Curriculum Vitae

Deepak Ahire
Algorithms Enthusiast.

Address:101, Indraprastha, plot no: 149,
sector: 9, New Panvel(E),
Navi Mumbai - 410206, India.
Portfolio: https://www.deepakahire.live

Email: ahiredeepak20@gmail.com

LinkedIn: https://www.linkedin.com/in/adeepak7/

Contact: (+91) 9757185363, (+91) 8104711316

he/him/his

Github: Open Source Projects
Stack Overflow: SO Contributions
Codechef: @adeepak7
Hackerrank: @ADeepak
ACM ICPC: ACM ICPC ID
ORCID: Research Publications
Youtube: Youtube Channel
Analytics India Magazine: Deepak Ahire

Contents

Research Interests

Algorithms, Bioinformatics, Statistics, Competitive Programming, Data Structures and Machine Learning to improve medical science, the environment and social good.

Skills

- **Machine Learning Libraries:** NumPy, SciPy, Scikit-learn, Pandas, Matplotlib, dlib(Facial Landmark Detector), OpenCV.

- **Data Analytics Tools:** Microsoft Power BI.

- **ML/DS Environemnts:** Jupyter Notebook, Google Colabs.

- **Operating Systems:** Ubuntu, Mac OS, Windows.

- **Assembly Languages:** 8085 Microprocessors.

- **Server-side Programming Languages:** C, C++, Java, Python, C#.

- **Server-side Web Frameworks:** Express (Node.js/JavaScript), ASP.NET.

- **Web Frameworks for Realtime Communication:** WebRTC, Socket.io.

- **Client-side Programming Languages:** Javascript, HTML, CSS.

- **Client-side Libraries:** jQuery, Metro 4.

- **Software Testing:** Unit Testing, Functional Testing with end-to-end automation, Cloud-based Load/Performance Testing with Visual Studio Team Services.

- **Software Testing Frameworks:** JUnit, Mocha, Microsoft unit test framework.

- **Clouds:** Microsoft Azure, Google Cloud.

- **Containerization:** Docker.

- **Orchestration:** Microsoft Azure Service Fabric, Kubernetes.

- **Databases:** Oracle RDBMS, MySQL, Azure Cosmos DB.

- **Version Control System:** GIT.

- **Typesetting Systems:** LaTeX.

- **IDEs/Editors:** IntelliJ IDEA, PyCharm , WebStorm, Code::Blocks, Visual Studio, Visual Studio Code.

Education

July 2014 - May 2018   Bachelor of Technology, Computer Science and Engineering,
Walchand College of Engineering (WCE), Sangli, Maharashtra, India.

CGPA: 9.69/10.0
Result: **Branch Gold Medalist**, PASS with First Class.

Relevant Courses
Discrete Mathematics, Basic Electrical Engineering, Basic Electronics
Engineering, Data Structures, Processor Architecture, Principals of Compiler
Design, Theory of Computation, Statistics and Fuzzy System, Design
and Analysis of Algorithms, Digital Image Processing, Soft
Computing, Business Intelligence, Information Security, Data
Warehousing and Data Mining, Machine Learning, Computer Forensics,
Techno Socio Outreach.

Work Experience

June 2018 - Sept. 2019   Software Engineer, Microsoft Device CARE Crew, Microsoft Supply Chain, Core Platform Engineering, **Microsoft India R&D**, Hyderabad, Telangana, India.
Manager: Abhinav Mahajan.

- Developed a Google Chrome extension "SpeechToCode" as part of the Microsoft LEAP Hackathon 2018.
  Github: https://github.com/adeepak7/Speech-To-Code
  Youtube: https://www.youtube.com/watch?v=JevqY-WSOWE
- Made enhancements to logging management in Supply Chain Microservice Framework and developed centralized telemetry reports using Power BI with alerting mechanisms.
- I was responsible for the test-driven development of microservices with end to end functional test automation.
- I developed a Performance Testing Tool and Application Insights scripts to monitor the Service Level Agreements in production environments.
- Developed a Notification service to process the service orders created against Microsoft Devices with pending payment or payment on hold status.
- With my team, I developed the Scrap Evidence collection tool to avoid fraud service orders and **save $10 Million/year for Microsoft Device Sales.**
- Designed a plug and play Task Group for Azure Devops Build pipelines for maintaining code, quality, code coverage, and minimum required artifacts.
- Contributed to the success of team members through continuous mentoring, doubt solving, and bug fixing.
- Taught me to hold a good grasp of incident management for production issues.

May 2016 - Present   Contributor, **Stack Overflow**.

May 2017 - May 2018   Mentor to Coding Expert,
Association of Computer Science and Engineering Students (ACSES), WCE, Sangli.

I served ACSES as the Mentor to Coding Expert ACSES for the year 2017-18. I was responsible for the onboarding of the new coding experts to ACSES club responsibilities and the online coding platforms. I was the problem statement reviewer for two university-level and one national-level programming competitions.

May 2016 - May 2017   Coding Expert,

Association of Computer Science and Engineering Students (ACSES), WCE, Sangli.

I was the Main Board Member of the ACSES club of Walchand College of Engineering, Sangli for 2016-17. ACSES has 24 Main Board members in total every year. I served ACSES at the post of Coding Expert. My job was to organize and moderate the university and national level programming contests involving diverse domains. I served as the coordinator in chief for 3 university-level and 2 national-level competitions. I conducted weekly club services on various innovative topics and delivered a session in C Workshop for novice students who are new to the world of computer science. For every four years of my college, I was part of the Social Information Technology Awareness Campaign. It is an initiative to educate the students of the rural areas about computers and upcoming technologies.

