

## Education

- 2011–2016 **B.Tech, M.Tech (Dual Degree) in Biotechnology and Biochemical Engineering,**  
*Indian Institute of Technology (IIT) , Kharagpur,*  
Minor in Chemical Engineering  
Micro-specialization in Biomedical Devices and Instrumentation.  
CGPA – 9.21/10 (Till 8th semester)
- 2011 **Senior Secondary School Examination, (C.B.S.E.),**  
*Maharishi Vidya Mandir, Senior Secondary School, Chennai.*  
Score – 95.4%
- 2009 **Secondary School Examination, (C.B.S.E.),**  
*The Hindu Colony Chellammal Vidyalaya, Senior Secondary School, Chennai.*  
Score – 96.8%

## Research Interests

1. Computational Cancer Genomics
2. Machine Learning Algorithms for Protein Bioinformatics
3. Web Applications & Database Systems
4. Data Science and Analysis

## Awards & Achievements

- 2015 Awarded MITACS Globalink Research Fellowship 2015 Toronto, Canada
- 2014 Awarded University of Alberta Research Experience (U ARE) fellowship for a research internship of 10 weeks
- 2015 Selected as a delegate for the panel Health & Social Policy in Harvard Project for Asian and International Relations
- 2011 Awarded the esteemed KVPY Scholarship by Dept. of Science and Technology, Govt. of India (top 300/1 lakh applicants)
- 2014 Selected for DAAD-WISE Research Fellowship 2014, 2015 and Indian Academy of Science Fellowship 2014
- 2011 Amongst top 1% students in National Standard Examination in Chemistry (NSEC) & selected for INChO
- 2015 Selected for prestigious Khorana Program for an exchange program in the United States of America
- 2009 Selected for CBSE Merit Certificate in Science for being in top (0.1%) in Class 10 Board examination

## Publications

- [1] Srinivasan Sivanandan and Athi N. Naganathan. A disorder-induced domino-like destabilization mechanism governs the folding and functional dynamics of the repeat protein ikba. *PLoS Comput Biol*, 9(12):e1003403, 12 2013.

## Certifications

- Jan'15 KPMG Six Sigma - Green Belt Certification

## Internships & Research Projects

### Master's Thesis Project - Computational Structural Biology Lab, IIT Kharagpur

- '15-'16 **Development of a Meta-classifier for the mapping of RNA binding regions in Human proteome**  
Guide : Dr. Ranjit Prasad Bahadur, Computational Structural Biology Lab, IIT Kharagpur
- Filtered the candidate RNA binding proteins from human proteome using a one-class global parameters based filter
  - Currently working on the development of a meta-classifier of existing algorithms for the mapping of RNA binding regions in Human proteome

## Summer Research Intern - Ontario Institute for Cancer Research, Toronto

- May-Jul'15 **Pipeline for simulation of heterogeneous tumours using BAMsurgeon & Benchmarking of SNV callers**  
Guide : Dr. Paul Boutros, Department of Medical Biophysics, University of Toronto
- Developed a streamlined and configurable pipeline for generating heterogeneous Tumour/Normal pairs using BAMsurgeon in Perl & Python
  - Simulated 3 whole genome tumors using the pipeline for **ICGC-TCGA DREAM Somatic Mutation Calling - Tumor Heterogeneity Challenge**
  - Benchmarked the performance of SNV callers (MuTect, SomaticSniper, Strelka and Mutationseq) on the simulated tumours

## Bachelor's Thesis Project - Computational Structural Biology Lab, IIT Kharagpur

- '14-'15 **Sequence based prediction of RNA binding protein residues**  
Guide : Dr. Ranjit Prasad Bahadur, Department of Biotechnology, IIT Kharagpur
- Developed a Random-forest based machine learning model for the classification of RNA binding regions of a protein using its sequence features and benchmarked the model with existing classification algorithms.
  - Analyzed the binding patterns of similar protein sequences binding with multiple dissimilar RNA sequence

## Summer Research Intern - University of Alberta, Edmonton

- May-Jul'14 **Purification of the cellular form of the prion protein from wild type mouse brain**  
Guide : Dr. Holger Wille, Department of Biochemistry, University of Alberta
- Established an efficient non-immunoaffinity based protocol for purification of cellular isoform of prion protein from FVB mouse brains using Cu<sup>2+</sup> Immobilized Metal Affinity Chromatography
  - Genotyped end tail samples from transgenic mouse
  - Presented poster on Purification of the cellular form of the prion protein from wild type mouse brain in U ARE symposium

## Summer Research Intern - Protein Biophysics Lab, IIT Madras

- May-Jul'13 **Analysis & Modeling of Protein folding kinetics in disordered proteins**  
Guide : Dr. Athi N. Naganathan, Department of Biotechnology, IIT Madras
- Developed Multi-parameter Folding landscapes of Protein Native Structures using Single Sequence Approximation
  - Modelled disorder and binding induced folding systems using an Ising-like WSME model
  - Analyzed nature of natively unfolded proteins and simulated their folding kinetics using Monte Carlo method with metropolis criteria

