Vivek Rai

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Education

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

Skills

Areas Bioinformatics, Systems biology, Computational modeling, Data visualization

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

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

Publications

Biorxiv (in submission) 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.

- Analyzed raw Wikidata information to visualize gender information across categories, performed statistical analysis, and 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.

Jigsaw Solver
Feb 2014–Mar 2014

- Implemented a genetic algorithm approach to solve a standard jigsaw puzzle (randomly shuffled pieces of an image).

Read Sign Language
Apr 2014–May 2014

- Developed a program to recognize basic American Sign Language alphabets through gestures with a kNN classifier trained on contour based features.

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

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)

- 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

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.

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