

# KICKSTART DSA AND FUTURE TECH STACK

-ATHARVA RAHATE



# WHO I AM ?



3<sup>RD</sup> YEAR SGPA 9.07  
OVERALL CGPA 8.4

FINAL YEAR STUDENT(COMPUTER ENGINEERING)

ML INTERN AT INTERNSHIP STUDIOS

DATA SCIENCE INTERN AT CELEBAL TECHNOLOGIES

SPORT ANALYST AT SPORTVOT

MULTIPLE HACKATHON FINALIST AND MADE OVER 120 PROJECTS

# PROJECTS

I've developed two custom Python libraries, VenomLearn, which simplifies AI/ML concepts for beginners with clean algorithm implementations, and BigOwl, a tool to visualize and understand algorithm complexity using interactive charts.

A key project, Tatvadeep, is an AI-powered platform that blends ancient Indian wisdom with modern NLP, knowledge graphs, and custom models to interpret and present philosophical concepts in a tech-friendly format.

## WAS DSA HELPFUL IN THESE?

YEAHHHHHHHHHHHHHHHH!!!!!!

### 01. INTERVEE



### 02. EXPENZA AI



### 03. STEGASHIELD



# WHAT IS DSA???

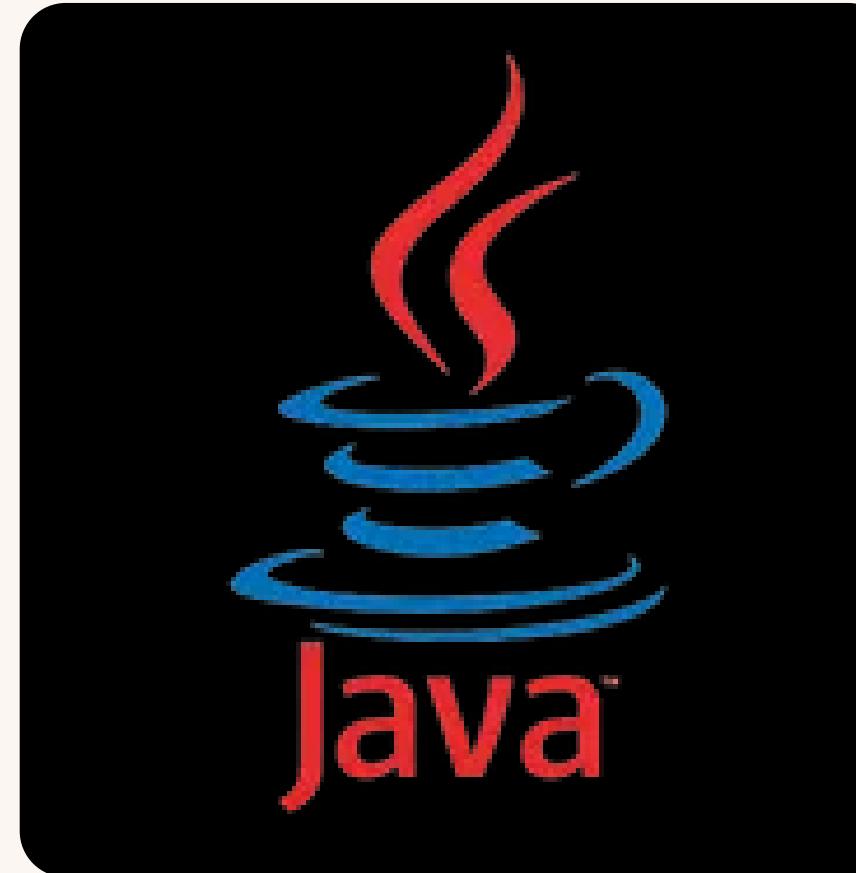
Data Structures and Algorithms provide the foundation for writing programs that are not just correct but optimized in terms of time and space. Whether it's searching, sorting, or path-finding DSA helps you solve problems the smart way.

DSA is a key focus area in technical interviews for companies like Google, Amazon, Adobe, and Microsoft. Mastering it not only improves your problem-solving skills but also opens doors to career-defining opportunities

From handling millions of users in social media apps to processing real-time transactions in banking software, DSA is what makes systems fast, reliable, and scalable. Good DSA is Good architecture.

Learning DSA teaches you how to break down problems, design logical solutions, and think algorithmically essential traits for any software developer, data scientist, or engineer building real-world systems.

