Tell me about yourself

[For data science] -

~~Hi~~ Good morning/evening/afternoon Im Ayush Agarwal from electronics engineering iit bhu . So, about me, as a kid I used to love tinkering with stuff and understanding how things work. So I took this electronics degree . I used to be really passionate about automating stuff. So when I got into college in 1st year, I got introduced to machine learning and data science from my college events in udyam and from robotics club . ~~I started with computer vision domain from my robotics club, used opencv for sometime, then moved towards exploring deep learning, CNNs . Later as the years progressed, I got introduced to business side of things, and I started applying my data science skills to business, Finance, Marketing , and even medical domain. I started taking up lots of courses in ML.~~

Since I really like building stuff and working on projects,I started exploring, I took up lots of courses on machine learning**, I applied data science in engineering, business, finance, marketing, medical etc**. I started picking up a lot of data science related projects, I've worked on the credit card fraud detection, starbucks customer segmentation, stained cell counter, invoice payment prediction system, I've worked on CNNs, UNets, and even DCGANs also, I did the basic MNIST project, and Music source separation project, made a DCGAN also, I worked a bit on NLP side also and made a basic spam classifier .

So yeah, apart from that , I ve won competitions in ML like the ones on my resume, and Ive even been **to inter iit ml team twice**, Ive won in recognizance, Cassandra, whereever I didn't win I took that as a learning experience also. I started reading data science articles to improve my knowledge and make myself aware of different domains like little bit each on reinforcement learning , time series, nlp, cv etc . I know a little bit of SQL and Power BI also .

All this stuff would probably convince you that I'm a nerd, but apart from all the academic stuff I have a personality too. I like to play guitar in my free time, I like shuffle as a dance form , I'm fond of traveling , I like mobile photography and I'm a foodie too . I like to explore new things and am open to experiences.

#todo – improve intonation make it natural

todo – if the person looks bit in hurry and impatient – then skip hobbies

[For management roles] –

~~Hi~~ Good morning Im Ayush ~~Agarwal~~ from electronics engineering iit bhu . So, about me, as a kid I used to love ~~understanding how things work and~~ understand the "**why"** behind things. Naturally I used to like physics. As life proceeded, I realized that it is now always possible to understand "why" for all the things in the world, but instead it's the "How" that matters. How can I use this concept to build something great, that can serve the purpose for a lot of people. Then I started engineering, and started learning the "How" behind a lot of things.

todo – do not use hindi words , I naturally say – “to(hindi) “ sometimes

Then this one time, I was leading this project that was – Voice Controlled Mecanum Based Forklift, that is VOCMEF. Since it was my vision, my own invention, and I had the rough idea of the mechanical, electronic as well as the machine learning part of the project, I made a group of my friends, and then I explained them my vision, and guided them on what needs to be done. That’s when I realized that even if I know the “How” behind all the things in the world, I wont be able to build the greatest things myself in the world. To build the greatest things, I need to be a true leader, a true visionary, and then guide the people who are specialized in their domains. I realized that what I really liked was the Management role, and that’s where my passion for management role comes from.

Anyways that project, we completed it in the span of 2 weeks, and then secured the 3rd prize in Robotics Conclave in Technex IIT BHU.

Since then, I have worked on diversifying my skill set – Ive had experience with Machine Learning, Data Analytics, Deep Learning, Robotics, Mechatronics, Electronics, Product Management and Business Domains too. I’ve applied Data Science to Marketing, Finance, Medical, Engineering and Business Domains.

I’ve worked upon polishing my communication skills by talking to a lot of people when we came offline to college. I’ve developed a business acumen by reading articles almost daily like Groww and Finshots articles. Ive developed problem solving and multitasking skills by taking up multiple projects, competitions, courses, camps during my college life.

Walk me through your internship –

I got opportunity to work with Nvidia Bangalore as an ASIC Design intern .~~So I was an ASIC Design intern at Nvidia in bangalore this summer~~. So, a bit about my team first, I was in XUSB team in **Tegra SOC** , this team builds chips for EVs that is electric vehicles and for embedded systems.

