIT JEE Mains among over 1.3 million candidates
- Secured All India Rank 6926 in IIT JEE Advanced among 220 thousand candidates

Extra-curricular activities

- **Blog**
  bri9k.github.io, About food, books, and standard nerd stuff *April 2018–Present*
- **Chess Team**
  School, Fergusson, CoEP., Represented institutions in inter-college events –
- **Writer, English Section**
  Abhiyanta Magazine, CoEP *September 2017–Present*
- **Event Head, *Retracer* (coding event)**
  Mindspark, CoEP's technical festival *May 2019–Present*

Hobbies

Love reading fantasy, science fiction, and farce. Enthusiastic about trekking. Listen to (and attempt to play on harmonium) all kinds of music. Write a bit of limerick. Currently learning sculling.