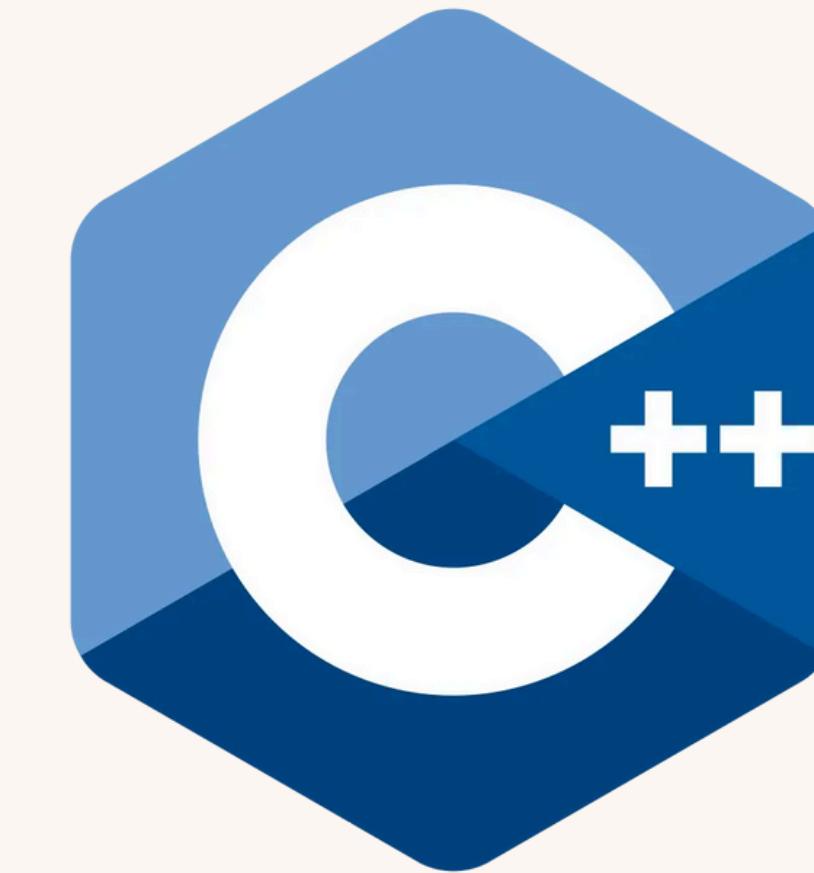
# WHAT LANGUAGE?



Reliable and industry-trusted Java's object-oriented design and robust libraries make it perfect for real-world DSA and job interviews.



Beginner friendly and super readable Python helps you focus on solving the problem, not wrestling with syntax. Great for learning DSA concepts fast



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# INDUSTRY USE

## 01. JAVA

Powers enterprise applications, Android development, backend systems (Spring), cloud-based tools, financial services, and large-scale distributed systems due to its portability and scalability.

## 02. PYTHON

Used extensively in machine learning, data science, automation, backend development, web scraping, testing, and scripting thanks to its simplicity and vast library ecosystem.

## 03. C++

Commonly used in game development (Unreal Engine), operating systems (Windows/Linux), competitive programming, embedded systems, and performance-critical applications like trading platforms.

# SERVICE BASED PRODUCT BASED

ASPECT	SERVICE-BASED COMPANIES	PRODUCT-BASED COMPANIES
<b>BUSINESS MODEL</b>	Provide services or solutions to clients	Build and sell their own products to customers
<b>EXAMPLES</b>	Infosys, TCS, Wipro, Cognizant	Google, Microsoft, Adobe, Amazon
<b>WORK NATURE</b>	Client-specific projects, multiple domains	Core development of a single or suite of products
<b>LEARNING CURVE</b>	Exposure to varied tech stacks & domains	Deep knowledge of specific technologies or products
<b>TECH STACK</b>	Depends on client/project needs	Mostly fixed & internally optimized
<b>SALARY &amp; BENEFITS</b>	Often moderate for freshers	Usually higher with better perks and stock options
<b>WORK PRESSURE</b>	Client deadlines & communication	High ownership, innovation-driven deadlines
<b>CAREER GROWTH</b>	Process-driven with slow-to-moderate progression	Faster growth for skilled developers and innovators