May 2015 - May 2016   Assistant Academic Expert,
Association of Computer Science and Engineering Students (ACSES), WCE, Sangli.

My job was to assist the Academic Expert of the ACSES in designing the technical content for club services, workshops, and contests.

Publications

- **Finding all Edges on any Smallest Route connecting two nodes of a Directed Acyclic Graph using Parallel Computing**
  Deepak Ahire, Kiran Kamble, Omkar Jadhav, Shubham Katakdhond.
  Accepted in the 9th International Conference on Innovations In Computer Science & Engineering (ICICSE), 2021, Hyderabad, India.

- **Commentary - Methods to find all the edges on any of the shortest paths between two given nodes of a directed acyclic graph**.
  Deepak Ahire, Omkar Jadhav
  Research Ideas and Outcomes 7: e68600, May 2021.

- **Finding the Kth Max Sum Pair in an Array of Distinct Elements using Search Space Optimization.**
  Deepak Ahire, Smriti Bhandari and Kiran Kamble.
  Proceedings of the 8th International Conference on Innovations In Computer Science & Engineering (ICICSE), LNNS, Springer Singapore.

- **Video Over Intranet (VDOIT)**.
  Deepak Ahire.
  Research Ideas and Outcomes 6: e58504, September 2020.
  (The project was presented in Innovata Project Fair 2017, organized by the Department of Computer Science and Engineering Innovation, Incubation and Entrepreneurship (IEE) cell, WCE, Sangli.)

- **Why Has The Number Of Combo Recommendations Decreased On E-commerce Platforms?**
  Deepak Ahire.
  Analytics India Magazine.
  (Analytics India Magazine chronicles technological progress in the space of analytics, artificial intelligence, data science & big data in India.)

- **The Journal of Competitive Programming.**
  Deepak Ahire.
  Journal of Brief Ideas, September 2020.
  (This is a brief idea that discusses the importance of and need for the journal of competitive programming.)

Publications: Algorithmic Problem Statements

(**NOTE:** The **"Editorial"** section on the problem statement page contains the **Editorial, Problem Setter Code, Problem Tester Code, and relevant publishing information.**)

- **Problem statement: Dumb Sucre**.
  Solution: Editorial.
  Published: August 2016.

- **Problem statement: Scofield And Password**.
  Solution: Editorial.
  Published: August 2016.

- **Problem statement: Lincon And The Subsets**.
  Solution: Editorial.
  Published: August 2016.

- Problem statement: **"T-Bag"'s Encoding**.
  Solution: Editorial.
  Published: August 2016.

- Problem statement: **The Final Escape**.
  Solution: Editorial.
  Published: August 2016.

- Problem statement: **Prom Ibiza**.
  Solution: Editorial.
  Published: October 2016.

- Problem statement: **Wrath of GOT**.
  Solution: Editorial.
  Published: October 2016.

- Problem statement: **Build It!**.
  Solution: Editorial.
  Published: October 2016.

- Problem statement: **Favourite Shape**.
  Solution: Editorial.
  Published: February 2017.

- Problem statement: **Industrial Visit**.
  Solution: Editorial.
  Published: February 2017.

- Problem statement: **MAX-OR**.
  Solution: Editorial.
  Published: February 2017.

Video Tutorials

- **Dynamic Programming - Maximum Subset Sum of non adjacent elements.**
  Youtube Channel: Deepak Ahire.
  Published: 23rd June 2020.
  Tutorial Description: This tutorial aims to teach how to approach dynamic programming problems. First, we contemplate on the brute force approach and prove why it is not a feasible approach. Secondly, we try to solve the problem by recursion and reduce the recursive call as we proceed. Finally, we will learn the memoization technique to solve the problem. Remember, intuition is an essential thing while solving algorithmic problems!

Most voted/accepted answers on Stack Overflow

- **Application of dynamic programming in real word programming.**

- **Minimum edge in a set of edges which connects a graph.**

- **C/Linux: How to find the perfect number of threads to use, to minimize the time of execution?**

- **Configure Azure deployment for Service Fabric.**

- **"Stable" k-largest elements algorithm.**

- **Inconsistency in determining directed graph's back edges via DFS.**

- **Trying to create a multithreaded program to find the total primes from 0-100000000.**

- **How to rotate in red black tree.**

- **Merge Sort vs Quick Sort Implemenation.**

- **Bellman Ford Implementation and simultaneously relaxation.**

- **About two threads alternately printing odd and even numbers.**

- **Balanced paranthesis question based on stack.**

- **Are structure variable initialized by default?**

- **Is my postorder traversal of this graph correct?**

- **How do different parameters affect Big O Notation for time complexity**

- **What this lines in bubble sort algorithm means?**

- **In what order does a minheap sort?**

- **Count distinct elements in every window using hash map.**

- **Can terms of fibonacci series be negative?**

- **STL vs Algorithms**

- **Why I have StackOverflow in DFS?**

- **What is the meaning of I/O intensive in Node.js**

- **Creating a constant instance of a custom data structure.**

- **Problem with finding the length of a string using pointers in a function in c.**

- **How execute code in a certain sequence in nodeJS?**

- **Minimum cabs required (Algorithm)**

Most voted questions on Stack Overflow

- **Why actual runtime for a larger search value is smaller than a lower search value in a sorted array?**

- **Generating ideal step functions using actual step function**

- **Is python module namespace itself an object in python?**

- **Difference between %d and %.d in C language**

Invited Talks

- Personality Advancement Circle of Engineers (PACE), WCE - Placement Talk 2018.
  Watch on Facebook: PACE Live.
  Event Date: 23 January 2018.
  Organizer: PACE Club, WCE, Sangli.
  Facebook: PACE on Facebook.

