

# Kaustav Ghosh

## Curriculum Vitae

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### Interests

Computer Science, Web Development, Software Engineering, Artificial Intelligence

### Education

- 2018–2022 **Bachelor of Technology in Computer Science & Engineering**,  
*Manipal Institute of Technology*, Manipal.  
Specializing in Computational Intelligence (CGPA 8.57)
- 2015–2017 **Central Board of Secondary Education, Science**,  
*Amity International School*, Gurgaon, Sector-43.  
Aggregate – 91%
- 2013–2015 **Central Board of Secondary Education, Science**,  
*Suncity World School*, Gurgaon, Sector-54.  
(CGPA 9.8)

### Work Experience

- Jan'22– **Software Development Engineer Intern**, HEVO DATA, Bangalore, India.
- Jun'22 **Manager : Aaghran Ghosh** (Product Manager @ HevoData).
  - Designed and implemented an end-to-end connector and SDK for the data source, Braze, a software as a service (SaaS) platform for Customer Engagement by deciding the source objects, the polling strategies, building the SDK authentication, models, client, and the connector offset, tasks, and services for polling each source object. All of this was supplemented by appropriate error handling for Socket Connection and Polling.
  - Worked on and resolved several bugs on already existing connectors tracked by Sentry and Coralogix
  - Worked on and resolved Google Big-Query and Marketo On-call issues supported with Senior developers
  - Developed Unit tests for Outbrain
- Jun'21–Jul'21 **Software Engineer Intern - IoT Products and Analytics**, SAMSUNG RESEARCH, Bangalore, India.  
**Manager : Shyamakshi Ghosh** (Senior Chief Engineer at Samsung R&D Institute Bangalore).
  - Designed & implemented MQTT bridge functionality for Moquette, an open-source lightweight Java MQTT broker.
  - Developed a socket programming system for the transfer of messages between the MQTT message broker and the bridge client.
  - Developed a lexical analyzer to parse the user-specified configuration of the bridge properties.
- Apr–Jun'20 **Machine Learning Intern**, MICROSOFT STUDENT PARTNERS, Remote, India.  
**Project Certificate. Team Repository.**
  - Guided a team of 10 individuals to collaborate and accomplish a Regression task of price prediction of used cars
  - Performed Feature Engineering to extract the most important attributes of the data-set using Uni-variate and Multi-variate Filtering techniques, Mutual Entropy Gain Filtering and also feature selection using RMSE Regression and ANOVA Test
  - Performed basic Data wrangling and processing using Numpy and Pandas and visualized it using Matplotlib and Seaborn and finally built the machine learning model using an XGboost Regressor
  - Also completed a Mini Project on extensive Data Visualization and Analysis using Matplotlib and Seaborn to gather useful insights of the data**Mini Project Feature Engineering Notebook. Model Notebook. EDA Notebook**
- May'20 **Data Analytics Intern**, TAKENMIND TECHNOLOGIES, Remote, India.  
**Project Certificate. Team Repository.**
  - Worked on Analyzing Industrial Data, predicting and presenting trends, using tools such as Exploratory Data Analysis, Machine Learning Algorithms and Data Organization-cum-visualization.

## Research Projects

- Oct'20- **Samsung PRISM** Intelligent Ranking for Dynamic Restoration in Next Generation Wireless Networks  
Mar'21
  - Implemented Machine Learning algorithms and Feature Engineering techniques to predict KPI values for eNodeB-s and consequently a ranking system to orderly restore them during blackouts

## Academic Projects

### Compiler **Front End of a Compiler**

- Design
  - Coded a **Lexical Analyser** that extracts tokens from a C source file and a **Symbol Table Generator** to store information of identifiers and functions.[**Code**]
  - Coded a **Recursive Decent Parser** that semantically parses the *grammar for subset of C-Language* by analysing the tokens generated by the Lexical Analyser, reports syntactic & semantic errors [**Code**]

### Web **Noteups - A Lecture Notes sharing platform**

- Development
  - Implemented the frontend using ReactJS and vanilla Redux, Redux Toolkit and RTK Query for state management, Framer Motion for animations and Styled Components for styling, Media Queries for responsive design, Sass for CSS pre-processing and Font Awesome for icons.
  - Implemented the backend using NodeJS and ExpressJS for server-side rendering, used MongoDB for NoSQL DB, Cloudinary for pdf and metadata storage, and PassportJS for JWT authentication and Social Login.
  - Implemented functionality to synchronize the note products between Cloudinary and MongoDB.
  - Implemented cart functionality for users to add products to their cart and check out the cart.
  - Integrated the backend with Stripe card payments and working on integrating Paypal and Razorpay for subscription payments.
  - Setup automatic deployments of the frontend using Netlify and the backend using Heroku.