# PATTERNS IN DSA

<a href="#"><u>Pattern 1: Sliding Window</u></a>	<a href="#"><u>Pattern 9: Two Heaps</u></a>
<a href="#"><u>Pattern 2: Two Pointer</u></a>	<a href="#"><u>Pattern 10: Subsets</u></a>
<a href="#"><u>Pattern 3: Fast &amp; Slow pointers</u></a>	<a href="#"><u>Pattern 11: Modified Binary Search</u></a>
<a href="#"><u>Pattern 4: Merge Intervals</u></a>	<a href="#"><u>Pattern 12: Bitwise XOR</u></a>
<a href="#"><u>Pattern 5: Cyclic Sort</u></a>	<a href="#"><u>Pattern 13: Top 'K' Elements</u></a>
<a href="#"><u>Pattern 6: In-place Reversal of a LinkedList</u></a>	<a href="#"><u>Pattern 14: K-way merge</u></a>
<a href="#"><u>Pattern 7: Tree Breadth First Search</u></a>	<a href="#"><u>Pattern 15: 0/1 Knapsack (Dynamic Programming)</u></a>
<a href="#"><u>Pattern 8: Depth First Search (DFS)</u></a>	<a href="#"><u>Pattern 16: Topological Sort (Graph)</u></a>

 Chanda-Abdul/**Several-Coding-Patterns-for-Solving-Data-Structures-and-Algorithms-Problems-during-Interviews**

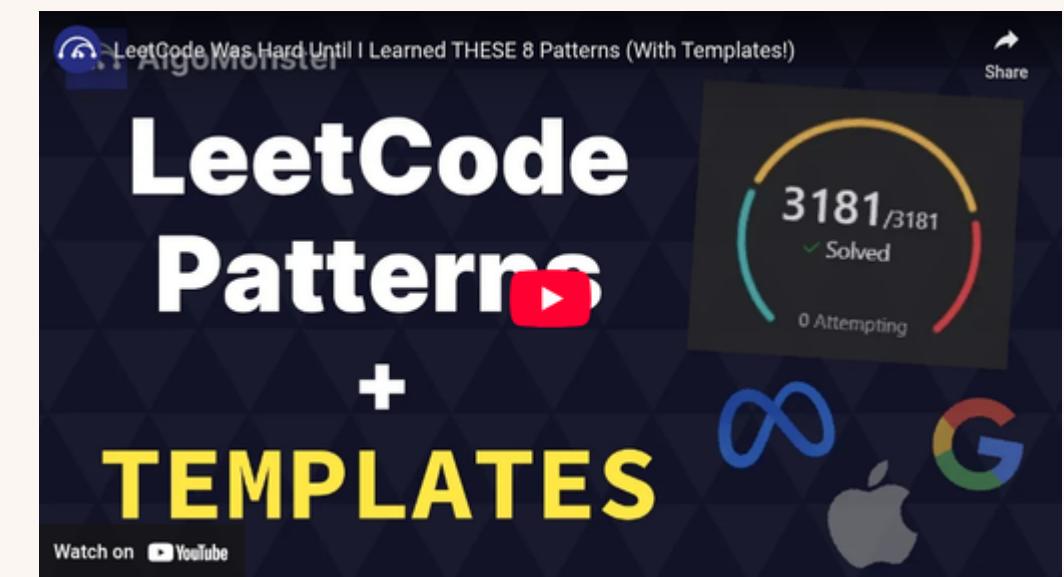
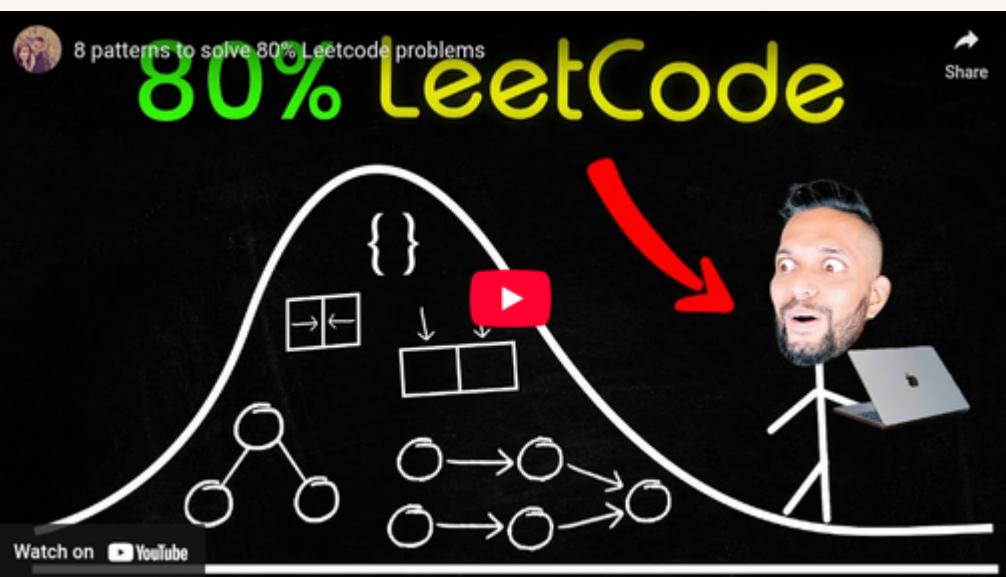
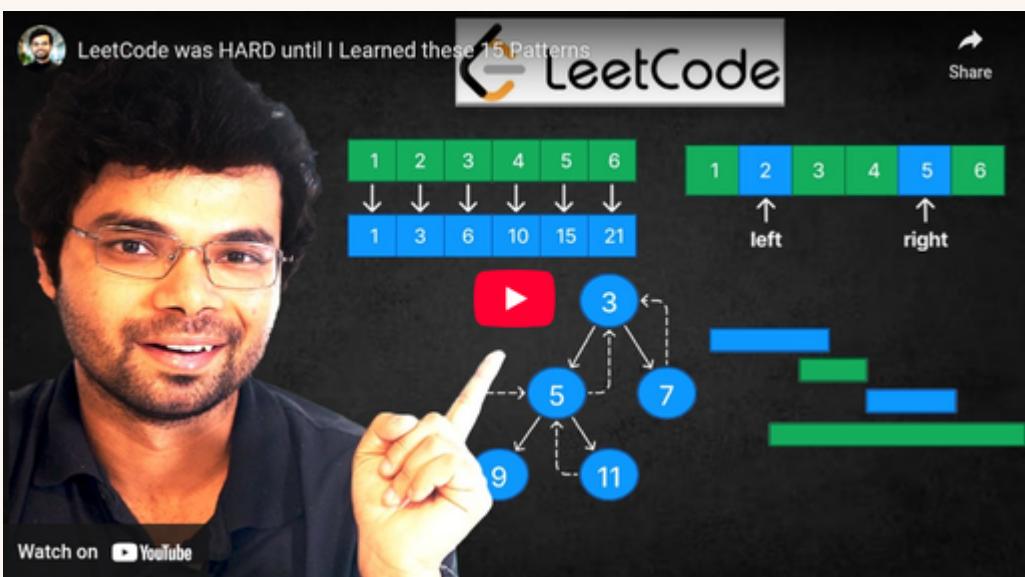
Several Coding Patterns for Solving Data Structures and Algorithms Problems during Interviews