Mentorship

- **Walchand College of Engineering (WCE) Covid-19 Visitor Management Project 2020.**
  Project Coordinator: Prof. Kiran Kamble.
  Project Outline: Progress as of August 2020.
  Software Solution: Architecture.

  I am currently working with Prof. Kiran Kamble with a team of 11 members to design and implement the WCE visitor management software. I guide my juniors who are still in college to develop projects as per the **industry standards**. I taught them the importance of **securing the users' personal information (PI)** in production environments by storing it in an encrypted format in the backend database. I made them aware of the **data protection laws** (like **GDPR**) and why it is illegal to use users' data without their consent. Furthermore, I taught them about the **multi-tier** architecture used in industrial projects and why multi-tier architectures are more **secure** than single-tier architectures when services get **compromised or hacked**.

- **Founding Member of WCE CODEPALS.**

  - We are a bunch of tech enthusiasts striving for each other's development. It's a Community by the students and for the students.
    Website: https://wce-codepals.github.io.
    Github Organization: @wce-codepals.

- **Mentor to Coding Expert, ACSES - 2017-18**.

  I was responsible for the following things:

  - Onboarding of the new coding experts to ACSES club responsibilities and the online coding platforms.
  - Reviewing the problem statements and test cases before every contest.
  - Ensuring the timely organization of Codefusion contests.

- **ACSES Mock Interviews 2018.**

  - With the ACSES Mentor Board 2018 members, I organized mock interviews for the Assistant Board 2018 members to have early exposure to the facts that industries expect. Mock interviews helped them prepare for the actual interviews, to make them aware of their lagging indicators to improve upon them.

Technical Events Managed

- **CodeFusion 1** - University Level Programming Contest.
  Number of Signups: 208.
  Event Date: 7th August 2016.
  Role: Coordinator in Chief.

- **CodeFusion 2** - University Level Programming Contest.
  Number of Signups: 154.
  Event Date: 18th October 2016.
  Role: Coordinator in Chief.

- **Game Of Codes - Round 2 (Novice)** - National Level Programming Contest.
  Affiliated Mega Event: **Techumen 2K16**, A National Level Tech Symposium.
  Number of Signups in Techumen 2K16: 1560.
  Event Date: 22th October 2016.
  Role: Coordinator in Chief.

- **Game of Codes - Grand Finale (Novice)** - National Level Programming Contest.
  Affiliated Mega Event: **Techumen 2K16**, A National Level Tech Symposium.
  Number of Signups in Techumen 2K16: 1560.
  Event Date: 22th October 2016.
  Role: Coordinator in Chief.

- **CodeFusion 3** - University Level Programming Contest.
  Number of Signups: 135.
  Event Date: 5th February 2017.
  Role: Coordinator in Chief.

- **CodeFusion 17.1** - University Level Programming Contest.
  Number of Signups: 157.
  Event Date: 9th August 2017.
  Role: Problem statement reviewer.

- **Code Wizard Wild Card (Expert)** - National Level Programming Contest.
  Affiliated Mega Event: **Techumen 2K17** - A National Level Tech Symposium.
  Number of Signups in Code Wizard: 106.
  Event Date: 3rd October 2017.
  Role: Problem statement reviewer.

- **CodeFusion 18.1** - University Level Programming Contest.
  Number of Signups: 197.
  Event Date: 7th January 2018.
  Role: Problem statement reviewer.

- **AlgoElite 0010** - National Level Programming Contest.
  Affiliated Mega Event: **Vision 2K18** - A National Level Tech Symposium.
  Number of Signups: 957.

Event Date: 15th March 2018.
Role: Contributor, problem statement reviewer.

Community Service/Outreach

- **Social Information Technology Awareness Campaign (SITAC)**

  Social Information Technology Awareness Campaign is a yearly initiative by the Association of Computer Science and Engineering Students(ACSES) club of WCE, Sangli. In this campaign, the ACSES team visits various schools in rural areas. It makes school children aware of computer fundamentals and emerging technology, which will help them sustain in today's technology world.

  – **Total number of students and teacher benefited: >13,000.**

  – **My Impact: >400 rural students.**

  – For live demonstrations of teaching, navigate to "**Community Service/Outreach**" section on my **website**: https://www.deepakahire.live.

  – Staff Advisor: Prof. Anil Surve.
    SITAC on ACSES Official Page: @WCEACSES
    SITAC Official Page: @WCESITAC

  – SITAC in Journal of Engineering Education Transformation: Case Study of Computer Awareness Campaign in Primary and Secondary Schools.

- **Stack Overflow Contributions**

  – **The motivation of my participation on Stack Overflow:** A lot of novice students struggle during their early stages of learning Computer Science. One needs a thorough understanding of the concepts, practice of solving problems, and correctly implementing the solutions in code to understand Computer Science in depth.

