

Divyanshu Srivastava | Curriculum Vitae

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Objective

To attain knowledge and expertise in the field of computational biology and use the skills in tackling current challenges in life sciences cancer research.

Experience

Doctoral student – Quantitative Biology, Faculty of Biology and Medicine, University of Lausanne, Switzerland June 2021 – Till date

- Research in computational systems oncology.
- Project supervision : Projets pratiques de la programmation en biologie (P3Bio)

Researcher – Life Sciences, TATA Consultancy Services (TATA Research, Development and Design Center), Pune, India Aug 2018 – May 2021

- Primarily worked in microbiology and metagenomics.
- Worked in areas of Text Mining, Data Visualization algorithms, Statistics and Machine Learning

Teaching Assistant – Indraprastha Institute of Information Technology, Delhi Aug 2016 – May 2018

Courses -

- Maths I - Linear Algebra
- Introduction to Mathematical Biology
- Fundamentals of Modern Biology

Education

University of Lausanne, Switzerland – PhD (Quantitative Biology) June 2021 - Till date

- Thesis: “Selection and adaptation in tumor evolution and therapeutic interventions”
Supervisors: Prof Giovanni Ciriello (UNIL), Prof. Elisa Oricchio (EPFL)
- Major Coursework
 - Cancer summer school
 - Tumor immune microenvironment
 - Key concepts in immunology

- Genomic data analysis
- Reviews in Quantitative biology.

Indraprastha Institute of Information Technology, Delhi – M. Tech
(Computational Biology)

Jul 2016 - Aug 2018

- Graduated with **9.26 CGPA**.
- Successfully defended **thesis** on “Graph Signal Processing based analysis of biological networks”.
- Major coursework
 - Biology
Cell Biology and Biochemistry, Foundations of Modern Biology, Introduction to Mathematical Biology
 - Maths and Computing
Probabilistic Graphical Models, GPU Computing, Statistical Computation

Cluster Innovation Centre, University of Delhi – B. Tech (Information Technology and Mathematical Innovations)

Jun 2012 - Jun 2016

- Graduated with an **83.61%** aggregate.
- Hold a minor specialization in Electronics and Robotics.
- Major coursework
 - Information Technology
Algorithms and Data Structures, Object Oriented Programming, Logic Systems, Computational Linguistics, Databases, Networking, Computer Graphics
 - Mathematics
Calculus, Differential Equations, Discrete maths, Linear Algebra, Statistics and Probability, Numerical Methods
 - Electives
Physics in motion, Digital Electronics, Control Systems, Robotics

Lucknow Public School – XII Standard - CBSE Board

2010 - 2011

- Passed with **88.8 %** marks.
- Electives - Physics, Chemistry, Mathematics, Computer Science, English

Lucknow Public School – X Standard - CBSE Board

2008 - 2009

- Passed with 93 % marks.

Skills & Abilities

1. Computational Biology

Single-cell multi-omics data analysis, epigenetics, spatial transcriptomics.

2. Programming Languages

Python, Shell Scripting, R

3. Tools and Technologies

Anaconda, Arduino, CUDA-C, Bash

4. Frameworks and Libraries

Scikit-learn, Graph Signal Processing, NetworkX, Keras, MySQL, Natural Language Toolkit, Keras, ScanPy

5. Competencies

Data Science, Natural Language Processing, Large scale data processing, Parallel computing, Data visualization, Nextflow.

Publications

1. S Mishra, N Pandey, A Rawat, **D Srivastava**, A Ray, V Kumar. An explainable model using Graph-Wavelet for predicting biophysical properties of proteins and measuring mutational effects. *IEEE Access* 11, 135222-135234 (2023)
2. A Santamaria-Martínez, J Epiney, **D Srivastava**, D Tavernari, M Varrone, D Milowich, I Letovanec, T Krueger, R Duran, G Ciriello, A Cairoli, E Oricchio. Lymphoma tissue explants to anticipate response to targeted therapies. *Hematological Oncology* 41, 798-798 (2023)
3. **D Srivastava**, G Bagler, V Kumar. "Graph Signal Processing on protein residue networks helps in studying its biophysical properties." *Physica A: Statistical Mechanics and its Applications* 615, 12860. (2023).
4. S Nagpal, NK Pinna, N Pant, R Singh, **D Srivastava**, SS Mande. Can machines learn the mutation signatures of SARS-CoV-2 and enable viral-genotype guided predictive prognosis?. *Journal of Molecular Biology* 434 (15), 167684 (2022).
5. V Pokhrel, BK Kuntal, **D Srivastava**, SS Mande, KD Baksi. Utilizing domain-based features to improve classification accuracy of biomedical text having bacterial associations. *2021 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)* (2021).
6. S Nagpal, NK Pinna, **D Srivastava**, R Singh, SS Mande. (Machine) Learning the mutation signatures of SARS-CoV-2: a primer for predictive prognosis. *BioRxiv*, 2021.08. 30.458244 (2021).