1 Contributor 6 Issues 3k Stars 822 Forks

[GitHub](#)

**Chanda-Abdul/Several-Coding-Patterns-for-Solving-Data-Structures-and-Algorithms-Problems-during-Interviews:**

Several Coding Patterns for Solving Data Structures and Algorithms Problems during Interviews - Chanda-Abdul/Several-Coding-Patterns-for-Solving-Data-Structures-and-Algorithms-Problems-during-Interviews...



# LET'S SEE SOME PROBLEMS

 Medium Score - 120/120

### Problem Statement

You have M coins placed on the floor, all initially showing tails.

- In the first round, you flip all the coins to heads.
- In the second round, you flip every second coin that is currently showing heads, turning it to tails.
- In the third round, you flip every third coin, toggling it between heads and tails.
- In the ith round, you flip every ith coin.

After performing this for M rounds, where in the last round you only flip the Mth coin, determine how many coins are showing heads.

### Input Format

The first line contains an integer M representing the number of coins.

### Output Format

Print the number of coins that are showing heads after M rounds.

 Medium Score - 0/120

### Problem Statement

You are given an array of length N. This array is sorted and contains several duplicates that must be removed.

You are supposed to clean the duplicates from the array and then print a special sum.

The special sum is defined as follows:

Let's say there are 3 unique values in arrays 1,2,3.

The special sum would be:  $2^1 + 2^2 + 2^3 = 2 + 4 + 8 = 14$

### Input Format

The first line of the input contains the size of the integer array, N.

The second line of the input contains N space-separated integers denoting the elements of the array nums.

### Output Format

Return the special sum obtained.

 Easy Score - 0/100

### Problem Statement

Once upon a time, a city biker embarked on an exciting road trip. This journey was laid out across a sequence of n+1 points, each with varying altitudes. The biker's adventure commenced at point 0, where the altitude was a humble 0 meters above sea level.

