KULWINDER KAUR

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	M.Sc in Physics	Indian Institute of Technology Delhi	7.905
2021	B.Sc. (Hons) in Physics	Panjab University, Chandigarh	8.5
2018	Punjab School Education Board	Govt. Girls School, Fazilka, Punjab	86.4
2016	Punjab School Education Board	SD Sen. Sec. School, Fazilka, Punjab	93.4

WORK EXPERIENCE

- **Class Teacher, Physics** worked with **Vedantu** Innovations Pvt Ltd as a ClassTeacher, from 26 July 2021 - 4 Nov 2021
- **Subject Matter Expert, Physics at Chegg Inc.** Clearing up doubts of **hundreds** of **international Students** (Sep 2021 - Present)

SCHOLASTIC ACHIEVEMENTS

- **Meritorious Award:** For Standing **First** in **High School** in Matricular Examination held by PSEB, Mohali in March(2016)
- **NAEST 2021** Secured **1st Position** in prelims round of doing experiment organised by **NANI**, Co-ordinated by **HC Verma**
- **PUCET(UG):** Obtained **51 Rank** in **Panjab University,Chandigarh** Common Entrance Test (UG 2018) of **Mathematics**
- Achieved **O++ (10)** Grade in courses **Maths** and **Mathematical Physics** during **UG** coursework in **Panjab University**
- Achieved **3rd** position among students of all the participated schools in **Vaidik Gyan Pariksha 2013** in **8th** class

PROJECTS

- **Plasma Mirrors (Prof. Vikrant Saxena)** (May, 2022 - Present)
  - Learnt and implemented different methods for numerical differentiation, intergration, ODE solving using python and NumPy
  - Learnt various algorithms to solve particle motion under electromagnetic field like RK, Leapfrog, Tajima and Boris method
  - Learnt about the **finite-difference time-domain** method and **Yee Algorithm** and used it to make some simple simulations
  - Learnt about **Particle in Cell** (PIC) algorithm and used a C/Python library **zpic** to simulate **Plasma-Laser Interaction**
- **Impact Dynamics of Liquid Drops**: A Study Using Image Analysis **(Prof. Deepak Kumar)** (May, 2022 - July, 2022)
  - Extracting center and trajectory of a liquid drop moving through thin film with the help of image preprocessing steps
  - Used **cropping** and **thresholding** to convert the raw image to a binary one and implmented a method from scratch to determine the coordinates of the center of drop with help of libraries like **Matplotlib**, **NumPy**, **OpenCV**, **scikit-image** etc.
  - Used the extracted information to observe the behaviour of the liquid drop through thin film with varying height and angle
- **Titanic - Machine Learning from Disaster**: Using the Titanic dataset, predict whether a passenger survived the Titanic disaster
  - Did **data visualization**, **feature engineering** and **data imputation** to preprocess the data for modeling experiments
  - Created a number of **classification algorithms** and used **grid-search** to find the best set of **hyperparameters**
- **Projects for Machine Learning Specialization:** Done a number of **real world projects** during the coursework. Some are:
  - Created **Linear Regression** as well as **Logistic Regression** from scratch using Python and its scientific library **NumPy**
  - Trained a four layered neural network to *recognize* handwritten digits using the **MNIST** dataset with **TensorFlow**
  - Built a simple **Decision Tree** classifier from scratch with **NumPy** and used it to *predict* whether a mushroom is edible

TECHNICAL SKILLS

- **Languages:** Python, LaTeX || **OS:** Windows, Ubuntu || **Database:** SQL || **Other Tools:** Excel, Tableau, Github, ZPIC
- **Libraries:** NumPy, pandas, seaborn, Matplotlib, Pillow, OpenCV || **Frameworks:** scikit-learn, Git

EXTRA CURRICULAR ACTIVITIES

- **International Astronomical Search Collaboration (IASC) 2020 (Supported by NASA):** Searched for near-Earth objects and Main Belt Astroids by analyzing the images from the **Pan-STARRS Space Telescope** (May 2020 - June 2020)
- **Mimamsa 2020:** Participated in the Mimamsa (2020) National Level Science Quiz organized by **IISER Pune**

Courses and Certifications

- **Fundamentals of SQL** by ***Various Instructors*** on **DataCamp**
  - Learnt SQL queries for selecting, filtering, aggregating and ordering
  - Learnt basic to intermediate level SQL queries and various types of joins and how to use them to join tables
- **2022 Complete Python Bootcamp From Zero to Hero in Python** by ***Jose Portilla*** on **Udemy**
  - Learnt basics to advanced topics of Python like **data types**, **Loops**, **Functions**, **Classes**, **OOP**, **Modules**, **Packages** etc.
  - Learnt about **Web Scraping** and **images related libraries** like **Pillow** and created a command line **tic-tac-toe** game
- **2021 Python for Machine Learning and Data Science Masterclass** by ***Jose Portilla*** on **Udemy**
  - Learnt about **Data Visualization**, **Data Imputation** and **Feature Engineering** using **Matplotlib**, **pandas**, **seaborn**
  - Learnt various machine learning algorithms like **Supervised** (Linear Regression, Logistic Regression, K-Nearest Neighbors, SVM, Decision Tree, Random Forest, XGBoost) and **Unsupervised** (K-Means, DBSCAN, PCA, Hierarchical Cluster)
- **Certificate of Appreciation** after completing six weeks of course content during **Summer Analytics 2022** organised by **IITG**

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

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IIT COURSE

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M.Sc in Physics	Indian Institute of Technology Delhi	7.905

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