Vivek Rai

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Education

Indian Institute of Technology Kharagpur, India
B.Tech & M.Tech, *Biotechnology*
GPA: **8.65** (out of 10), **first** in class. 2012-2017

Skills

Languages Python (+scipy), SQL, Ruby, JavaScript, C, R, MATLAB, BASH

Areas Scientific computing, Bioinformatics, Computational modeling, Data visualization

Tools *nix, Vim, Git, LaTeX

Publications

in prepration 2015 — Priyam *et al*, "Sequenceserver: rapid creation of assistive graphical BLAST frontends for custom sequence databases" http://sequenceserver.com

Development Experience[1]

WIGI, Wikimedia May 2015–present — A Wikimedia project to quantify gender biases in Wikipedia and create quantitative indicators. The project is supported by an *inspire* grant of **$ 22,500**.

- Analyzed raw Wikidata information to visualize gender information across categories and perform statistical analyses; also developed the corresponding portal for hosting results.
- Assisted in research and community efforts by writing writing blog posts, reports and reviewing paper.

Sequenceserver Jun 2014–Current — Contributed more than **110 commits** over an year log period and co-authored the paper.

- Implemented BLAST+ output parser module, back-end data-layer in **Ruby** and designed graphical overview scheme for BLAST hits information using **D3.js** improving overall application architecture, usability, and modularity.

Afra Dec 2014–Jan 2014 — Improved frontend of the gene annotation platform for intuitive visual feedback and better user experience, while backend work constituted of handling annotation data, managing user sessions and editing features etc.,

Jigsaw Solver Feb 2014–Mar 2014 — Program to solve large piece jigsaw puzzle (randomly shuffled pieces of an image) based on genetic algorithm; implemented entirely from scratch in C++ using OpenCV image processing library.

[1] Please find an exhaustive list of projects on my website.

Research Experience

B.Tech thesis
IIT Kharagpur
August 2015–present

Bioinformatic analysis of protein knots and their knotting mechanism.

- Delivered an in-house talk assessing latest developments in concerned field and formulating my research problem statement.
- Investigating sequence properties and pattern (amino acid nature and distribution, for example) in the protein knot core.

Research Intern
MRDG, IISc
May 2015–July 2015

Fluorescent labeling and lipid phase dependence study of *E.coli* ClyA toxin.(Report)

- Extracted, purified and labeled (fluorescence) the wild type and mutant proteins obtained from expression vectors.
- Assessed toxin activity and qualitatively demonstrated a lipid phase dependent kinetic behavior of Cytolysin A; one of the foremost such study of the toxin.

Conferences and Seminars

Winter School
Dec 2015

Selected for **Winter School on Quantitative Systems Biology 2015** organized at International Centre for Theoretical Science, Bangalore as a part of the ICTP- ICTS Programme in Biology.

Short Term Course
Mar 2014

Attended a set of seminars and **Short Term Course on Computational Biology** organized at Indian Institute of Technology Kharagpur.

Other

Hackerrank	Author of tutorial problems for Ruby, Python & Linux sections.	2015
en Wikipedia	Experienced editor with over **30** english articles and more than 1600 edits.	2012–Now
iGEM	Wet lab team member and content writer for the iGEM project.	2015
metaKGP	Contributor and administrator of the first Comprehensive campus Wiki.	2015