During his expedition, he encountered different terrains. For every segment between points i and i+1, where  $0 \leq i < n$ , the biker faced varying challenges in altitude. Each segment was represented by an integer array called gain of length n, where gain[i] denoted the net gain in altitude between points i and i+1.

The biker's goal was to find the highest altitude he reached during his journey. This altitude was determined by the net gain in altitude at each point along the way. It could be a thrilling peak or a serene valley, depending on the varying gains between consecutive points.

### Input Format

- The first line of the input contains an integer n – the number of elements.
- The next line contains n space-separated integers.

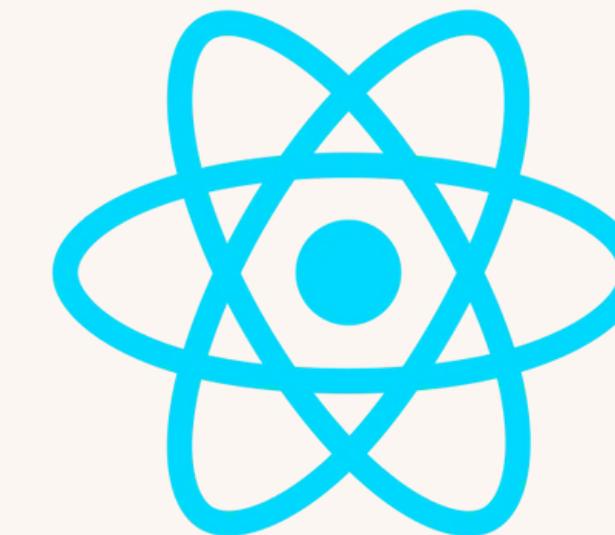
### Output Format

City Biker needs to return the highest altitude of a point.

# FUTURE TECH STACK

The future tech stack blends:

1. AI (with TensorFlow, PyTorch),
2. Web3 (Solidity, Ethereum),
3. Modern web tools (React, Next.js),
4. Automation (n8n),
5. cybersecurity (Kali Linux, Burp Suite) to power next-gen innovations.



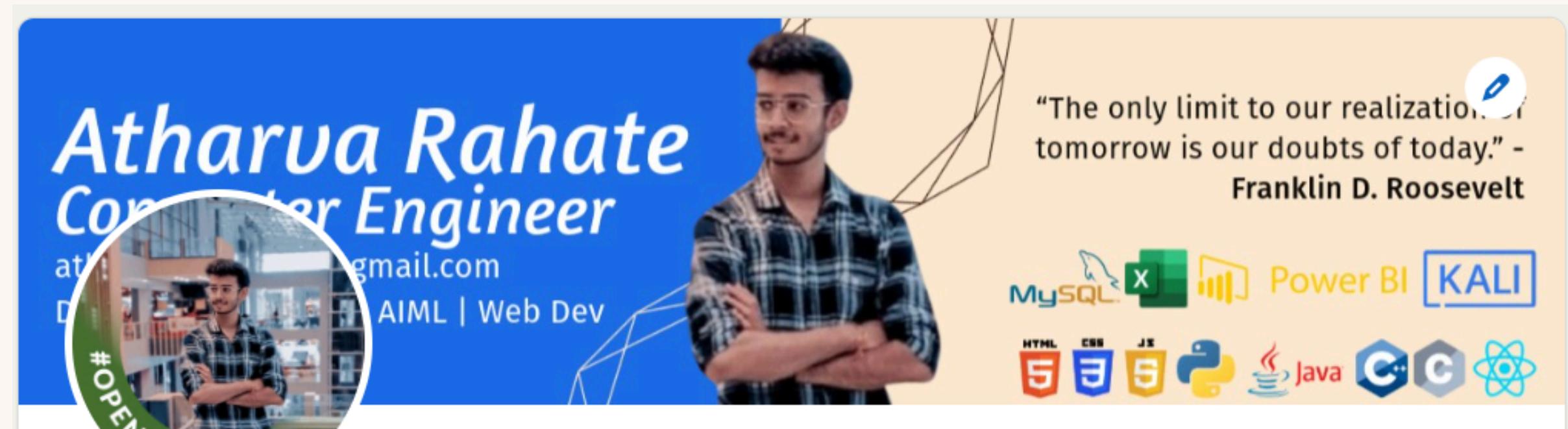
## WHAT TO LEARN NEXT ???

