

# VIVEK RAI

🌐 <http://vivekiitkgp.github.io>  
📧 <http://github.com/vivekiitkgp>

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## EDUCATION

Indian Institute of Technology Kharagpur, India  
Dual Degree (B.Tech & M.Tech), *Biotechnology and Biochemical Engineering*  
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, L<sup>A</sup>T<sub>E</sub>X

## PUBLICATIONS

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

## DEVELOPMENT EXPERIENCE<sup>1</sup>

**WIGI, WIKIMEDIA** A Wikimedia project to quantify gender biases in Wikipedia and create quantitative indi-  
May 2015–present cators. 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** Contributed more than **110 commits** over an year log period and co-authored the paper.  
Jun 2014–Current  
– 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** Improved frontend of the gene annotation platform for intuitive visual feedback and better  
Dec 2014–Jan 2014 user experience, while backend work constituted of handling annotation data, managing  
user sessions and editing features etc.,

## RESEARCH EXPERIENCE

**B.TECH THESIS** Bioinformatic analysis of protein knots and their knotting mechanism.  
**IIT KHARAGPUR**  
August 2015–present

<sup>1</sup>Please find an exhaustive list of projects on my website.

- 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.

## 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 better annotation of raw genomic data.

**SUBJECTS TAKEN**  
 Sem I–Sem VII

(+L) includes laboratory

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

## OTHER

<b>METAKGP</b>	Contributor and administrator of the first Comprehensive campus Wiki.	2015
<b>iGEM</b>	Wet lab team member and content writer for the iGEM project.	2015
<b>HACKERRANK</b>	Author of tutorial problems for Ruby, Python & Linux sections.	2015
<b>EN WIKIPEDIA</b>	Experienced editor with over <b>30</b> english articles and more than 1600 edits.	2012–Now