

Abhay Kshirsagar

Curriculum Vitae

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Education

2019–Present **Indian Institute of Science Education and Research, Kolkata,**
Dept. Biological Sciences, Minor : Computer Science.
GPA – 8.8/10

Interests and Hobbies

Research Int. I am mainly interested in understanding Biological phenomena through the application of Computational techniques such as deep learning, proteomics and molecular dynamics simulations. I am also interested in Computational Structure based Drug Design.

Hobbies Origami, Drums, Programming

Projects

- Nov 2021 – **Exploring the the Free Energy Landscape of IDR**, *Prof. Neelanjana Sengupta, IISER Kolkata, India.*
- Study the Conformational Landscape of two COVID proteins using Molecular Dynamics Simulation.
 - Sample the Intermediate Rare Conformations using the latent space
- Jun 2022 – **NLP Researcher**, *At Wavel.ai.*
- Aug 2022 Worked in the core team to learn, explore, and build state-of-the-art TTS models for multilingual and multispeaker voice cloning.
- Nov 2021 – **Predicting Global Horizontal Irradiance** [[Code](#) , [Certificate](#)], *Hackathon Submission.*
- Dec 2021
- Implemented Long Short Term Memory Networks on previous GHI and could cover data of a solar farm.
 - Qualified To be Finalist Teams among 30 Teams
- Oct 2020 – **Wind Farm Layout Optimization** [[Code](#)], *Hackathon Submission.*
- Nov 2020
- Implemented Particle Swarm Optimization Algorithm in Python.
 - The algorithm finds the optimal wind turbine farm layout using PSO and Wind Data of a particular region.
- Jun 2020 – **Summer Project** [[Report](#)], *Prof. Jayasri Das Sarma.*
- Nov 2020
- Studied the parallels between m-CoV and SARS-CoV-2 and how is can be used as a model organism for studying SARS-CoV-2 in mice.
- Feb 2020 – **Welearn Bot** [[Code](#)], *Team Project.*
- Jun 2020
- A cli application for interacting with Welearn IISER-Kolkata for downloading files getting assignment deadlines
 - Implemented the cache file system for the downloaded files and calendar event creation
 - Implemented the google calendar integration for adding assignment and examination deadlines as an event on google calendar for those productivity.

Publications

- In Review **Conformational Ensemble of the NSP1 CTD in SARS-Cov2: Perspectives from the Free Energy Landscape**, *Under Prof. Neelanjana Sengupta, IISER Kolkata*.
In this Study we investigate the conformational ensemble of NSP1-CTD of SARS-CoV-2 virus by leveraging Enhanced Sampling Method like Replica Exchange Molecular Dynamics and gain insights on its conformational landscape by using methods such as Expectation Maximized Molecular Dynamics.

Achievements

- Dec 2021 **HPC Hackathon**, *Funding for Research*.
 - Our Team won the HPC Hackathon organized by DST-India and Powered by Amazon Web Services
 - We received a prize of \$10,000 (USD) in compute credits by AWS for our project proposal.
- Jun 2020 **KVPY SB Scholar**, *Scholarship*.
 - Qualified for a scholarship program for students interested in pursuing science
 - Ranked 56
- Jun 2019 **INSPIRE Scholar**, *Scholarship*.
 - Qualified for a scholarship program for students interested in pursuing science

Skills

- Languages Python, C/C++, SQL, MATLAB, R, Dart
- Frameworks Keras, PyTorch, Tensorflow
- Web Dev HTML/CSS, JavaScript (ES6)
- Android Dev Flutter
- Communication English, Hindi

Relevant Courses

Online Certifications.

- Machine Learning by Andrew Ng - [\[Certificate\]](#)
- Introduction Neural Networks - [\[Certificate\]](#)
- Convolutional Neural Networks - [\[Certificate\]](#)
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization - [\[Certificate\]](#)

Extra Curriculars

- Aug 2021 **SlashDot Club**, *Convener*.
 - I was the convener of SlashDot Club which is the Coding Club of IISER Kolkata
 - During my period I have taken Workshops on Web Development where I taught HTML, CSS and JavaScript.
 - I was also an active member of Code Chef College chapter of IISER Kolkata
- Jan 2021 **Campus Radio**, *Web Development Team*.
 - I headed the Web Development Team at Campus Radio and created website with a database Back-end
 - For the Website I used tools like Firebase for storing Images, And personal Data
 - I also created an app which connects to the Fire-base with CRUD functions that allows user to Modify the Data seamlessly through the GUI