Python for ai  
Nextjs and reactjs for Webapps  
java or python for dsa  
c++ and c# for game dev  
n8n and zapaire for AI automations.....



TensorFlow

# IF ANY DOUBTS CONNECT ME ON LINKEDIN



A LinkedIn profile card for Atharva Rahate, Computer Engineer. The profile picture shows him in a plaid shirt. The card includes his name, title, email (atharvrahate12@gmail.com), and experience (AIML | Web Dev). It also features a circular badge with "#OPENTOWORK". On the right, there's a quote by Franklin D. Roosevelt: "The only limit to our realization of tomorrow is our doubts of today." Below the quote are icons for MySQL, Excel, Power BI, KALI, HTML5, CSS3, JS, Python, Java, C, C++, and React. At the bottom, it lists his current employer (Celebal Technologies) and previous education (PUNE VIDYARTHI GRIHA'S COLLEGE OF ENGINEERING,...).

**Atharva Rahate**  He/Him

AI Engineer | CSI @ Celebal Technology | Ex-AIML Intern @ Internship studio | Ex-Intern @ Tallent Battle | Building Scalable AI Solutions with Python & React | 8K+ Followers LinkedIn | BE Computer Engineering 2026

Nashik, Maharashtra, India · [Contact info](#)

[My LinkTree](#) 

8,904 followers · 500+ connections

"The only limit to our realization of tomorrow is our doubts of today." - Franklin D. Roosevelt

MySQL X Power BI KALI

HTML5 CSS3 JS Python Java C C++ React

Celebal Technologies

PUNE VIDYARTHI GRIHA'S COLLEGE OF ENGINEERING,...

# RESOURCES THAT I USE



## CodeWithHarry

Code With Harry is my attempt to teach basics and those coding techniques to people in short time which took me ages to learn. At Code With Harry, I...

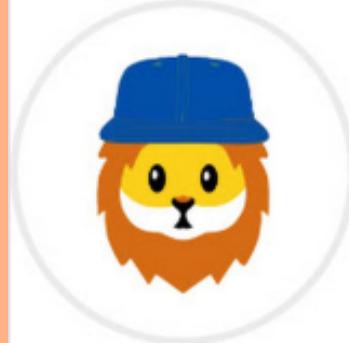
[YouTube](#)



## AI Foundations

Learn to leverage market moving AI tools.

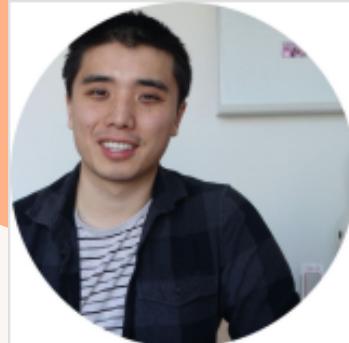
[YouTube](#)



## Sheryians Coding School

The Sheryians Coding School is a step towards helping our Indian audience to learn modern design and coding practices.