    With many basic questions arising in the mind day-by-day, if unanswered, one cannot develop a grasp on concepts.

    Stack Overflow is a question and answer site for professional and enthusiast programmers. It is the largest, most trusted online community for developers to learn, share their programming knowledge, and build their careers.

    Answers are peer-reviewed and voted in real-time by the experts in the respective fields.

  – **My Stack Overflow (SO) profile:** Deepak Tatyaji Ahire.

  – **My Impact: $\sim$ 29,000 people reached worldwide.**

  – **Reputations:** 3212 (as of 8th Februray, 2021).

  – Number of questions answered: > 180.

  – **Featured**: **Most voted answers**.

- **Cheif in Charge, Media Committee, Sangli First Entrepreneurship Fair 2018, WCE, Sangli.**

    – **Total Number of small businesses impacted:** >150.
    – **Sangli First on Facebook:** Event Page.

- **ACSES Weekly Club Service**

    – Organized weekly club service on various topics in Computer Science.

- **ACSES General Interest Meet (GIM)**

    – General Interest Meeting is organized by ACSES every year for the newly joined first-year undergraduate students.

- **C Workshop**

    – ACSES organizes C Workshop every year for the freshers. I presented and conducted a hands-on session on the topic **"Taking Input From User."**
    – **Event Date:** 29th August 2016.
      Number of participation: 100.
    – **Slides of my session:** Taking Input From User.

- I, with my ACSES team and volunteers, organized the yearly **WCE Annual Alumni Meet**.

- I, with my ACSES team and volunteers, organized the yearly **ACSES Genesis Event**.

Competitive Programming

- **Topics covered:** C++ Standard Template Library, Bit Manipulation, Mathematics, Number Theory, Recursion and Backtracking, Divide and Conquer, Segment Trees, Fenwick Trees, Binary Indexed Trees(BIT), Square Root Decomposition, Greedy Algorithms, Graphs, Network Flow, Game Theory, Dynamic Programming, Geometric Algorithms, Hashing Problems, Tries, String Matching Algorithms, Fast Fourier Transform (FFT's) and Heavy Light Decomposition.

- **My Competitive Programming Solutions on online coding platforms (Platform wise)**:

    - **Codechef** (An Unacademy Initiative): @adeepak7.
      Check section: "Problems Solved".

    - **Hackerrank:** @ADeepak.
      Check section: "Submissions".

    - **SPOJ:** @adeepak_207.
      Check section: "List of solved classical problems".

    - **Codeforces:** @aDEEPAK7.

    - **Hackerearth:** @ahiredeepak20.

- **My Competitive Programming Solutions on online coding platforms (Topic wise)**:

    - **StopStalk:** @Deepak Ahire.
      Check section: "Solved Problems".
      Total number of algorithmic problems solved: 955.

- **International Ratings on online coding platforms:**

    - **Hackerrank:** 6* (Problem Solving category).

    - **Codechef:** 4* (overall).

Projects

- **Lip Reading using Deep Learning**
  Semester 7-8 (2017-18).

  Developed a lip-reading system that takes mute videos as input and generates/predicts text output - words/phrases spoken out in the input.

  Functionalities achieved:

  - **Vowel Recognition Results:**
    Model trained on dataset of a single person speaking out all the 5 vowels which gave validation accuracy of 92.5%. The dataset used here was collected from 32 random people from college and the model has been trained on the same dataset using Vanilla Neural Networks on Tensorflow. Accuracy using Tensorflow: 37.4%

  - **Words and Phrase Recognition Results:**
    In this method we used **MIRACL-VC1 dataset** which contained videos collected from 15 people speaking out 20 words and phrases all together. Feature vector of each video has been generated to train the SVM model. Resulted in accuracy of 40.13%.

- **MultiLayer Perceptron Neural Network**
  Semester 7 (2017-18).

  This repository provides an implementation of Multilayer Perceptron Neural Network from scratch for **Binary XOR inputs** in JAVA.

  Github Repository: adeepak7/MultiLayer-Perceptron-Neural-Network.

  Functionalities achieved:

  - Coded using the OOPs principles.
  - **Entities:** Synapse, Neuron, MultiLayerPerceptron.

- **Video Over Intranet (VDOIT)**
  Semester 6 (2016-17).

  An on-demand, on-premise, and secure video calling service over the private cloud of private organizations that can be used without the use of any external hardware and free of cost.
  (This project was an extension of the VOIT project.)

  Github Repository: adeepak7/Video-Over-Intranet.

Project Report: Video Over Intranet (VDOIT).

Functionalities achieved:

- Implementation of the bi-directional real time call by implementing the methods of **RTCPeer-Connection** class.

- Eshtablising **Signalling server** for connection discovery and negotiation using **Session Description Protocol (SDP)** protocol.

- **Bottle Filling Inspection System using Digital Image Processing**
  Semester 6 (2016-17).

  A automatic bottle filling inspection system for Quality Control Management implemented in JAVA.

  Github Repository:adeepak7/Bottle-Filling-Inspection-System-using-Digital-Image-Processing.

  Functionalities achieved:

  - Prediction of the **shoulders** of the bottles.
  - **Detction** and **seperation** of the liquid from the bottle.
  - **Segmentation** of bottles if an image contains multiple bottles.
  - **Fetching the current liquid level** in the bottle and comparison with the required liquid level.
  - Fetching the centre of the bottle to **fetch the lower meniscus of the liquid**.

