Adrita Das
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EDUCATION

Carnegie Mellon University-College of Engineering Pittsburgh,PA
Master of science in Biomedical Engineering | Aug 2022-Present
Selected coursework: Machine learning, Deep learning(Intermediate and Advanced),Computational Biomedical engineering,Image Modeling and Analysis

Vellore Institute of Technology Vellore,India
Bachelor of technology in Biotechnology | GPA: 7.81/10.0 May 2021
Selected coursework: Protein Engineering and Design,Biochemistry,Biological Spectroscopy,Python Programming,Object-Oriented programming

EXPERIENCE

Carnegie Mellon University,Barati Lab Pittsburgh,PA
Graduate Student Researcher Aug 2022-Present

- Working on MD simulations of GPCRs with the help of openMM and VMD.
- Working on writing scripts in python to control VMD.
- Applying various machine learning and deep-learning models to understand the dynamics of GPCRs.
- Working with computational modeling and analysis of protein structures using softwares like Rosetta.

Vellore Institute of Technology,Molecular Chemistry Lab(CBST) Vellore,India
Undergraduate Student Researcher Nov 2018-Mar 2022

- Investigated the actions of AspN, LysC and GluC on some therapeutic antibodies to examine the length(size) distribution of the polypeptides that result from the proteolysis of those therapeutic antibodies.(IN-SILICO Analysis)
- Worked on molecular docking analysis of natural products for inhibition of main protease of SARS-CoV-2 and repurposing drugs against the main protease of SARS-CoV-2.
- Investigated the solvatochromic properties of commonly used organic dyes such as Bromophenol blue in organic solvents to study protein folding and dynamics in organic solvents using bromophenol blue.

Vellore Institute of Technology,Cellular Biomechanics Lab(CBCMT) Vellore,India
Undergraduate Project Assistant June 2019-Oct 2019

- Employed techniques such as FTIR-ATR Spectroscopy, SEM and UV-Vis spectroscopy for characterization of the films.
- Different tests and measurements were being taken for the films including Contact angle measurements, blood compatibility test ,platelet adhesion test, MTS Assay. The results of the MTS Assay were being statistically analyzed with one-way ANOVA.

***Co-authored a research paper,publication:https://doi.org/10.1007/s40204-020-00146-z**

Indian Institute of Science,Molecular Biophysics Lab(MBU) Bangalore,India
Summer Research Intern May 2019-Jul 2019

- Investigated the reaction of phenylglyoxal with arginine residues in proteins with the help of NMR spectroscopy(C13 and H1 NMR).
- Identified the Product formed in the reaction between phenylglyoxal and arginine under different conditions, pH and concentration dependent studies,assessed product stabilities,analyzed NMR Data, NMR Pulse Programming.
- Learned how to interpret TOCSY,COSY and NOESY data. Learnt more about NMR data acquisition.

ACADEMIC PROJECTS

IMAGE REGISTRATION IN MEDICAL IMAGING WITH CNN Carnegie Mellon University|Nov 2022

- Implemented a keypoint-based geometric network for the registration of medical images with dense deformations.

DISEASE MODELING AND ANALYSIS OF MENINGITIS Carnegie Mellon University|Nov 2022

- Presented and implemented a summary of different computational approaches aimed at describing and modeling the effect of different factors on mortality rate of meningitis around the world.

PREDICTION OF PNEUMONIA USING MACHINE LEARNING MODEL VIT Vellore|Mar 2020

- Developed a machine learning model to predict whether a patient has pneumonia or not given images of their chest X-rays.The dropout method prevented this model from overfitting as much and reduced the loss of the model to 23.7%. The accuracy also rose to 91.2%.

BRAIN TUMOR DETECTION AND SEGMENTATION VIT Vellore|Mar 2020

- Implemented a deep learning model and integrated into a web app with the help of python flask.

GAME THEORY WITH PYTHON VIT Vellore|Nov 2022

- Implemented several game theory models to explain the neuroscience of decision making.Simulated game theory models such as Axelrod and Chicken game in python.

SKILLS

Programming Languages: Python,C++,C,MATLAB,Tcl
Software:MATLAB,OpenCV,PyTorch,PyMol,VMD,MestReNova,GROMACS,AutoDock,WoLF PSORT
Computing Environments: Windows,Linux,Raspberry Pi

CONFERENCES

- Presented findings at the International Conference of Chemical Sciences and Nanomaterials(2019).
- Presented research at 26th CRSI National Symposium Chemistry-Royal Society of Chemistry(2020).