So, my internship work had 2 parts, the 1st part was pretty short, in that I had to deploy SLCG SFV workflow over different submodules in USB IP, so I did the setup part of the workflow. ~~This is basically called as semi formal verification of second level clock gates~~ . Anyways the **conclusion** of this part is that I made some pretty nice **documentations** for Nvidia and I discovered a critical bug.

My 2nd project in internship, which I found more interesting was applying **Data Analytics over Netlist Linting**. So to explain it in very simplified terms, I would say netlist is basically a collection of logic gates and wires generated from a code called Verilog code, and it can have bugs also, so we run checker tools, generate its error logs dataset and then analyze it.

~~So this checker tool is not very advanced, so a lot of the error logs it generates can be waived off.~~ Also, there are multiple different **types** of errors which are explained in the nvidia internal documentations also, which was huge amount of rules. So, I had to take the error log dataset, apply **rule based data analytics** over it, check the RTL Code to see if the

rules were followed, to take final decisions on those logs, I had to see which waivers could be ported over from the past implementation dataset of the USB IP, I had to generate reports over the waived and analyzed logs and I had to find the bugs and debug them too. The final result of it was that I **debugged another bug** which help in optimizing the clock tree structure and I made a report of the 8000 errors I had analyzed.

Why should you NOT join our company ?

If I join this much esteemed company , I have to give party to my connections xd

Where do you see urself in 5 yrs

In five years I would like to expand my horizons by jumping into the industry and learning as much as I can, as quickly as I can, with the organization. Five years down the line, I see myself as a specialist across multiple domain . I want to work with your organization and create maximum value through my work. Basically I want to build something extremely incredible that it has a huge impact on everyone's lives.

What are your strengths and weaknesses

I believe that my creativity ,task management abilities and fast learning abilities are a great strength . I often tend to work on my own original ideas , and have managed to convert few of them to projects too , I'm highly involved with different club events , competitions and workshops across the college which enhanced my task management skills by a lot . Moreover , working in different fields boosted my learning speed by a lot , as I tend to work with different tools and technologies . Ever since I've come to college, I started working on my communication skills by talking to a lot of people, so I feel that my communication skills are great too.

My weakness I think is that some people tell me that I speak way too fast for them, I'm trying to work on it by giving logical pauses whenever I speak so that it dosent feel very fast to the other person.

My weakness is that I sometimes believe in teamwork too much, and this causes my work to slow down .

Why should we hire you –

Ok , I'll give you 3 reasons on why you should hire me

First , hard core tech skills. I have applied Data Science over Business, Engineering, Medical, Finance, Marketing, I've done about 15-20 projects in Machine learning and deep learning, I've won many ML competitions and been in Inter IIT ML team also, and my technical knowledge sets me apart from my competition .

Two, soft skills. I have very fast learning skills , this I have demonstrated by learning about huge number of domains like ML, Robotics, Electronics, and business within a span of 3 years , I've taken up so many courses . This also adds to the fact that I have a learning attitude, I am focused on advancing my skills rapidly and deliver best content . I also led so many teams while working on so many projects, building a leadership quality within me. Im also a very strong communicator, and have a very innovative mindset.

And finally three, even if you find someone who could match my hard and soft skills, I will assure you that you wont find someone who worships __insert company name here__ like I

do, you won't find someone who is as passionate as me about being a __insert role__ and bringing changes.

Walk me through credit card fraud detection project –

So, as I was gaining more and more skills in Data Science, I wanted to explore the power of data science across multiple domains. So I was looking for how data science is applied across the financial domain, and I came across this term – "Credit risk analysis" (important word – attributes analysis) which I found bit interesting and challenging enough. So while I was scrolling Kaggle datasets, when I saw this particular dataset, I realized that this is a problem that I wanted to solve. So I went for it.

