IIT Delhi
Indian Institute of Technology Delhi

Aryan Dua

Computer Science
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Course	College/University	Year	CGPA/%
Computer Science	IIT Delhi	2020-Present	8.89
Senior Secondary Examinations	SNBP International School, Pune	2020	97.2
Secondary Examinations	Vibgyor High, Pune	2018	96.4

SCHOLASTIC ACHIEVEMENTS

- Department **Rank 6** [2020 - Present]
- Among the **top 7%** of all students in semesters 1 and 2 [2020 - 2021]
- 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 [2020]
- Among the **top 1%** in National Standard Examination in Chemistry [2021]
- One of the **top 685** students to qualify for the **Indian National Chemistry Olympiad** [2021]
- Won a **Bronze** medal at the regional level in the **World Robot Olympiad** [2017]

WORK EXPERIENCE

- **ML Intern | Ripik.ai** [May'23 - Present]
  - Helped the team build artificial intelligence and machine learning applications for industrial companies to improve their bottom line without any capital expenditure.
  - Built algorithms to optimise the resource utilization and maximise the production of industrial companies.
- **Research Intern | Zuse Institute Berlin** [Jun'22-Aug'22]
  - Programmed asynchronous algorithms which involve gradients, projections and proximity operators and determining hyper-parameter selection strategies for the synchronous and asynchronous version of the algorithms and comparing them both.

SKILLS & INTERESTS

- **Programming Languages**: Java, Python, Prolog, SML, VHDL, Assembly, C, C++, HTML, CSS, Julia, Bash, Makefiles, SQL
- **Tools & Libraries**: Scipy, Matplotlib, Tensorflow, Pandas, Numpy, Pytorch
- **Interests**: Data Analysis, Machine Learning, Algorithms

PROJECTS

- **Multi-Class Classification | Prof. Parag Singla** [Oct'22 - Nov'22]
  - Implemented a general neural network architecture to learn a model for multi-class classification, working on Fashion-MNIST data set (a data set of Zalando's article images, where each example is represented as a 28 x 28 grayscale image, with a label from 10 classes)
- **Built a Covid-19 Data Visualiser | Prof. Srikantha Bedathur** [April'22 - May'22]
  - From open source data, I built a web application using Django with a Postgres-12 server at the backend. The application lets you choose the filters to apply for certain statistics of a country, displays the list of countries that satisfy the filter and plots Covid-19 graphs for those countries.
- **Tinkering the Linux Kernel | Prof. Smruti S. Sarangi** [Feb'23 - April'23]
  - Completed 2 out of 3 'hard' assignments based on the latest Linux Kernel. Implemented everything from scheduling to memory to device drivers in the kernel. Was privileged to be a part of the first Operating Systems course in the world to teach concepts practically through the Linux Kernel. We spent 4 months looking at the intricacies of the kernel code during lectures and applied these concepts in assignments wherein we had to look through the kernel documentation and elixir.bootlin.

- **Developing machine learning models | Stanford University, Coursera** [July'21 - Dec'21]
  - Developing machine learning models to solve problems based on classification, neural networks, supervised and unsupervised learning algorithms.
- **Text Classifier | Prof. Parag Singla** [Sept'22 - Oct'22]
  - Implemented and constructed a text classifier using the Naive Bayes Algorithm which works on a Large movie review data set and predicts the sentiment of a movie review as positive or negative.
  - Also formed a word cloud of the most frequently occurring words of the positive and negative classes.
- **Data Driven Selection in Artificial muscles | Prof. Sitikantha Roy** [Jan'22 - March'22]
  - 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.
- **Automated Correction of Incorrectly Recognised Text | Prof. Rohan Paul** [Oct'22 - Nov'22]
  - Applied search-based methods for determining possible corrections for the input erroneous text.
- **Building my own processor | Prof. Anshul Kumar** [Jan'22 - March'22]
  - 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 a compiler | Prof. S. Arun Kumar** [Jan'22 - March'22]
  - 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 a Speech Processor | Prof. Rijurekha Sen** [Jan'22 - March'22]
  - 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.

RELEVANT COURSES

- Game Theory | Cloud Computing | Algorithms | Logic [Presently Doing]
- ML | AI | DBMS | DSA | OS | Programming Languages | Computer Architecture | Probability [Completed]
- ML | DL | Neural Networks | CNNs | RNNs [Online Courses]

POSITIONS OF RESPONSIBILITY

- **Executive | National Service Scheme** [June'22 - May'23]
  - Organised activities through various events and projects which were aimed towards the benefit of people in and around IIT Delhi, and was a part of the organising team of an event in our college fest, Kaizen '23.
- **Academic Mentor | Board of Student Welfare** [Apr'22-Jun'22]
  - Helped junior freshmen students as an Academic mentor in the course COL100, Introduction to Programming (in Python).

EXTRACURRICULAR ACTIVITIES

- 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, both using arduinos as well as EV3 kits.