

Pranav Ballaney

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EDUCATION

Birla Institute of Technology and Science, Pilani
Master of Science in Biological Sciences
Bachelor of Engineering in Computer Science and Engineering

Goa, India
Aug. 2018 – May 2023
Cumulative GPA: 9.26/10

WORK EXPERIENCE

National Resource for Network Biology

May 2021 – August 2021

Student Developer under Google Summer of Code 2021 at Keio University, Japan

[\(Link to Project\)](#)

Developed a simulator for SBML models, along with parsers for SBML and MathML in Rust, under the guidance of Dr Akira Funahashi, Department of Biosciences and Informatics. The simulator applies the Runge-Kutta and Runge-Kutta-Fehlberg methods for numerical integration of ODEs in an SBML model.

Debian

May 2020 – August 2020

Student Developer under Google Summer of Code 2020

[\(Link to Project\)](#)

Designed test suites for over 40 applications in bioinformatics, performed bug fixes and added several new packages to the Debian operating system.

RESEARCH EXPERIENCE

In-silico Discovery of SARS-CoV-2 3CL Protease Inhibitors

August 2021 - Present

Currently working on molecular dynamics simulations of 3CLpro-inhibitor complexes to discover small molecule inhibitors of the 3CL protease of SARS-CoV-2, under the guidance of Dr. Raviprasad Aduri, Assistant Professor, BITS Goa.

CSIR - Institute of Genomics and Integrative Biology

February 2021 - July 2021

Carried out molecular dynamics simulations of autophagic complexes to understand the process of formation of autophagosomes under the guidance of Dr. Lipi Thukral, Senior Scientist at the Computational Structural Biology lab.

RNA Secondary Structure Prediction

January 2021 - Present

Currently working on evaluation and extension of computational tools used to predict RNA secondary structures, under the guidance of Dr. Raviprasad Aduri, Assistant Professor, BITS Goa.

SCHOLARSHIPS AND AWARDS

iGEM Competition 2020

November 2019 – November 2020

Software Team Lead, iGEM BITS Goa

[\(Link to Project\)](#)

Awarded the **Gold Medal** along with two Special Prizes for Best Software Tool and Best Composite Part at the International Genetically Engineered Machine competition for designing a genetically engineered bacterial system to reduce post-harvest losses in sugarcane, under the supervision of Dr. Sumit Biswas.

Institute Scholarship, BITS Goa

August 2018 - Present

TECHNICAL SKILLS

Languages: Python, C, C++, Java, Rust, HTML, CSS, JavaScript, Bash

Frameworks: Flask, Django, jQuery, NumPy, Pandas, Scikit-Learn, ProDy

Bioinformatics: Molecular dynamics simulations, protein modelling, docking and secondary structure prediction

RELEVANT COURSES

Biology: Biochemistry, Microbiology, Cell and Molecular Biology, Bioinformatics, Genetics, Recombinant DNA Technology, Immunology, Biophysics, Developmental Biology, Biomolecular Modelling

Mathematics: Multivariable and Vector Calculus, Linear Algebra and Complex Analysis, Differential Equations, Probability and Statistics

Computer Science: Object Oriented Programming, Data Structures and Algorithms, Database Management Systems, Operating Systems, Deep Learning