- **Voice Over Intranet (VOIT)**
  Semester 5 (2016-17).

  A P2P voice calling software developed in Java which facilitates members of a private organization to make audio calls over the intranet.

  Github Repository: adeepak7/Voice-Over-Intranet-VOIT.

  Functionalities achieved:

  - Setting up and Reading from the **TargetDataLine** (interface in JAVA) to process the incoming audio from the input audio/microphone port.
  - **User** class comprising of 6 ports:
    * **Ping update**/**send** and **ping receive** (To timely update user's connection status to the server).
    * **Call send** and **call receive** (Yo call the other online users and receive the incoming call).

* **Data send** and **data receive** (To exchange the voice data).

– **PingHandler** class to handle the timely pings to and from the server by the clients.

– **RequestHandler** class was responsible for handling the call requests to and from the clients.

– Capturing and sending **UDP packets** directly to and from clients.

– Data compression using **Huffman Encoding and Decoding Algorithm**.

• **Digital Image Processing Library**
Semester 6 (2016-17).

Digital Image Processing Library implemented in python containing basics of image processing, histogram equalization and various filters.

Github Repository: adeepak7/Digital-Image-Processing-Library

Functionalities achieved:

– **Histogram Equalization.**

– Converting images to **GrayScale**.

– **Filters:** Laplacian, Median, Sobel, Gaussian.

• **8085 Programming using 8085 Microprocessor kit simulator**
Semester 6 (2016-17).

This code repository is the collection of 8085 microprocessor programs which are simulated on 8085 Microprocessor kit. Checkout the ISE-PA Questions directory for different use cases and 8085 programs directory for their source codes/ solutions.

Github Repository: adeepak7/8085-Programming-using-8085-Microprocessor-kit-simulator.

Featured programs:

– **Bubble sorting** (descending).

– **Rotate** (left, right) 16 bit numbers.

– **Multiplication and division** of two 8-bit numbers.

– **Two's complement** of a 16 bit number.

• **Spell Checker**
Semester 4 (2015-16).

Detects misspelled words and Line number of the file on which error is found and provides suggestions from the English dictionary.

Github Repository: adeepak7/Spell-Checker.

Functionalities achieved:

- **Loaded** the entire English dictionary in main memory using Binary Search Trees.
- **Suggestions** to misspelled words are generated using the **Levenshtein distance algorithm** with distance less than or equal to 3.

- **Paint Software in CPP**
  Semester 2 (2014-15).

  A MS-Paint clone designed in C++, using C++ graphics library and Mouse Programming.

  Github Repository: adeepak7/Paint-Software-in-CPP.

  Functionalities achieved:

    - File **save** and **load**.
    - **Undo** functionality by reloading the saved file and replacing the pixel as per the saved file.
    - **Erase** functionality using white pixels.
    - **Pencil** and **Bold brush** functionality.
    - **Coloring** functionality using the **Flood fill algorithm**.

- **Colpitts Oscillator Simulation in Proteus**
  Semester 1 (2014-15).

  Oscillator to convert DC supply energy into AC energy.

  Github Repository: adeepak7/Colpits-Oscillator-Simulation-in-Proteus.

Open Source Projects for Increasing Diversity in Computing

- **Speech To Code**
  Speech To Code is a Google Chrome Extension designed in JavaScript to convert Speech into Code. The Project was started in Microsoft LEAP Hackathon 2018. This project aims to help physically challenged people who are passionate about programming so that they can code and contribute for the society.

  Contributors: Deepak Ahire, Anuj Sande.

  Github Repository: adeepak7/Speech-To-Code

  Youtube: Live Demonstration

- **CCDSAP Roadmap**
  A roadmap to crack Codechef Certified Data Structure and Algorithms Programme (CCDSAP). CCDSAP certification is an assessment of programming proficiency in Data Structures and Algorithms under a proctored environment. It's a lifetime certification as it tests a programmers grasp on subjects that are very fundamental to the field of computer science, and therefore, they do not change with technological advancements.

  Motivation: In my college, I sensed that many students fear competitive exams and lag a clear roadmap on preparing for these tests. I created a roadmap in the form of a Github repository, which will help others to crack one of the most stringent certifications for algorithms and data structures to address this issue.

  Contributors: Deepak Ahire, Ajay Gunjal.

  Github Repository: adeepak7/CCDSAP-Roadmap

  CCDSAP Slack Channel: ccdsaproadmap.slack.com

Sponsorships Received

- **Convas**
  Sponsored Plan: Convas Open Source Plan.
  Sponsored Organization: adeepak7 Github Organization.

- **Localizely**
  Sponsored Plan: Localizely open source project plan.
  Sponsored Project: adeepak7/Speech-To-Code.

