HARIKESH KUSHWAHA

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	M.Sc in Physics	Indian Institute of Technology Delhi	8.667
2021	B.Sc. (Hons) in Physics	Banaras Hindu University, Varanasi	8.41
2018	UP Board	Government Inter College, Deoria, UP	87.8
2016	UP Board	Navtappi Inter College, Deoria, UP	85.3

SCHOLASTIC ACHIEVEMENTS

- **Machine Learning Specialization** by ***Andrew NG*****:** Certified after completing **three course** specialization offered by **DeepLearning.AI**
  - Learned **linear and logistic regression**, **gradient descent**, some regularization techniques and implemented them using numpy
  - Trained neural networks with **TensorFlow** and implemented a simple **Decision Tree Classification** algorithm from scratch
  - Learned unsupervised algorithms and some **Recommender Systems**. Got introduced to basics of **Reinforcement Learning**
- **Deep Learning Specialization** by ***Andrew NG*****:** Certified after completing **five course** specialization offered by **DeepLearning.AI**
  - Implemented **neural network from scratch** using NumPy and Python with arbitrary **number of layers** and **number of neurons**
  - Implemented and applied a variety of optimization algorithms, such as **Gradient Descent**, **Momentum**, **RMSprop** and **Adam**
  - Built NN architectures like **CNN**, **LSTM**, **GRU** and **RNN** and implemented regularization techniques like **Batchnormalization**, **Dropout**
- Achieved **S** grade in **Geometry**, **Statics & Dynamics**, **Quantum Mechanics** and **Electronic Devices & Circuits** during UG Course

PROJECTS

- **House Prices - Advanced Regression Techniques**: Using **80 different features**, trained models to predict the price of a house
  - Did **data visualization**, **feature engineering** and **data imputation** before training over a dozen of regression models
  - Performed **grid search** for the best parameters. The best model secured a place in the top **15%** on the **Kaggle Leaderboard**
- **Natural Language Processing with Disaster Tweets**: Using a tweet, **predict** whether it is about a real disaster or not
  - Used **text vectorization** and **word embedding** to transform the Tweets into a **vector** to be trained by **Neural Network**
  - Generated both **character level** and **word level embeddings** with the pretrained **Universal Sentence Encoder (USE)**
  - Used them as inputs to create a **Multivariate** model with the **functional API** of **TensorFlow** getting test accuracy of **82%**
- **Digit Recognizer**: Trained machine and deep learning models to *recognize* **handwritten digits** of the famous **MNIST dataset**
  - Trained **very deep Convolutional Neural Networks (CNNs)** with **Dropout** and **Batch Normalization** to reduce **overfiting**
  - The best performing model got a **test** accuracy of **99.48%**, securing a place in the **top 15%** on the **Kaggle Leaderboard**
- **Food Vision**: Using **101k** images from **101 different categories of food**, trained a model to *recognize* the food category
  - Utilizing **transfer learning**, first used pretrained **EfficientNet** for **feature extraction** then **fine tuned** its last few **layers**
  - To make training faster, used the **tensorflow.data** API to make a **efficient** data input **pipeline** and employed **mixed precision**
  - The best model got an accuracy of **80%** on the test dataset. Deployed the model on **Heroku** using **Django** for the back end
- **TensorFlow Speech Recognition Challenge**: Trained a neural network to recognize **30** different **voice commands**
  - As **preprocessing** steps, created **waveforms** from the raw audio file then used **STFT** to get a **2D spectrograms** with **TensorFlow**
  - Trained deep **Convolutional Neural Networks** using the spectrograms as inputs resulting in a test accuracy of **90%**
- **Book Gallery** : A **responsive** website featuring various information and images of over **450** books using **RESTful** routes
  - Used **HTML**, **CSS**, **Bootstrap** and **JavaScript** for the **front end** and **Node.js**, **Express**, **ejs** etc. for the **back end**
  - Used **Beautiful Soup** along with **Selenium** to **scrap** all the required data and assets from Amazon and Goodreads
  - Used **MongoDB** and **mongoose** as database, **Heroku** as deployment platform and **Amazon S3** for storing the static files
- **My Portfolio** : Some of my projects and information about me is available on my portfolio hosted using **Github Pages**

TECHNICAL SKILLS

- **Languages:** Python (Proficient), JavaScript, LaTeX, MATLAB || **Databases:** SQL, MongoDB || **OS:** Windows, Ubuntu
- **Major Frameworks:** scikit-learn, TensorFlow, Keras, Django, Git, Selenium, Node.js, Express, Bootstrap
- **Libraries:** pandas, Matplotlib, seaborn, BeautifulSoup, SciPy, Plotly, OpenCV, ejs, jQuery || **Other Tools:** Github, Tableau, Excel

EXTRA CURRICULAR ACTIVITIES

Courses and Certifications

- **TensorFlow Developer Certificate in 2022: Zero to Mastery** on **Udemy** Instructed by ***Andrei Neagoie***
  - Became familiar with both the **sequential** and **functional** API of **Tensorflow** as well as with efficient **data pipelines**
  - Built and trained a number of neural network architectures like **Feed Forward Networks**, **CNN**, **LSTM**, **GRU** and **RNN**
  - Used regularization techniques like **Dropout**, **Batch Normalization** etc. and created some models solving **real world problems**
- **3 Courses from SQL Fundamentals** on **DataCamp** Instructed by Various Instructors
  - Learned basic SQL queries for selecting, filtering, aggregating and ordering. Used them to find relevant information from database
  - Used the **JOIN** keyword to work with various types of **joins** like inner, outer, self, full. Learned about various **set operations**
  - Learned about **subqueries** and used **Common Table Expressions** and **window functions** for **complex** and **nested** queries

Disclaimer: All the information on this page is entered by student.

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IIT COURSE

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COURSES DONE

Quantum Mechanics I, Classical Mechanics, Laboratory I, Electronics, Mathematical Physics, Applied Optics, Comp. Te. For Solid State Mat., Electrodynamics, Group Theory & Its Application, Quantum Mechanics Ii, Solid State Physics, Statistical Mechanics, Laboratory Ii