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## Student Software Projects

- Apr'16 **AutoMosaic - Automated Mosaicking of Torn Paper Documents**
- Designed a novel dynamic programming image processing algorithm for automated mosaicking of torn paper documents optimising the algorithm for higher accuracy and efficiency.
  - Developed a software "AutoMosaic" (<https://github.com/srinivasans/AutoMosaic>) using the designed algorithm in Python
- Apr'16 **ResCite - Citation Analyser using Microsoft Academic Search API**
- Developed an open-source software to search Journal Papers using Microsoft Academic Search API, analyze author citations and bookmark favorites in C#
  - <https://github.com/srinivasans/OpenSoft2013>

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## Entrepreneurship

### Co-founder & Lead Developer - ReadersNode (1400+ registered users, 2100+ books )

- Jan'15 **Online platform to Sell, Buy and Share books with people within a locality**
- Co-founded ReadersNode (<http://readersnode.com>), an online platform for selling, buying and renting books on campus and in local communities
  - Full-stack development of the website in Object Oriented PHP with Yii Framework, MySQL, JavaScript, JQuery, AJAX & CSS
  - Designed a location based searching algorithm and book recommendation system based on user history

## Technical Leadership

### '13-'15 Captain OpenSoft, Meghnad Saha Hall of Residence

- Led a team of 10 to develop "Graph Visualizer" for OpenSoft 2015 & "AutoMosaic" for OpenSoft 2014
- Won Bronze medal in the event during my tenure as the Captain
- Developed a "ResCite" for windows as a member of OpenSoft team 2013

### '13-'14 Web Team Head , Kshitij Asias Largest Techno-Management Fest

- Led a 5 member team to develop and maintain the website, online games and app (<http://2014.ktj.in>)
- Redesigned and developed online forex and stock market simulation games Woodstock and Forex in Python
- Organized code base & structured the website into persistent, well extendable components using MVC
- Managed a night long coding event with 76 on-site participants as Tech Head of Overnite

### '12-'14 Web Head & Founding team member of Public Relations Cell, IIT Kharagpur

- Developed a new layout with additional features for the IIT Kharagpur Campus website (<http://iitkgp.ac.in>)

### '13-'14 General Secretary, Association of Biotechnologists

- Elected as the B.Tech student representative of 250 students of Department of Biotechnology
- Initiated webinar conferences with eminent alumni of department and coordinated designing of department magazine

## Relevant Courses

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|-------------------------------------|------------------------------------|
| - Programming and Data Structures   | - Advanced Calculus (Maths I)      |
| - Vector Algebra (Maths II)         | - Partial Differential Equations   |
| - Probability & Statistics          | - Discrete Structures              |
| - Design and Analysis of Algorithms | - Algorithms Laboratory            |
| - Computer Software                 | - Computational Biophysics         |
| - Bioinformatics                    | - Computational Structural Biology |
| - Process Modeling and Simulation   | - Databases                        |

### Online Courses

- Getting & Cleaning Data (Data Science Specialization) by Johns Hopkins University (Coursera)
- Regression Models (Data Science Specialization) by Johns Hopkins University (Coursera)
- Machine Learning by Stanford University (Coursera)
- Introduction to Databases by Stanford University (Stanford Online)
- Machine Learning Foundations - A case study based approach - University of Washington (Coursera)

## Skills

**Web Development :** HTML, CSS, JavaScript, Object Oriented PHP, AJAX, JQuery, Yii PHP Framework, Django Framework, RESTful API, Agile and Test driven development

**Programming & Databases :** C , C++, Python, Object Oriented Design, SQL (MySQL & PostgreSQL), Shell Scripting, Perl, Java, R Statistical Programming, MATLAB/Octave, OpenCV, XML & JSON

**Bioinformatics :** NGS Analysis, Structural analysis of Protein-RNA binding & IDPs, Samtools, Picard, BWA, PyMol, BLAST, NACCESS, STRIDE, STRIDE, HBPlus

## Extra-Academic Activities

- 2015 Core team volunteer at International Society for Computational Biology (ISCB) Student Council - RSG India
- 2013 Won Silver medal in Inter-hall Eastern Vocals (Vice-captain of team) conducted by Students Gymkhana
- 2013 Won Silver Medal in Ad-design (Advertisement campaign design) 2013 conducted by Students Gymkhana
- 2013-2015 Represented hall of residence in Inter-hall OpenSoft, Data analytics, Eastern Vocals, Eastern Groups & Ad-design events
- 2012 Tutor - Programming & Data Structures - Instructed a class of 80 freshmen for a semester
- 2010 Won Gold medal in district level Design with stamps contest conducted by Indian Postal Department