- **BrowserStack**
  Sponsored Plan: App Automate x 5 Parallel Tests (Up to 5 Users).
  Sponsored Project: adeepak7/Speech-To-Code

- **1Password**
  Sponsored Plan: 1Password Teams membership for open source project.
  Sponsored Project: adeepak7/CCDSAP-Roadmap.
  Verify Sponsorship: Verify

- **Slack**
  Sponsored Plan: Slack Standard plan for community.
  Sponsored Project: adeepak7/CCDSAP-Roadmap

Certifications

- **Introduction to Statistics (ST0050).**
  (3 ACE semester credits)
  Topics Covered: Course Description
  Issuing Organization: Sophia Learning, LLC.
  Issue Date: June 2021.
  Certification ID: **Verify Certification**

- **Foundations of Statistics (ST0050).**
  (2 ACE semester credits)
  Topics Covered: Course Description
  Issuing Organization: Sophia Learning, LLC.
  Issue Date: February 2021.
  Certification ID: **Verify Certification**

- **Hackerrank Skills Certification - Node.js - Intermediate Level**

  Topics Covered: Understand the concepts behind an Event-Driven Architecture and Concurrency..
  Issuing Organization: Hackerrank.
  Issue Date: December 2020.
  Certification ID: A99CDED6EEA0
  Certification URL: **Verify Certification**

- **LaTeX for Students, Engineers, and Scientists.**

  Topics Covered: Styling Pages, formatting Content, tables and images, referencing and indexing, presentation using Beamer.
  Issuing Organization: IITBombayX.
  Issue Date: December 2020.
  Certification ID: 5989cf588cb14a7a9c789725938eb12b
  Certification URL: **Verify Certification**

- **PCEP Certified Entry-Level Python Programmer.**

  Topics Covered: Data Types, Evaluations, and Basic Input-Output Operations, Flow Controls, Data Collections, Functions.
  Issuing Organization: Python Institute.
  Issue Date: December 2020.
  Certification Code: Qk5z.mYyt.NfOy
  Certification URL: **Verify Certification**

- **Introduction to AI by Elements of AI.**
  2 ECTS Credits Online Course.

Topics Covered: How should we define AI?, Related fields, Philosophy of AI, Search and problem solving, Solving problems with AI, Search and games, Odds and probability, The Bayes rule, Naive Bayes classification, The types of machine learning, The nearest neighbor classifier, Regression, Neural network basics, How neural networks are built, Advanced neural network techniques, About predicting the future, The societal implications of AI.
Issuing Organization: The University of Helsinki.
Issue Date: October 2020.
Credential ID: u9dlsajjqyg.
Credential URL: Verify Certification

- **Hackerrank Skills Certification - Java - Intermediate Level.**

  Topics Covered: Multithreading in Java, Working with Networking in Java, and Collections and Serialization.
  Issuing Organization: Hackerrank.
  Issue Date: September 2020.
  Credential ID: DC835EA411E0.
  Credential URL: Verify Certification

- **Hackerrank Skills Certification - REST API - Intermediate Level**

  Topics Covered: Rest API, Fetching data from an API and process using parameters or paging.
  Issuing Organization: Hackerrank.
  Issue Date: August 2020.
  Credential ID: FE55A920352D.
  Credential URL: Verify Certification

- **Python 101 for Data Science**

  Topics Covered: Types, Expressions and Variables, String Operations, Lists and Tuples, Sets, Dictionaries, Conditions and Branching, Loops, Functions, Objects and Classes, Reading files with open, Writing files with open, Loading data with Pandas, Working with and Saving data with Pandas.
  Issuing Organization: IBM Cognitive Class.
  Issue Date: July 2020.
  Credential ID: 1346e0cfbae547528d904fa022e71f35.
  Credential URL: Verify Certification

- **Hackerrank Skills Certification - Javascript - Basic Level**

  Topics Covered: Functions, Currying, Hoisting, Scope, Inheritance, Events and Error Handling.
  Issuing Organization: Hackerrank.
  Issue Date: June 2020.
  Credential ID: 1D44AA3809A1.
  Credential URL: Verify Certification

- **Kaggle Learn Course Certificates - Python**

Topics Covered: Functions and Getting Help, Booleans and Conditionals, Lists, Loops and List Comprehensions, Strings and Dictionaries, Working with External Libraries.
Issuing Organization: Kaggle.
Issue Date: June 2020.
Credential URL: Verify Certification

- **EF SET English Certificate 71/100 (C2 Proficient)**

  Issuing Organization: EFSET.
  Issue Date: May 2020.
  Credential ID: fV19hT.
  Credential URL: Verify Certification

- **Hackerrank Skills Certification - Problem Solving - Intermediate Level**

  Topics Covered: Data Structures (HashMaps, Stacks and Queues) and Algorithms (Optimal Solutions).
  Issuing Organization: Hackerrank.
  Issue Date: May 2020.
  Credential ID: D0736C443533.
  Credential URL: Verify Certification

- **Hackerrank Skills Certification - Java - Basic Level**

  Topics Covered: Classes, data structures, inheritance, exception handling, etc. You are expected to be proficient in either Java 7 or Java 8.
  Issuing Organization: Hackerrank.
  Issue Date: April 2020.
  Credential ID: 7B047A102205.
  Credential URL: Verify Certification

- **Hackerrank Skills Certification - Problem Solving - Basic Level**

  Topics Covered: Data Structures (Arrays, Strings) and Algorithms (Sorting and Searching).
  Issuing Organization: Hackerrank.
  Issue Date: April 2020.
  Credential ID: DFCFBD9DE8EB.
  Credential URL: Verify Certification

- **CodeChef Certified Data Structure & Algorithms Programme (CCDSAP) - Advanced Level**

  Topics Covered: Heaps, Disjoint Set Union, Segment Trees, Binary Index Tree (Fenwick tree), Trees (traversals, tree dynamic programming), Finding Lowest Common Ancestors (O(log N) solution where N is number of nodes), Connected Components, Dijkstra, Bellman-Ford, Floyd-Warshall, Prim and Kruskal algorithms, bridges, articulation points, Strongly connected components in directed graphs, Topological Sorting,Euler path, tour/cycle, Modular arithmetic including division, inverse, Amortized Analysis, Divide and Conquer, Advanced Dynamic Programming,

Sieve of Eratosthenes.

