NIKHIL SHENOY

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EDUCATION

Indian Institute of Technology, Delhi *July 2016 - July 2020*
B.Tech in Biochemical Engineering and Biotechnology Overall GPA: 8.06/10

Delhi Public School, Gurgaon *May 2016*
Central Board of Secondary Education - Class 12 Overall Percentage: 94.4%

ACADEMIC ACHIEVEMENTS

Tsinghua Summer School, Beijing: Offered Scholarship to attend conference on climate change *(2019)*
Department Rank: 5 among final year undergraduates in Dept.of Biochemical Engineering *(2020)*
National Top 0.1% in Mathematics: Secured 100 in XII Boards; Conferred with certificate of merit *(2016)*
C.B.S.E Merit Certificate: For outstanding performance in Class X, securing A1 grade in all subjects *(2014)*

COURSEWORK

Intro. to Calculus, Intro. to Differential Equations, Linear Algebra, Probability and Stochastic Processes, Data Structures and Algorithms, Embedded Systems Design Project, Econometric Methods, Macroeconomics, Bioinformatics, Intro. to Machine Learning, Deep Learning.

WORK EXPERIENCE

Elucidata Data Consulting, Delhi *May 2019 - July 2019*
Data Science Intern

· Worked on SOTA classification models for breast cancer sub type classification. Used these classification models to classify other TCGA cancers into breast cancer subtypes to find out similarity.
· Built a Web App to perform Weighted Gene Co-Expression Analysis on RNA-seq data to visualise results. Additional features were designed to provide users with relevant insights across different cancers

National Tsing Hua University, Taiwan *May 2018 - July 2018*
Computational Biology Lab - Prof. Lee Wei Yang

· Performed drug-protein docking using Autodock Vina and extracted features using a python package PyMol. Used the features to predict the inhibitory response using different types of regression model.
· Preprocessed the unbalanced dataset using techniques like PLS Regression, PC Analysis and SMOTE.

PROJECTS

Transfer Learning for Segmentation and Classification *January 2020 - February 2020*
Deep Learning Course Project - Dr. Prathosh

· Performed classification on a novel spine dataset using an ensemble of SOTA Computer Vision classification models (VGG16, InceptionV3, Resnet34 and VGG19) using transfer learning to achieve the best results.
· Used FCN, U-Net, PSPnet and SegNet for semantic segmentation of the Spine dataset. To improve performance used a pretrained encoder of Resnet34 and a trainable decoder to increase IOU score further.

Convex Optimization in Support Vector Machines *July 2019 - November 2019*
Machine Learning Course Project, Lab - Dr. Sumeet Aggarwal

· Utilized CVXOpt to solve the SVM Dual Problem to find out support vectors instead of using standard library
· Used the above SVM to solve a multiclass classification using both one-verses-one and one-verses-all approach

Survival Prediction Model for Breast Cancer *July 2019 - November 2019*
Computational Biology, Lab - Dr. D. Sundar

- Performed Tumor Segmentation from MRI images of breast cancer using the Image Processing toolbox of MATLAB GUI. The model implemented a standard U-Net Architecture for performing segmentation.
- Trained a Drug Response Prediction model by retraining the survival prediction model on annotated data.

Understanding Hidden Representation in Neural Networks *July 2019 - November 2019*
Machine Learning Course Project, Lab - Dr. Sumeet Aggarwal

- Implemented backpropogation algorithm for any generic neural network creation with complete flexibility
- Visualized differences in representations learned by hidden layers and PCA reduced features post training
- Used Autoencoder type architecture to get low level latent representations of data and used it for classification

Assistance App for the Visually Impaired *January 2018 - April 2018*
Embedded Systems Project - Dr. Balakrishnan

- Performed a study on various Face Detection Algorithms and the ease of implementation on an Android Platform
- Developed an App using Google Vision API, added utilities to track head pose and perform distance approximation. Designed an easy to use GUI that incorporated Text-To-Speech API to help the visually impaired

Image Processing Filter for Noise Removal *December 2017 - January 2018*
Winter Design Project - Dr. Mukul Sarkar

- Designed a filter by creating kernels for each pixel using Histogram of oriented gradients of neighbouring pixels
- Tested the filter on several images using MATLAB and calculated the efficiency of noise removal in the process

Road Network Design using Graphs *March 2018 - April 2018*
Data Structures Course Project - Prof. Saroj Kaushik

- Created an adjacency list using priority queue from STL Library to represent the junctions and roads of a city.
- Implemented a design for a network of roads by creating a minimum spanning tree and used Dijkstra's algorithm to provide the users of the city with the shortest path using the traffic time and traverse time.

Website Connectivity Management using Data Structures *March 2018 - April 2018*
Data Structures Course Project - Prof. Saroj Kaushik

- Implemented a Sparse Matrix with Circular Multi-Linked List to represent large number of websites with links.
- Added efficient utility functions like removing, adding and returning the number of links between websites.

EXTRA CURRICULAR ACTIVITIES

Class Committee Coordinator, CAIC : *April 2019 - Present*

- Elected by 56 students to represent in the highest academic body of the institute
- Ensuring that all changes suggested by the students are presented before the faculty members with due diligence
- Responsible for solving diverse academic and administrative issues by liaising between the students and faculty

House Working Committee, Aravali House : *April 2019 - Present*

- Maintained liaison with Hostel authorities in management decisions and actively involved in Hostel welfare affairs
- Brainstorming, identifying & reviewing hostel maintenance

Volunteer at National Association for the Blind : *June 2017 - April 2018*

- Created documents essential for the rehabilitation programs planned for visually impaired women at NAB
- Responsible for functioning and of compledifftionferent programs as designed by the manager at NAB