7. S Mishra, D Srivastava, V Kumar. Improving gene network inference with graph wavelets and making insights about ageing-associated regulatory changes in lungs. *Briefings in Bioinformatics* 22 (4), bbaa360 (2021).
8. S Nagpal, D Srivastava, SS Mande. What if we perceive SARS-CoV-2 genomes as documents? Topic modelling using Latent Dirichlet Allocation to identify mutation signatures and classify SARS-CoV-2 genomes. *BioRxiv*, 2020.08. 20.258772 (2020).
9. D Srivastava, KD Bakshi, BK Kuntal, SS Mande. "EviMass': A literature evidence based miner for human microbial associations." *Frontiers in genetics* 10 (2019).
10. D Srivastava, A Iyer, V Kumar, D Sengupta. "CellAtlasSearch: a scalable search engine for single cells." *Nucleic acids research* 46, no. W1 (2018).
11. D Srivastava, and V Kumar. "Graph signal processing-based analysis of biological networks." PhD diss., IIT-D. (2018).

Patents

1. KK Bhusan, SS Mande, V Pokhrel, D Srivastava, KD Bakshi. Method and system for annotation and classification of biomedical text having bacterial associations. US Patent App. 17/815,129.
2. R Singh, S Nagpal, D Srivastava, MM Haque, SS Mande. System and method for estimation of delivery date of pregnant subject using microbiome data. US Patent App. 17/805,079

Internships

Defense Research and Development Organisation – Institute of System Studies and Analysis (ISSA), Delhi	Apr 2013 – Jun 2013
Studied blast loading effects modelling and its effect on dynamic structures.	
PHD Chamber of Commerce – Delhi	May 2014 – Jul 2014
Under E-Business Circuit, improved IT infrastructure of MSMEs by designing specific software. Specifically developed a Packaging ERP Module and a Pressure Calculator for AMD Industries, Ghaziabad (U.P.).	
Birla Institute of Technology – Department of Computer Science, Noida Campus	Apr 2015 – Jul 2015
An ant colony algorithm for scheduling applications to Grid Heterogeneous systems with its implementation on MATLAB.	
Defense Research and Development Organization – Defense Terrain Research Laboratory (DTRL), Delhi	Jun 2015 – Nov 2015

Other Academic Projects

1. Designed an AI based picture puzzle solver on MATLAB.*
2. GyroBot - An Arduino powered robot remotely controlled from Android smartphone over Bluetooth.*
3. Smart phone sensor's based automatic body gesture recognition. *
4. Rewave - A system to control presentations remotely from a mobile device. *
5. Du Innovation Project - Designing innovative working models and IT based modules to explain concepts of physics and mathematics. Particularly worked on “The Magnet Gun”, “Inclinometer”*, “Magic Square Application” and “Understanding Gears in a clock”.
6. Web based Clinic Management System - Developed a Web based Clinic Management System for Doctors.
7. Deriving Causal Protein-Signaling Network Using Single Cell Protein level data - We used Information theoretic model selection methods to find causality among 11 proteins and lipids based on flow cytometry data of single cells.

* Source codes available on [GitHub Profile](#)

Achievements

1. IELTS English proficiency test (2019) - **8.5** aggregate (Reading - 8.5, Listening - 8.5, Writing - 8, Speaking - 8)
2. GATE Examination (2016) - Computer Science - **532** score

Awards

1. Awarded First Prize - “**Best in Robo**” in Innovation Fair organized during Innovation Festival, 2015 held at National Science Centre, New Delhi for Android Controlled Robot.
2. TCS Citation Award - 2019 (For the published paper *EviMass*)
3. Awarded “**All-rounder of the year**” award at school.
4. GATE Scholarship - 2016-18

Positions of Responsibility

1. President - YUVA-Indians student's associations @ EPFL
2. Student Representative - Quantitative Biology PhD School @ UNIL
3. Purchase Manager - Autonomi CIC Robotics club
4. Member and Coordinator - BioBytes Club IIITD Delhi
5. Sports Captain of the High School.

Extracurricular Activities

1. Football - (Awarded best defender in corporate tournament, Runner's up in college league)
2. Basketball - Captain of the school team. Also competed at college level.
3. Organized numerous sports and cultural events at school, college, and office level.
4. Active contributor to the Stack Exchange network and local data science community.

Personal Information

- Gender Male
- Nationality Indian
- Date of Birth 28 January, 1993
- Languages Known English, Hindi

External Links

LinkedIn	linkedin.com/in/divyanshu28jan
GitHub	github.com/divyanshusrivastava
Stack Overflow	stackoverflow.com/users/7041244/divyanshu-srivastava
Research Gate	researchgate.net/profile/Divyanshu_Srivastava5
Google Scholar	scholar.google.co.in/citations?user=bp8myG4AAAAJ&hl=en&oi=sra

Contact Details

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References

1. Dr. Giovanni Ciriello,
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2. Dr. Elisa Oricchio
Assistant Professor, EPFL - Switzerland
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3. Mr. Kuntal K. Bhusan
Senior Scientist, TCS TRDDC - Pune

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4. Dr. Vibhor Kumar
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5. Dr. Debarka Sengupta
Assistant Professor, IIIT - Delhi

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Declaration

The above information is correct to the best of my knowledge.

Divyanshu Srivastava

10 February 2024