

# 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

## 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, L<sup>A</sup>T<sub>E</sub>X

## 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<sup>1</sup>

**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.

**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.

<sup>1</sup>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)

- 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.

## 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