Issuing Organization: Codechef.
Issue Date: September 2019.
Credential ID: 40fbbe5.
Credential URL: Verify Certification

- **CodeChef Certified Data Structure & Algorithms Programme (CCDSAP) - Foundation Level**

  Topics Covered: Arrays, Strings, Stacks, Queues, Asymptotic analysis (Big-O notation), Sqrt(n) primality testing, Euclid's GCD Algorithm, Greedy Algorithms, Naive string searching, O(n logn) Sorting, Binary Searching.

  Issuing Organization: Codechef.
  Issue Date: July 2019.
  Credential ID: 2eb67f8.
  Credential URL: Verify Certification

- **International Collegiate Programming Contest ID**

  Issuing Organization: Association of Computing Machinery, International Collegiate Programming Contest (ACM ICPC).
  Issue Date: July 2019.
  Credential ID: B0P3UGZ1W6XB.
  Credential URL: Verify Certification

- **Prevention of Sexual Harassment at the Workplace**
  Issuing Organization: Interweave Consulting Pvt Ltd.
  Issue Date: August 2018.
  Credential URL: Verify Certification

- **National Programming Aptitude Test 2017**
  Score: 800/800 (94 percentile).
  Issuing Organization: NPTEL, ACM India, Google.
  Issue Date: August 2017.
  Credential ID: 111051326434097713530.
  Credential URL: Verify Certification

Achievements

- **Finalist**, STEPIK Bioinformatics Contest 2021.
  Rank: 646/6094.

- **Gold Medal**, Computer Science and Engineering, Walchand COE, Sangli.
  Issue Date: May 2020.
  Awarded Gold Medal for securing the first rank amongst students who completed the require-
  ments for the degree of B. Tech in CSE in the year 2017-18 by **Hon. Dr. Subhash R. Bhamre,
  Federal Minister of State for Defence, Govt. of India, Hon. Dr. Devanand Shinde, Vice
  Chancellor, Shivaji University, Kolhapur, Hon. Shri Sanjaykaka Patil, Member of Parlia-
  ment and Member, Administrative Council.**
  Credential URL: Verify Achievement

- **8th International Conference on Innovations in Computer Science & Engineering (ICICSE-
  2020 – Virtual Conference)**
  (Award for presenting/participating/submitting a paper titled "Finding the Kth Max Sum Pair in an
  Array of Distinct Elements using Search Space Optimization" in the Technical Session **Network
  Security/Image Processing** of the "8th International Conference on Innovations in Computer
  Science and Engineering (ICICSE-2020)", held during 28th - 29th August, 2020.)
  Issuing Organization: Guru Nanak Institutions.
  Credential URL: Verify Achievement

- **Bronze Medal, HackerRank HackFest 2020**
  (International Rated Contest.)
  Issue Date: October 2020.
  Credential URL: Verify Achievement

- **Codility Golden Award for the Palladium 2020 Challenge**

  Issuing Organization: Codility.
  Issue Date: July 2020.
  Credential ID: certCBQ3ND-QJQNMFN6NXPYXVY9.
  Credential URL: Verify Achievement

- **Bronze Medal, Week of Code 38**
  (International Rated Contest.)
  Issue Date: June 2018.
  Credential URL: Verify Achievement

- **Outstanding Placement Award**
  (Award of Appreciation in recognition of participation and outstanding performance in WCE
  placement drive 2018, for getting placed in Microsoft India R&D.)

  Issuing Organization: Department of Computer Science and Engineering, Walchand College
  of Engineering, Sangli.
  Issue Date: April 2018.
  Credential URL: Verify Achievement

- **ACM ICPC 2017 - Asia Amritapuri First Round Online Programming Contest - Regional Rank 57**
  (Award for securing RANK 57 (Amritapuri region) in ACM ICPC- ASIA 2017 Online Qualification Round, held in December, 2017 on CODECHEF.)

  Issuing Organization: ACM ICPC.
  Issue Date: December 2017.
  Credential URL: Verify Achievement

- **Silver Medal, World CodeSprint 12**
  (International Rated Contest.)
  Issue Date: December 2017.
  Credential URL: Verify Achievement

- **ACM ICPC 2017 - Asia Gwalior First Round Online Programming Contest - Regional Rank 31**
  (Award for securing RANK 31 (Gwalior region) in ACM ICPC- ASIA 2017 Online Qualification Round, held in December, 2017 on CODECHEF.)

  Issuing Organization: ACM ICPC.
  Issue Date: December 2017.
  Credential URL: Verify Achievement

- **Silver Medal, Week of Code 33**
  (International Rated Contest.)
  Issue Date: June 2017.
  Credential URL: Verify Achievement

- **Silver Medal, Ad Infinitum18**
  (International Rated Contest.)
  Issue Date: June 2017.
  Credential URL: Verify Achievement

- **Bronze Medal, World CodeSprint 10**
  (International Rated Contest.)
  Issue Date: April 2017.
  Credential URL: Verify Achievement

- **2nd Runner-up InnoVenta Project-Fair 2K17**
  (Best project award for the project entitled "Video calling service in WCE Network" at "InnoVenta Project-Fair 2k17" held on 15th April 2017, organised by Department of Computer Science and Engineering & Engineering Innovation, Incubation and Entrepreneurship (IIE) Cell. The project-fair is supported by Association of Past Students WCE.)

