Vivek Rai

🌐 http://vivekiitkgp.github.io ✉ *vivekrai@iitkgp.ac.in*

🌐 http://github.com/vivekiitkgp ☎ *+(91) 801 329 1569*

Education

Indian Institute of Technology Kharagpur, India
B.Tech & M.Tech, *Biotechnology*
GPA: **8.65** (out of 10), Class rank: **1** of 40.   2012-2017

Skills

Areas   Bioinformatics, Computational modeling, Open source, Data visualization

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

Tools   GNU/Linux (*nix), Vim, Git, LaTeX

Publications

eLife (submitted) 2015

Priyam, Woodcraft, **Rai** *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–present

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.

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

Research Experience

B.Tech thesis
IIT Kharagpur
Aug 2015–present

Bioinformatic analysis of protein knots and their knotting mechanism.

- Delivered an in-house talk with comprehensive review of the topic and formulated 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–Jul 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 in association with ICTP, Italy.

Short Term Course
Mar 2014

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

Other

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