So this dataset was actually a PCA reduced dataset of the actual version, to protect the privacy of the customers. So there was no physically significant variable to analyze except time. We found no correlation between time and frauds after plotting the dataset.

The main challenge in this dataset was that the dataset was severely **imbalanced** .

We also did robust scaling , and then removed outliers using Z score .

Then I generated a lower dimension visualization using PCA and T-SNE to see how "separable" these classes look

Then I trained a Logistic Regression, KNN and Decision Tree Classifier and used metrics like F1 score and ROC AUC score to judge these models. Found that **Logistic regression** worked the best on this dataset.

Walk me through starbucks customer segmentation project –

So, the idea to do this project came when I watched the Netflix documentary – social dilemma . That's when I realized that Data Science is used a lot in the field of marketing also, and hence I wanted to explore how to do it . Also I read a finshots article (or maybe it was grow article) about how starbucks actually acts like a bank and earns a lot from interest on the money deposited with them. I got fascinated by this amazing idea, and wanted to know ki why customers would deposit money with them . That's when I discovered starbucks reward program, and hence decided to do my project along these lines.

Rfm – recency frequency monetary value in marketing studies

Coe – customer offer engagement

There were some enteries with age 118 and rest of the details missing , we removed those rows . Then we did a lot of data engineering to make a central dataset to work upon called as coe which is customer offer engagement .

Then we reduced the dataset dimensions using PCA, which also gave us continuous numbers to work with which is smoother to work with k means, as having any kind of count data would require us to use k medioids , k mode or maybe even **k prototype clustering**. We took 17 out of 39 features, which explained 95% variance as we could see from the **scree plot**.

Then we used power transforms to make the data more “normal” since K means prefers isotropic that is rounder clusters.

Then we performed silhouette analysis and dimensionality reduced plots to figure out the best number of clusters. We found that 6 clusters are feasible. Elbow method was not so conclusive here.

Then we performed cluster analysis for those clusters, meaning we analyzed and studied all the properties of those clusters.

Then since our score was not so high, instead of hard clustering model this time, we decided to choose soft clustering model GMM that is Gaussian Mixture Model and then performed clustering. We visualized our new clusters using t-SNE and looked quite better than our previous results.

Then I made rough conclusions on marketing strategies for these clusters based upon my intuition , and what kind of offers we can give them, and how to proceed with the people in the segments further. I also did some surface level analysis of marketing tactics I saw and recognized on the Starbucks website.

Walk me through your POR –

I was the coordinator of Digisim, the digital electronics competition in Udyam which is my department fest. So when I became the coordinator, the ~~one absolute goal in my mind was~~ one question in my mind was -“**How can we improve this event**” . Having been a participant myself in the previous years, I realized that there was a gap between real life electronics and what was taught.

So then, I curated **innovative problems** in digital electronics based on real life situations , I made the final problem statement based on EVM and Blockchain, and although a lot of people told me that it couldn’t be done, I still took a **bold step and introduced PCB designing** in this event, and it was a great success. About 50 juniors made their first PCBs . This was a great success for me .

Apart from that, I also got opportunities to **speak on stage** to a large crowd which increased my stage speaking skills . I also got to work on my **time management skills**, as I had to coordinate the timings of the workshops with the other events that were simultaneously happening so that the students had enough time to grasp all content and practice, and still manage to finish all the content by the D day . I also got the opportunity to polish my **leadership skills and communication skills** as I had to guide the juniors on how to solve the final problem statements . I also took on the work of the other similar event Funckit since the Funckit coordinator fell sick .

What is your aim in life –

Automation innovation

Hobbies –

Favourite song – Boulevard of broken dreams

Favourite band – I don’t have any favourite band, I listen to a lot of bands and like a variety of music .

Music intrests – Im into EDM these days, although sometimes I prefer listening to popular party songs also

Favourite dance form – shuffle

Favourite dancer – zanouji maybe , in Indian maybe hritik roshan

Favourite photography style – silhouette , monumental photography (proceed to show my insta)

Watch MAS reels –