

VIVEK RAI

UNDERGRADUATE STUDENT AT IIT KHARAGPUR
A303, LBS HALL OF RESIDENCE

vivekrai@iitkgp.ac.in¹

<https://vivekiitkgp.github.io>

SKILLS

General Information	Git, Test Driven Development, Scientific Computing, Software Practices
Production Quality	Python (scipy stack), Ruby, C, C++
Dabbled In	Javascript, R, BASH, d3.js
Platforms	Linux (primary), Windows
Bioinformatics	BLAST+, Sequence Analysis, BioPython,
Interests	Food, Writing, Computer Science, Biology, and Badminton

OPEN SOURCE PROJECTS [HTTPS://GITHUB.COM/VIVEKIITKGP/](https://github.com/vivekiitkgp/)

SequenceServer

<https://github.com/yannickwurm/sequenserver>

- Worked with parsing and storing of the BLAST+ output information and creating a backend data-layer for improving the overall application architecture and enhance modularity.
- Implemented graphical overview scheme for obtained hit information using d3.js (<http://www.d3js.org>), a javascript visualization library.

gistie.py

<https://github.com/vivekiitkgp/gistie>

- Wrote a small script that allows one to quickly create Github gist of outputs received from various terminal commands. Often helpful in scenarios where we want to create a log of a commands' output for pasting somewhere or showing to someone.

TERM PAPERS

Comparison of Fuzzy guided Gene prediction Methods

Guide: Prof. S.K. Barai, Mar 14

- The paper explored the scale of genomic data being generated every year and different techniques being followed for predicting genes on specific and or whole genome level.
- Studied the application and future prospects of different machine learning and heuristic techniques like Genetic Algorithm, Neural Networks etc., for gene annotation and classification.

PROJECTS

Sign Language Interpreter

Collaborated project

Guide: Prof. Priyadarshi Patnaik (Apr, 2014)

- Developed a gesture to text(or speech) application which would interpret sign language gestures for aiding deaf and dumb people.
- Implemented Image processing techniques to obtain noise free information from the real time video.
- K-means clustering was used to classify the data into relevant clusters and prediction of new information.
- Further possibility of it's application as a mobile chat application is being explored

Jigsaw Puzzle solver

Collaborated project

Guide: Prof. S.K. Barai (Mar, 14)

- Worked and explored different techniques based on Genetic Algorithm to solve large piece jigsaw puzzle.
- The code was written entirely from scratch in C++ using culturally accepted software design patterns. Image processing was done using OpenCV.

Automated Torn Paper Mosaicing

Collaborated project

(Mar, 14)

- Developed and implemented algorithms to digitally stitch manually torn pieces of a document to reconstruct the original one with minimal loss of information.

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POSITIONS

Google Students Club, IIT Kharagpur

Core Team Member (2013-present)

- Organized multiple hackathons, online coding competitions, a Google blogger challenge, and other activities sponsored by Google.
- Our team was among the only two winners from India for Google Vote Challenge.

Technology Literary Society, IIT Kharagpur

Writer (2012-2013)

- Organized Literary events at college fests.
- Wrote content for college's annual magazine.

EDUCATION

IIT Kharagpur

Kharagpur, WB (2012-2017 expected)

- Bachelor's and Master's degree in Biotechnology and Biochemical engineering - **3.44 GPA**
- Within Top 3 of the class (Rank 2).
- Additional courses taken across various streams suited to my interests (see courses taken)

Shree Jain Vidyalaya

Kolkata, WB (Upto 2012)

- Cumulative average of 93% & 80% in final high school and senior high school examinations respectively.
- Topper of the class for entire duration during the schooling.
- **Awarded:** Best Student Award (High school), Scholarship for 5 years of schooling during 2007-2012, Hindi Sahitya Pratibha Puraskar 2010.

COURSES TAKEN

Departmental Courses

T/L indicates Theory and Laboratory classes

- | | |
|------------------------------------|---|
| - Cell and Molecular Biology (T/L) | - Biochemical, and Bio analytical Labs. |
| - Microbiology (T/L) | - Bioinformatics (T/L) [#] |
| - Genetics | - Protein Engineering [#] |
| - Biochemistry | - Immunology [#] |

Other Courses

[#]To be completed by Spring 2015

- | | |
|------------------------------|---------------------------------------|
| - Probability and Statistics | - Soft Computing Tools in Engineering |
| - Discrete Structures | - Statistical Decision Modelling |

ACHIEVEMENTS

- Secured a position among **Top 1%** of all students (.45 million) appeared in IIT-JEE.
- Awarded Merit-cum-means scholarship for two consecutive years by IIT Kharagpur.
- Won 1st prize in **Woodstock** event, an online virtual share market trading game.
- Wrote over **30 articles** and more than **1600 edits** to the English Wikipedia.²
- Provided voluntary teaching support (free of cost) to children of poor villages nearby college campus.

²http://en.wikipedia.org/wiki/User:Vivek_Rai