### Machine Learning & Time Series Forecasting **Covid-19 Data Analysis, Time Series Forecasting and Web Scraping**

- Link to Certificate :** Certificate. **Link to Code :** Repository.
  - Prepared a complete Data Analysis report on the Worldwide COVID-19 attack statistics and used Facebook's Fbprophet Time-series Forecasting library to speculate the number of active corona victim cases in the upcoming days.
  - Also used a corona data-set of my country and the Python folium package for the binding of data to a map for choropleth visualizations. Further used Beautiful Soup and Requests HTTP library for Web Scraping of live corona stats.
  - Implemented code snippets for the pre-processing of data & data wrangling and visualized the data via several Matplotlib and Seaborn tools
  - Created neural networks from scratch which facilitated in implementation of a machine learning model to recognize the function of an XOR gate without explicitly being programmed.
  - Trained a Deep Learning model with TF2 and Keras API for MNIST Handwritten digit Recognition

### Machine Learning **Kaggle - Advanced House Price Prediction Regression Techniques**

- With 79 explanatory variables describing (almost) every aspect of residential homes in Ames, Iowa, applied feature engineering and machine learning techniques to predict the final price of each home.**Repository.**

### Machine Learning & Deep Learning **Machine Learning & Deep Learning Algorithms Implementations from scratch**

- Implemented basic machine learning algorithms such as Linear Regression, K-Nearest Neighbours, Logistic Regression, and K-Means Clustering from scratch without existing machine learning libraries. Implemented a few gradient descent algorithms

**Source Code.**

### Deep Learning **Transformers family**

- Working on developing a deep learning project using the Transformers library for text preprocessing, tokenization, and embedding.

**Repository.**

## Algorithms & **Backtracking Algorithms**

- Data Structures
  - o Coded a **Crossword Solver** that takes a 10\*10 grid and word list and outputs a grid with the words accurately filled into the slots. **[Code]**
  - o Coded a **Sudoku Solver** that takes a partially filled 9\*9 sudoku grid and outputs a solution so that every row, column and nine 3x3 subgrids contains exactly 1 instance of the digits from 1 to 9. **[Code]**

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## Positions of Responsibility

Jan'20 - Local Committee Member of IOSD (International Organization of Software Developers)  
Jan'22

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## Technical Section

Softwares: AutoCAD, Matlab, Keil, Altera MaxPlus 2, VirtualBox, Vm Ware, Oracle SQL, GNS 3 Network Simulator  
Programming Languages: Fluent in C/C++ & Python, Familiar with Java, Verilog, L<sup>A</sup>T<sub>E</sub>X, Linux Shell Scripting, fair acquaintance with ARM assembly programming (*NXP LPC 1768*)  
Libraries & Frameworks: **C++**-STL **Python**-Numpy, Pandas, Scikit-Learn, Keras, Tensorflow, PyTorch **Java**-JavaFX GUI  
Web-Dev: JavaScript, ReactJS, NodeJS, prefer MERN stack

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## Courses Taken

### Off-Campus Academies and Online Courses

Coding Ninjas Competitive Programming

- o **Link to Cpp, Data structures and Algorithms Repository**
- o Link to Completion Certificate
- o Link to Top Performer Certificate

### College Curriculum

Engineering Mathematics, Data Structures, Object-Oriented Programming with Java, Digital System Design with Verilog, Computer Organization and Architecture, Database Systems, Theory of Computation, Embedded Systems, Algorithms, Operating Systems, Computer Networks, Compiler Design, Software Engineering, Robotics, Smart Sensors