

ACADEMIC DETAILS

Degree	Year	Institution	Grade/Percentage
B.tech	2016-2021	Indian Institute of Technology, Kanpur	58%
12th	2015	DAV College	88.60%
10th	2013	DAV COLLEGE	83.80%

SCHOLASTIC ACHIEVEMENTS

- Selected for INSPIRE scholarship, awarded to the top 1% among 5.3lakh students by Department of Science & Technology.
- 2<sup>nd</sup> Position in Aviation Development Competition 2019 at IIT Kanpur.

KEY PROJECTS AND INTERNSHIP

- Field Inversion and Machine Learning** *BTP supervisor: Dr. Rajesh Ranjan* Apr'21-'July21
  - Used Field Inversion Method and Machine Learning to improve the CFD model. Used 2-Equation **K-omega model**
  - Used **tanh clustering** for meshing, applied central finite difference method to get the second derivatives.
  - implemented under Relaxation method to Evaluate Linear Equation the K and Omega correction equations.
  - MSE loss function for Field Inversion and implemented **Bolt Drive Method** for Optimization and Used Discrete Adjoint method to calculate derivatives of loss function.
  - Designed 3 Neural Networks and Machine leaning model and compare their performance.
- Image Processing** *(Self Project)* Jan'21-Aug'21
  - Brain MRI Segmentation** Used Kaggle Public lgg segmentation dataset. The dataset had only 4k images, used Keras in built IDG for augmentation. Built a small unet with 31million parameters. used custom loss functions Dice Coefficients and Jaccard index. Final model trained for 30 epochs had size of 335MB and 0.98 binary, 0.72 IOU, 0.82 Dice accuracy on Test Set.
  - Intel Image Classification** Used Intel Image Classification Dataset on kaggle. Dataset has 14k images. Created a smalle subset of dataset and Used Keras in built IDG for smooth training. Built model with 0.3 million parameters. Model trained for 30 epochs had accuracy of 0.94 on training, 0.89 on val set and 0.79 on test set
- Toxic Comment Classification***(Self Project(Kaggle Competition))* May'20-'July20
  - Competition was to build a model which recognizes toxicity with imbalance dataset.
  - Built a new balanced dataset of all six classes, Performed visualization and correlation test, applied Cleaning, lexicon normalization and stopword removal.
  - Used TF-IDF unigram, bigram and trigram model for word embeddings.
  - Trained LogReg(0.91), KNN(0.66), BNB(0.76), MNB(0.87), SVM(0.91), Random Forest(0.91) with average accuracy on training data.**
  - Built LSTM model for further improvement. used Keras embedding and 1 Layer of LSTM with total of 2 million parameters gave **accuracy of 0.97 on training data.** Future models:LSTM with Attention and Transformer architecture.
- Design and Modelling Internship** May'18-July'18  
VTOL Aviation India Pvt Ltd.
  - Worked as a part of Propulsion Team Analyzed the Rotor Performance to achieve **optimal Power Consumption of India's First AirTaxi(900kg)**, also worked on landing gear of 50kg UAV.
  - Developed simulation codes on MATLAB Using **BEMT** to predict the Performance parameters of the rotor.
  - Developed Codes on Visual C++, Used Lab-View to test the sensors of Test-Bench of The Bird.
- Data Handling***(Mentor: Abhijit Kushari)* May'20-'July20
  - Collected 1000 of data points with the help of LABView software and applied preprocessing to it.
  - Calibrated Physical Quantities (pressure,velocity) with Voltage measured(on device), by plotting curves on Python.
- Other Self Projects**
  - Housing Price Prediction, Sentiment Analysis, Movie Review, Neural Style Transfer, Simon Game(Web), TicTacToe(Web), Pong Game(Python), Blog Website

TECHNICAL SKILLS AND TOOLS

- Languages** :C++, JAVA, HTML5, Matlab, Python, SQL, JS, CSS, Octave.
- Tools and Skills** : Auto-desk, Machine Learning, NLP, Image Processing Deep Learning, Web Dev(Front), Git.

RELEVANT COURSES

- Institute Courses:** Fundamentals of Computing, **Linear Algebra, Finite Element Method**, Aircraft Propulsion, Thermodynamics, Optimal Space Flight Control, Modern Control System,Rocket Propulsion. Helicopter dynamics
- Online Courses** Machine Leaning, **IBM Data Science, Deep Learning Specialization**, Complete Web Development, Python Code challenge.

EXTRA-CURRICULAR

- Mentored Students of Various Colleges in **Boeing National Aeromodelling Festival'17**
- Volunteered in the National Service Scheme to provide education to underprivileged children in school.