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

- **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

- **Impact Dynamics of Liquid Drops: A Study Using Image Analysis** under ***Prof. Deepak Kumar*** (May, 2022 - July, 2022)
  - Extracting center and then trajectory of a liquid drop moving through thin film with help of image preprocessing steps
  - Used **cropping** and **thresholding** to convert the raw image to a **binary** one and implemented some methods from scratch to determine the coordinates of the center of drop with help of libraries like **Matplotlib**, **NumPy**, **OpenCV** and **scikit-image**
- **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 Python's library **Beautiful Soup** along with **Selenium** to **scrap** all the required data from Amazon and Goodreads
  - Used **MongoDB** and **mongoose** as database, **heroku** as deployment platform and **Amazon S3** for storing the **static files**
- **Python Web Apps**: A website hosting a number of small but useful web apps written in Python and Django for back end
  - The website has apps like **Language Detector**, **Image Tools**, **YouTube Song Downloader** and some ML models
  - Used the **Django** framework to deal with the back end, **SQLite** for the database and **Heroku** as deployment platform
- **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** the 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
- **My Portfolio**, hosting some of my personal projects, can be found by following the link ***https://hari31416.github.io/Portfolio***
  - Wrote it using HTML, CSS and JavaScript with Bootstrap for styling. Used the **Github Pages** for hosting purposes

TECHNICAL SKILLS

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

EXTRA CURRICULAR ACTIVITIES

Courses and Certifications

- **The Web Developer Bootcamp 2022** on **Udemy** Instructed by ***Colt Steele***
  - Learned about **HTML**, **CSS**, **Bootsrap**, **JavaScript**, **jQuery** and **DOM** to create a **responsive front end** of a website
  - Learned the **npm world**, **express** and **ejs**, together with **mongoose** and **mongoDB** to create the **back end** of a website
  - Learned concepts like **REST**, **RESTful** and **CRUD** functionality and used them to make a fully functional **Book Gallery** website
- **Python and Django Full Stack Web Developer Bootcamp** on **Udemy** Instructed by ***Jose Portilla***
  - Learned about **django** framework and its classes like **Models**, **Forms**, as well as the **MVT Paradigm**, **CBV** and **templates**
  - Learned about the **Document Object Model (DOM)** and how to **manipulate** it with JavaScript to create an interactive webpage
- **2021 Complete Python Bootcamp From Zero to Hero in Python** on **Udemy** Instructed by ***Jose Portilla***
  - Learned basics to advanced python concepts from **data types**, **loops** and **functions** to **OOP**, **decorators** and **generators**
  - Got familiar with a dozen of useful python libraries for tasks ranging from **image processing** to **web scraping** and **automation**
- **Introduction to Git and GitHub** on **Coursera** by ***Google Career Certificates***
  - Learned about **Version Control Systems** and their importance especially when **collaborating** with other developers
  - Became familiar with **git** and **Github** and learned concepts like **staging area**, **diff**, **patch**, **commit**, **branch**, **merging** etc.
- **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

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IIT COURSE

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M.Sc in Physics	Indian Institute of Technology Delhi	8.667

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