Vivek Rai

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Education

Indian Institute of Technology Kharagpur, Kharagpur, India
Dual Degree (B.Tech & M.Tech), *Biotechnology and Bioechmical Engineering*
GPA: **8.65** (out of 10), **first** in class.   2012-2017

Skills

Languages	Python (+scipy stack), Ruby, JavaScript, C, R, MATLAB, BASH
Areas	Scientific computing, Bioinformatics, Computational modeling, Data visualization
Tools	*nix, Vim, Git, LaTeX

Publications

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

Professional Experience[1]

Indian Institute of Science, Bangalore
May 2015–July 2015

Fluorescent Labeling and lipid phase dependence study of *E.coli* ClyA pore forming toxin.

– Extracted, purified and fluorescently labelled wild type and mutant proteins obtained from expression vectors.
– Assessed toxin activity using hemolytic assay and calcein leakage assay by preparing small unilamellar liposome vesicles (SUVs); used dynamic light scattering experiment.
– Qualitatively demonstrated a lipid phase dependent kinetic behavior of Cytolysin A; one of the foremost such study for the toxin.

WIGI, Wikimedia
May 2015–Current

A Wikimedia project with objective to quantify gender biases in Wikipedia and create quantitative indicators. The project is supported by a grant of **$ 25,000**.

– Processed and analyzed raw Wikidata information to visualize meaningful information and perform statistical anlyses.
– Developed the tabbed-view portal for displaying collected statistics and inferences.
– Assisted in research and community efforts by writing writing blog posts, reports and reviewing paper.

SequenceServer
Jun 2014–Current

A project to provide biologists with an easy to setup custom BLAST server and intuitive visualizations to effectively query and handle sequence data. Total contribution translates to over **110 commits** and eight months of activity.

– Implemented `BLAST+` output parser module and back-end data-layer in **Ruby**, thereby improving application architecture, usability, and modularity.

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

– Designed graphical overview scheme for BLAST hits information using **D3** (`http://www.d3js.org`), a javascript visualization library.

Afra
Dec 2014–Jan 2014

A gene annotation platform inspired by crowdsourcing approaches inlcuding Foldit, Galaxy Zoo and Crowdflower, but with easier learning curve.

– Frontend work with JavaScript, JQuery to design and improve the overall user experience and provide intuitive visual feedback to the user.
– Backend work constituted of handling annotation data, providing tab synchronization between multiple user sessions, extending edit track features etc.,

Lab Experience

– Microscopy	– Assay techniques	– DNA cloning
– Basic microbiology	– HPLC, FPLC	– Dynamic Light Scattering
– Cell culture	– Spectrophotometry	– Western blotting
– Cell fractionation	– Gel electrophoresis	– Fermenter operation

Coursework

Short Term Course
Mar 2014–Apr 2014

Computational Systems Biology

– Learned about latest techniques and ongoing research in the field of sequencing, systems biology, protein interactions, modeling, and metabolic engineering.

Term Paper
Feb 2014–Feb 2014

Comparison of Fuzzy Guided Gene Prediction Methods

– Reviewed existing computational techniques to analyze and annotate whole organism's genome in an automated way to predict genes and other regions of interest;
– Critiqued the future prospects and application strategies of **SVM, NN** learning and heuristic techniques (**GA, Fuzzy Logic**) combined as hybrid methods for better annotation of raw genomic data.

Subjects taken
Sem I–Sem VII

Core courses   *(T)heory and (L)aboratory*

– Cell and Molecular Biology (T/L)	– Computational Neuroscience
– Microbiology (T/L)	– Probability and Statistics
– Genetics	– Statistical Decision Modelling
– Biochemistry (T/L)	– Mathematics I & II
– Gene Expression	– Bioprocess Technology
– Bioinformatics (T/L)	– Biochemical, and Bio-analytical Labs.
– Protein Engineering	– Data Analytics

Additional courses

– Discrete Structures	– Soft Computing Tools in Engineering

Other

iGEM	Core team member of the iGEM 2015 team.	2015
en Wikipedia	Experienced editor with over **30** english articles and more than 1600 edits.	2012–Now
Hackerrank	Author of tutorial problems for Ruby, Python & Linux sections.	2015–Now