



**Koustav Sen**  
**Computer Science & Engineering**  
**Indian Institute of Technology Bombay**

**190050062**  
**UG Second Year**  
**Male**  
**DOB: 19-Aug-2000**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	0.00
Intermediate/+2	CBSE	Hemsheela Model School	2019	97.20
Matriculation	ICSE	St. Joseph's Convent Higher Secondary School	2017	97.60

Pursuing Minor in **Industrial Engineering and Operations Research (IEOR)**

## SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 42** in JEE Advanced among 2,00,000 candidates [2019]
- Achieved **All India Rank 29** in JEE Main among 1.2 million candidates [2019]
- Recipient of prestigious **KVPY Fellowship** by Dept. of Science and Technology, Govt. of India securing **All India Rank 75** in SA stream [2017]
- Recipient of National Talent Search Examination **NTSE** scholarship by NCERT, Government of India [2017]
- Awarded certificate of merit for outstanding academic performance and for being among the top **0.1 percent** of successful candidates in **Physics** for AISSCE [2019]
- Awarded certificate of merit for being placed in **National Top 1%** in **National Science Examinaton** in **Physics** and **Chemistry** [2019]

## PROJECTS UNDERTAKEN

### Red Plag

*Autumn 2020*

*Guide: Prof. Amitabha Sanyal | Ongoing Course Project*

*IIT Bombay*

- Developing a **cloud** based rudimentary **copy checker** for computer programs using **Django**, terminal client and authenticated users to have access to the service
- Implementing the **Local** and **Winnowing** algorithms for document fingerprinting and calculating the covariance matrix for the set of files
- Implementing vectorization and manipulation of text files using **NLTK** library of python
- Extended the algorithms to represent the data graphically using surface plots on **Matplotlib**

### Machine Learning GYM

*Summer 2020*

*Season of Code*

*Web and Coding Club, IIT Bombay*

- Implemented **Logistic Regression** and **n-layer Neural Network** model from scratch using **Numpy** for general binary classification problem
- Extended the algorithms to **multi-class** classification using **Softmax Regression**

### Image Compression and Noise Reduction

*Autumn 2020*

*Guide: Prof. Amitabha Sanyal | Course Project*

*IIT Bombay*

- Replaced all color vectors in an Image with their **K Cluster Centroids** using **KMeans Algorithm** of **Scipy** Library
- Reconstructed Image from given (possibly overlapping) patches while minimising the **salt and pepper noise**

## Deep-Learning in Image Recognition

Summer 2020

Self Project

- Implemented a **Deep Neural Network** for **Image Classification** using **Tensorflow**
- Implemented a **Convolutional Neural Network** model for image classification and compared the results with a deep neural network
- Implemented a **Residual Neural Network** model for sign recognition using **Keras** and **Tensorflow** to improve over a CNN model
- Explored and implemented **YOLO** algorithm for autonomous driving and developed a model using weights from previously trained model

## Levitt's Metric

Autumn 2020

Guide: Prof. Amitabha Sanyal | Course Project

IIT Bombay

- Implemented **Levitt's Metric** to represent Covid-19 India cumulative deaths data using **Matplotlib**, **Pandas** and **Numpy** for data analysis and pre-processing
- Implemented **Linear Regression** model of **SciPy** library to fit the data and using the obtained line to predict the time required for the pandemic to end

## TECHNICAL SKILLS

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<b>Languages</b>	C++, Python, L <sup>A</sup> T <sub>E</sub> X
<b>Web Development</b>	HTML, CSS, JavaScript, Bootstrap
<b>Machine Learning</b>	Numpy, Pandas, Tensorflow, Keras, Matplotlib, SciPy
<b>Softwares</b>	MATLAB, AutoCAD, SolidWorks

## COURSES UNDERTAKEN

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<b>Computer Science</b>	Data Structures and Algorithms + Lab*, Software Systems Lab*, Discrete Structures*, Data Interpretation and Analysis*, Logic for Computer Science**, Digital Logic Design + Lab**, Design and Analysis of Algorithms**, Computer Networks + Lab**, Abstractions and Paradigms in Programming Language, Computer Programming and Utilization
<b>Mathematics</b>	Calculus, Linear Algebra
<b>Online Courses</b>	Deep Learning Specialization (By deeplearning.ai), Convolutional Neural Networks in TensorFlow (By deeplearning.ai), Sequence Models (By deeplearning.ai)
<b>Miscellaneous</b>	Optimization Models*, Introduction to Electrical and Electronic Circuits*, Organic and Inorganic Chemistry, Physical Chemistry, Engineering Drawing, Biology

\*\*to be completed by April 2021, \*to be completed in November 2020

## EXTRA CURRICULAR

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- Committed to **Green Campus** initiative under **National Service Scheme**, IIT Bombay by planting trees inside the Institute, collecting and reusing plastic waste to make flower pots and made a presentation on **Hot Composting** method of organic farming [2019-20]
- Successfully designed a **remote controlled bot** in **XLR8** competition conducted by Electronics and Robotics Club, IIT Bombay [2019]
- Attended **Vijyoshi Camp**, organized by Indian Institute of Science (IISc), Bangalore for facilitating interaction and discussion among bright young minds and leading researchers [2019]