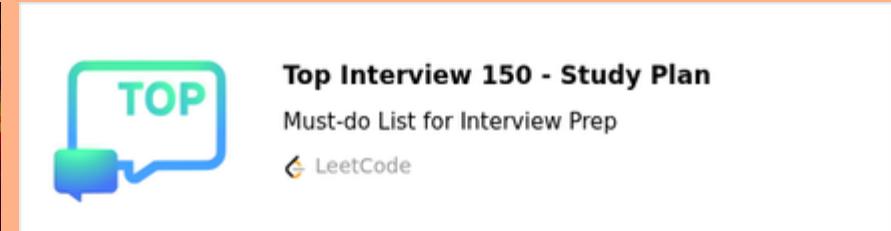
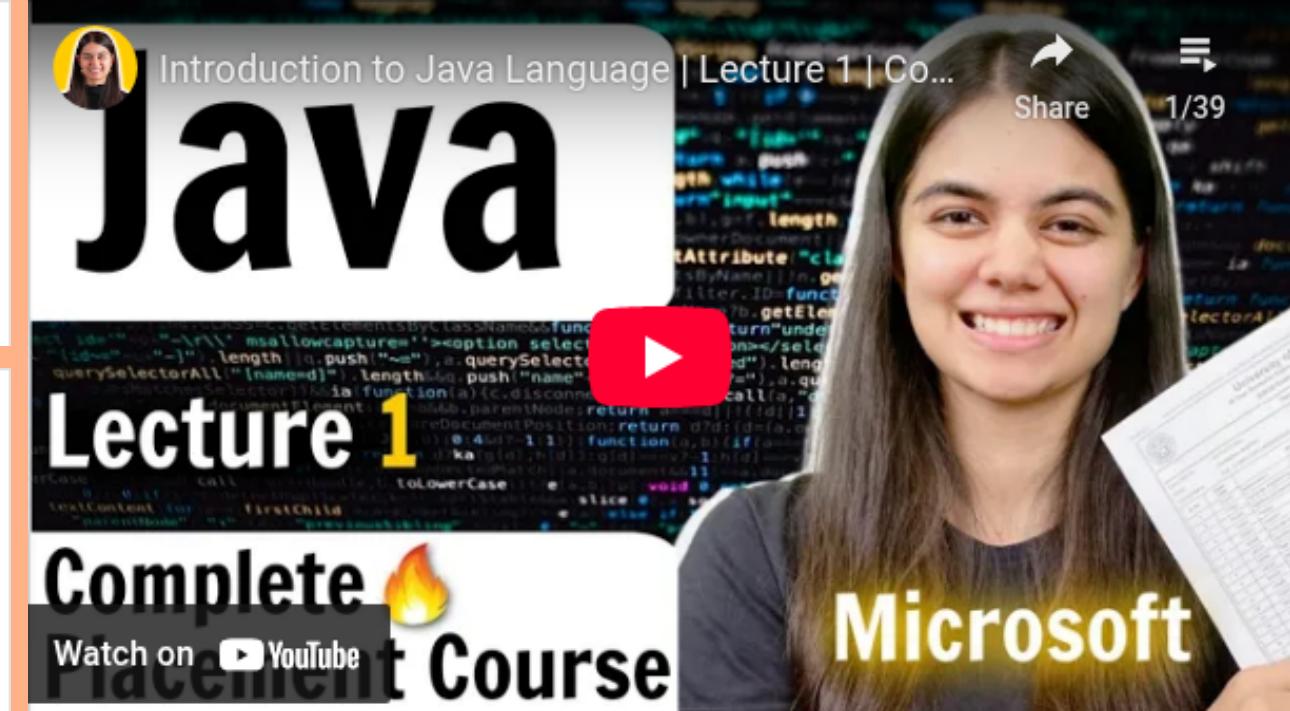
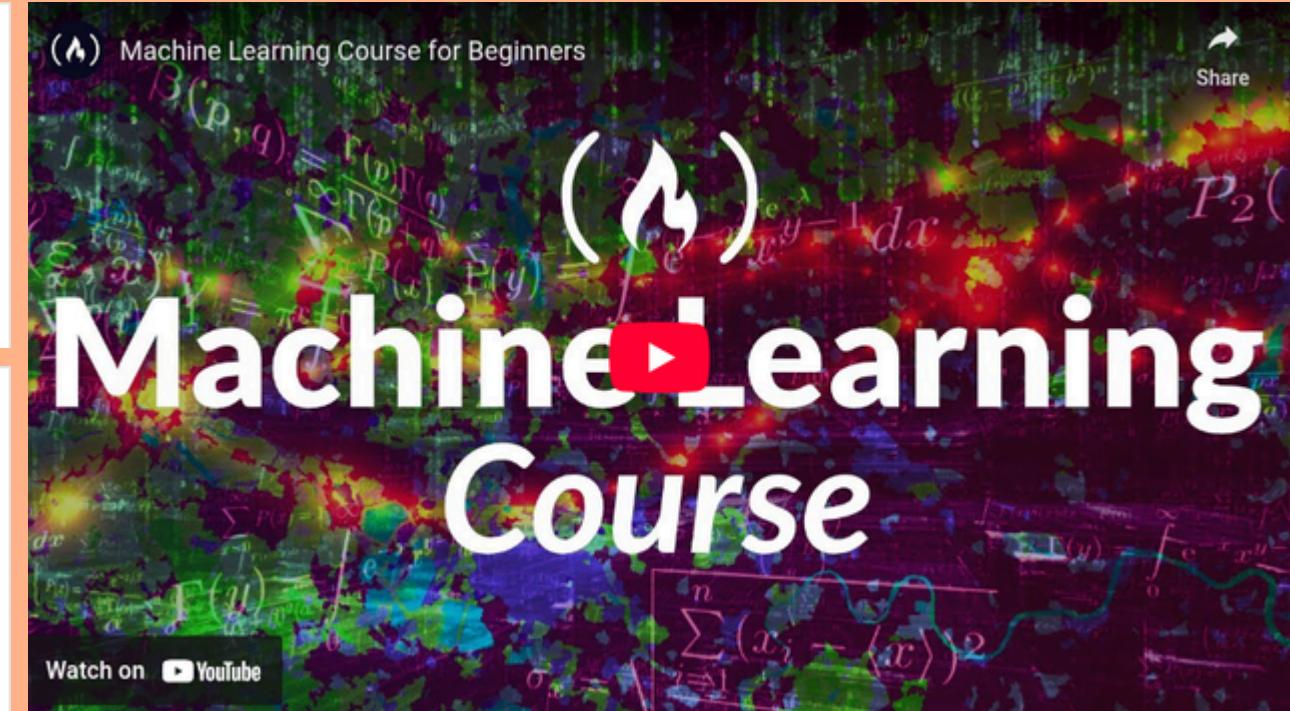
[YouTube](#)



