Vivek Rai

vivekiitkgp.github.io
github.com/vivekiitkgp
✉ *vivekrai@iitkgp.ac.in*
☎ *+(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

Publications

Biorxiv (in submission) Priyam, Woodcraft, **Rai** *et al.*, "Sequenceserver: rapid creation of assistive graphical BLAST frontends for custom sequence databases" `http://sequenceserver.com`

Research Experience

B.Tech thesis
IIT Kharagpur
Aug 2015–present

Bioinformatic analysis of protein knots and their knotting mechanism.

– Investigating the role of structural (e.g. sequences, secondary structures) and functional patterns in knotted proteins and how they may influence the knotting mechanism.(Talk)

Research Intern
MRDG, IISc
May 2015–Jul 2015

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

– Assessed toxin activity using fluorescence and qualitatively demonstrated a lipid phase dependent kinetic behavior of Cytolysin A; one of the foremost such study of the toxin.

Development Experience[1]

WIGI, Wikimedia
May 2015–present

A Wikimedia project to quantify gender biases in Wikipedia and create quantitative indicators.

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

Sequenceserver
Jun 2014–present

– Implemented `BLAST+` output parser module, backend data-module in **Ruby** and designed graphical overview scheme for BLAST hit information using **D3.js**.
– Contributed more than **110 commits** over an year and co-authored the research paper.

Afra
Dec 2014–Jan 2014

– Improved user interface of the gene annotation platform for better visual feedback
– Handled annotation data, introduced multiple sessions sync, and streamlined annotation editing features in backend.

[1] Exhaustive list at GitHub and an online version of resume.

Skills

Areas Bioinformatics, Systems biology, Computational modeling, Data visualization

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

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

Conferences and Seminars

Winter School Dec 2015
Attended **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 on next-gen sequencing, interaction networks and computational tools as a part of **Short Term Course on Computational Biology** organized at Indian Institute of Technology Kharagpur.

Coursework

Term Paper Feb 2014–Feb 2014
Comparison of Fuzzy Guided Gene Prediction Methods
- Reviewed the future prospects and application strategies of support vector machines, neural network and heuristic techniques (genetic algorithm, fuzzy logic) based learning combined as hybrid methods for improved annotation of raw genomic data.

Subjects taken 2012–2015
(+L) includes laboratory

- Cell and Molecular Biology
- Microbiology
- Genetics
- Biochemistry (+L)
- Gene Expression
- Bioinformatics (+L)
- Protein Engineering
- Probability and Statistics
- Statistical Modelling
- Mathematics I & II
- Discrete Structures
- Bioanalytical Lab.
- Data Analytics
- Computational Neuroscience

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