

# Shubham Mutreja | Haryana, India

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## Academic Profile

Year	Degree/Certificate	Institution/Board, City	Percentage
2016-20	B.Tech - CSE	Guru Gobind Singh Indraprastha University, Delhi	7.42 CGPA
2016	Class XII	O.P.S Vidya Mandir—CBSE Board, Karnal	87.2%
2014	Class X	O.P.S Vidya Mandir—CBSE Board, Karnal	9.8 CGPA

## Skills

C, C++, Python, Data Structures, Algorithms, Object-Oriented Programming, Machine Learning, Deep Learning.

## Training and Certifications.

### 1. ICAR-National Dairy Research Institute

[June 2019 - July 2019]

#### Machine Learning Trainee.

Karnal, Haryana

- Worked on Machine Learning models under Professor A. K. Sharma, Principal Scientist - Computer Department, NDRI.
- Implemented Deep Learning CNN models using R language in an industrial laboratory setting.
- Increased the accuracy of their experimental milk testing model from 93% to 98% using Deep Learning.

### 2. Greatch Soft Solutions Private Limited

[June 2018 - July 2018]

#### Machine Learning Trainee

New Delhi, India

- Learned python programming, machine learning and build projects under Sir Uday Upreti and his teaching staff.
- Implemented basic Image Processing projects using Open CV and Keras for Deep Learning Model.
- Implemented a model for Semantic Analysis using Natural Language Processing on Twitter Reviews Dataset.

### 3. Hacker-rank Certifications

[September 2020]

- **Python (Basic):** It covers topics like Scalar Types, Control Flow, Strings, Collections and Iteration, Objects and Types and Classes.
- **Problem Solving (Basic):** It covers basic topics of Data Structures (such as Arrays, Strings) and Algorithms (Sorting and Searching).

## Projects

### 1. Index implementation using B-Tree.

- A **B-tree** is a self-balancing **tree** data structure that maintains sorted data and allows searches, sequential access, insertions, and deletions in logarithmic time. The **B-tree** generalizes the binary search tree, allowing for nodes with more than two children. It can be used to improve speed for query processing in a RDBMS. The index can be implemented using B-Trees.
- In a database without indexing, queries are processed using Table Scan which results in high disk usage and poor performance.
- Using B-Trees, the query performance is increased and disk loads are reduced considerably.

### 2. Prediction of Terrorist group using Global Terrorism Dataset.

- Predicting Terrorist group using global terrorism dataset by simple machine learning models and Deep Learning Models.
- The model uses tokenize summary and details about weapon used, country, vicinity, attack type, summary, casualties, etc.
- Summary was tokenized and used as a feature target values were label encoded for classification using label Encoder from Keras.
- Keras Functional API was used to create a model that concatenates two separate dense layers.
- The categorical data and summary tokens are now separately processed and then combined into a several dense layers.
- Maximum Accuracy using Simple Machine Learning models is 72% and Deep Learning Models is around 78%.

### 3. Sound Classification using Urban Sound Classification Dataset.

- Classification of some common sounds like engine noise, dog Barking, air conditioner, car horns and even gun shots.
- Key Libraries and modules: Librosa for sound processing. Keras for Deep Learning building models and Label Encoders.
- The dataset used is called UrbanSound and contains 8732 labeled sound samples of urban sounds from 10 classes.
- Maximum Accuracy achieved is 75% using simple feed forward neural network build using Keras with Tensor Flow Backend.

### 4. Crop Recommendation System using IOT.

- This was my Major project which I and my team made under the guidance of Ms Savita, Assistant Professor MAIT, Delhi.
- Using data like humidity, soil moisture, temperature and pH of the soil, the system recommends a suitable crop.
- Data is collected using sensors and Arduino Uno. Then this data is processed using Decision Tree Machine Learning Model.

### 5. Eye Detection using Open CV.

- A simple project of Computer Vision which detects and builds a bounding box around eyes and faces in an image.
- This project was build using Open CV and HaarCascades XML files.

## Notable Achievements

- Participated in various Hacker Earth Circuits with the best rank of 1301 in May 2020 Circuits. [May'20]
- Cleared the **Airbus Coding Test at Hacker Earth** and was invited for **Airbus Onsite Hackathon at Bengaluru, India.** [Dec'19]
- **Was ranked 308 in Sangam '19, a flagship event of the IIT Madras Alumni Association, with 99.21% accuracy.** [Aug,19]
- **5 star/Gold Level in problem solving on Hacker Rank and 3 star in LeetCode.** [June'17 | July'20]
- **Bass Guitarist at musical band – 6 Miles Ahead:** Numerous wins in Battle of Bands held at various Colleges. [Sep'17 - May'20]