## SuperSimpleDev

Hello I'm Simon Bao! My goal is to help people get into the tech industry!

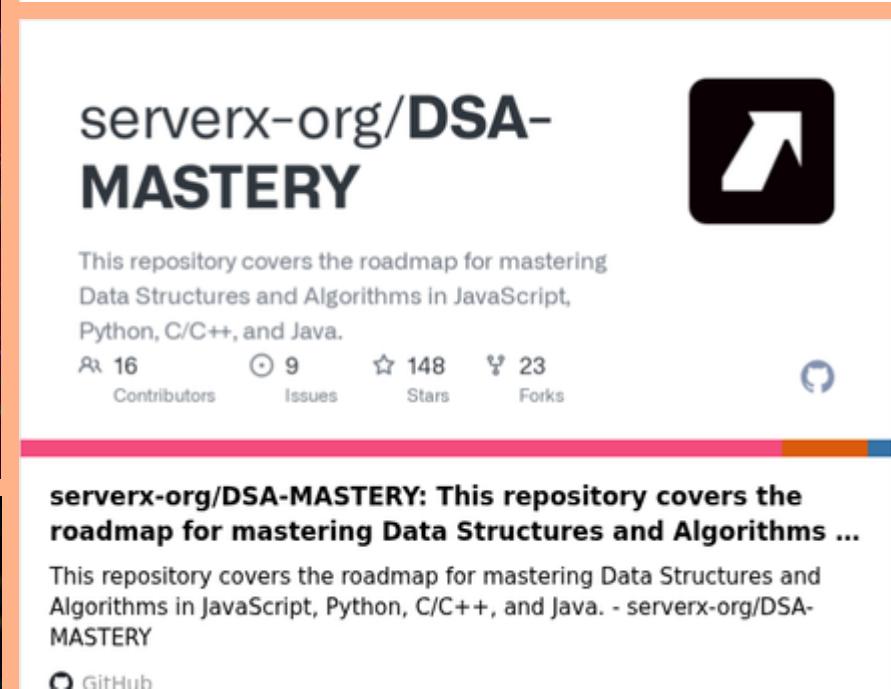
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## Top Interview 150 - Study Plan

Must-do List for Interview Prep

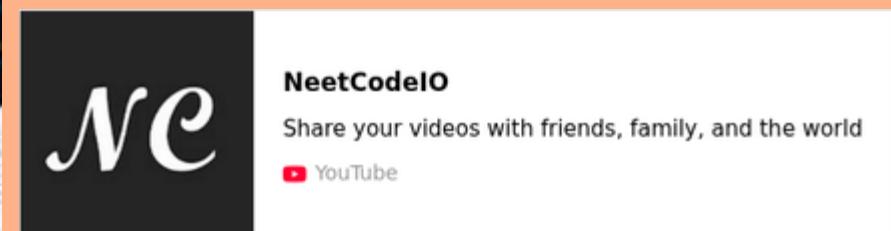
[LeetCode](#)



## serverx-org/DSA-MASTERY: This repository covers the roadmap for mastering Data Structures and Algorithms ...

This repository covers the roadmap for mastering Data Structures and Algorithms in JavaScript, Python, C/C++, and Java. - [serverx-org/DSA-MASTERY](#)

[GitHub](#)



## NeetCodeIO

Share your videos with friends, family, and the world

[YouTube](#)

**IF MORE RESOURCES  
NEEDED PLEASE  
REACH OUT ON  
LINKEDIN**

**ANY DOUBTS  
ABOUT  
ANYTHING ?**

**FEEL FREE TO REACH OUT\_**

**THANKYOU !!!!**