

Aryan Dua

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Career Objective

2nd year Computer Science student at IIT Delhi with decent academic record and keen interest in Computers and developing new technologies.

Academics

- GPA(2020-present) - 9.08
- Senior Secondary Examinations - 97.2%
- Secondary Examinations - 96.4%

Achievements

- Department Rank 4 (Among the top 7% of all students in semesters 1 and 2.
- Secured All India Rank 516(out of 250,000 students) in JEE(Advanced) 2020
- Secured All India Rank 534(out of 1 million students) in JEE(Mains) 2020
- Secured All India Rank 677(out of 50,000 students) in KVPY 2020
- Among the top 100 students who gave BITSAT in 2020
- Among the top 1% in National Standard Examination in Chemistry
- Qualified for the Indian National Chemistry Olympiad 2020
- Won a bronze medal at the regional level in the World Robot Olympiad 2017.

Technical Skills

>Programming Languages - Python, Prolog, SML, VHDL, Assembly, Java, C, C++, HTML, CSS, can write shell scripts, makefiles.
>Softwares/Tools: FreeCAD, MATLAB
>Can set up various Machine learning models.

Academic Projects

Data Driven Selection in Artificial muscles

Jan 2022 - March 2022

Machine learning

- Built a multi-label SVM classifier which can classify the type of actuator required based on the input features like Stress, Strain, Efficiency, etc. The data collected from the research site was sparse and incomplete and so I had to implement a novel approach to build the classifier with an accuracy of 72% as of now. Instead of using all 5 feature columns to build the classifier, I had to use them 2 at a time to maximise training examples with all non-null features and then build 10 classifiers. I then found the final prediction by compiling the predictions from all the classifiers.

Edge Detection

Jan 2022 - March 2022

Signals and Systems

- Built a program to detect edges in an image using the properties of high and low-pass filters, 2D convolutions, Gaussian kernels, Fourier transforms, etc. The novel part about this project was that we did not use the built-in OpenCV library functions, we implemented the whole program ourselves, from scratch.

Speech Processor

Jan 2022 - March 2022

Machine Learning for speech

- Built a basic audio-processing library which can recognise a set of 12 given keywords from any 1 second audio clip. The Machine learning algorithm for this project was written in C++. There were helper files to ease the implementation, they are in C++, python, bash script and Make.

Developing machine learning models

July 2021 - Dec 2021

Stanford University, Coursera

- Developing machine learning models to solve problems based on classification, neural networks, supervised and unsupervised learning algorithms.

Building a compiler

Jan 2022 - March 2022

Compiler Design

- Built a full compiler which first converts any given program written in the WHILE programming language to an Abstract Syntax Tree, then from that AST it evaluates the program using a VMC Stack Machine implementation(Value - Memory - Command). The code of the compiler was written in sml(ml-lex and ml-yacc were used for lexing and parsing the program)

Building my own processor

Jan 2022 - March 2022

Computer Hardware

- Built a full processor which can execute any set of machine level instructions. If you convert any program written in assembly to its corresponding binary representation, it will execute the given set of commands. All of this was written in VHDL.

Building my own cryptocurrency

Aug 2021 - Nov 2021

COL106

- Developing and implementing my own Cryptocurrency, as well as the software for processing transactions through data structures in Java

Relevant Courses

University Courses

Aug 2021 - Nov 2021

- Data Structures and Algorithms, Machine Learning, Programming Languages, Computer Architecture, Probability and Stochastic processes, Design Practices, Signals and Systems

Online

Aug 2021 - Nov 2021

Stanford University and Deeplearning.ai, Coursera

- Machine Learning, Neural Networks and Deep Learning, Structuring Machine Learning Projects, Advanced Deep Neural Networks, Convolutional Neural Networks

Extra-Curriculars

- Played Cricket, Badminton and Chess, as hobbies
- Member of Institute's Drama team.
- Have represented my school at a national level quiz, Newswiz, that aired on India Today. The quiz was based on current affairs.
- Have won debate competitions and have hosted a couple of large-audience events.
- Participated in many robotics competitions, building and programming bots, using arduinos as well as lego mindstorms.

Social Service

- Worked as a volunteer for NSS IIT Delhi by going from door to door to ask for donations that we could give to the underprivileged.
- Working as a teacher for underprivileged students and teaching them maths, also through NSS