  Issuing Organization: Department of Computer Science and Engineering, Walchand College of Engineering, Sangli.
  Issue Date: April 2017.
  Credential URL: Verify Achievement

- **Silver Medal, Week of Code 30**
  (International Rated Contest.)
  Issue Date: March 2017.
  Credential URL: Verify Achievement

- **Silver Medal, University CodeSprint 2**
  (International Rated Contest.)
  Issue Date: February 2017.
  Credential URL: Verify Achievement

- **Bronze Medal, HourRank 17**
  (International Rated Contest.)
  Issue Date: February 2017.
  Credential URL: Verify Achievement

- **Winner, Ignition 2K17 - C-Cipher**
  (C-Cipher is a University level programming competition.)

  Issuing Organization: Department of Electronics and Communication Engineering, Dr. J.J. Magdum College of Engineering, Jaysingpur.
  Issue Date: February 2017.
  Credential URL: Verify Achievement

- **Silver Medal, World CodeSprint 9**
  (International Rated Contest.)
  Issue Date: January 2017.
  Credential URL: Verify Achievement

- **Silver Medal, Week of Code 28**
  (International Rated Contest.)
  Issue Date: January 2017.
  Credential URL: Verify Achievement

- **ACM ICPC 2016 - Asia Amritapuri First Round Online Programming Contest - Regional Rank 273**
  (Award for securing RANK 273 (Amritapuri region) in ACM ICPC- ASIA 2016 Onsite Qualification Round, held on 23rd October, 2016, on CODECHEF.)

  Issuing Organization: ACM ICPC.
  Issue Date: December 2016.
  Credential URL: Verify Achievement

- **ACM ICPC 2016 - Asia Amritapuri Multisite Regional Contest- Regional Rank 134**
  (Honorable mention at ACM ICPC Multisite Regionals, Amritapuri, for representing WCE, Sangli and securing 134th rank in regional contest.)

  Issuing Organization: ACM ICPC, Amrita International University, Amritapuri, Kerela.
  Issue Date: December 2016.
  Credential URL: Verify Achievement

- **ACM ICPC 2016 - Asia Chennai First Round Online Programming Contest - Regional Rank - 161**
  (Award for securing RANK 161 (Chennai region) in ACM ICPC- ASIA 2016 Onsite Qualification Round, held on 23rd October, 2016, on CODECHEF.)

  Issuing Organization: ACM ICPC, Hindustan University,Chennai.
  Issue Date: December 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, Ad Infinitum 17**
  (International Rated Contest.)
  Issue Date: December 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, World CodeSprint 8**
  (International Rated Contest.)
  Issue Date: December 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, Week of Code 26**
  (International Rated Contest.)
  Issue Date: November 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, Week of Code 24**
  (International Rated Contest.)
  Issue Date: October 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, 101 Hack 41**
  (International Rated Contest.)
  Issue Date: September 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, World CodeSprint #6**
  (International Rated Contest.)
  Issue Date: August 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, 101 Hack 40**
  (International Rated Contest.)
  Issue Date: August 2016.
  Credential URL: Verify Achievement

- **Silver Medal, Week of Code 22**
  (International Rated Contest.)
  Issue Date: August 2016.
  Credential URL: Verify Achievement

- **Silver Medal, World CodeSprint 5**
  (International Rated Contest.)
  Issue Date: July 2016.
  Credential URL: Verify Achievement

- **Silver Medal, Week of Code 21**
  (International Rated Contest.)
  Issue Date: June 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, World CodeSprint #4**
  (International Rated Contest.)
  Issue Date: June 2016.
  Credential URL: Verify Achievement

- **Bronze Medal, Week of Code - 20**
  (International Rated Contest.)
  Issue Date: May 2016.
  Credential URL: Verify Achievement

- **Runner Up, Tech-Symposium 2K16 CYBER KNIGHT**
  (Tech - Symposium is a National Level Technical Event held every year. Cyber Knight is a part of it and is a University level programming competition.)

  Issuing Organization: Department Of Computer Science, D.K.T.E Society's Textile & Engineering Institute, Ichalkaranji.
  Issue Date: February 2016.
  Credential URL: Verify Achievement

- **Runner Up, CodeWars 2K15 - D-SOFTA**
  (CodeWar D-SOFTA is University level programming competition.)

  Issuing Organization: Department Of Information Technology, D.K.T.E Society's Textile & Engineering Institute, Ichalkaranji.
  Issue Date: September 2015.
  Credential URL: Verify Achievement

- **Award Of Endowment Prize / Scholarship**
  (Walchand College Of Engineering, Sangli Institute Prize for standing first amongst from F.Y B.Tech(ALL BRANCHES) in the year 2014-15.)

  Issuing Organization: Walchand College Of Engineering, Sangli.
  Issue Date: August 2015.
  Credential URL: Verify Achievement

- **Winner, Code Fusion-1 (2015)**
  (Code Fusion is the monthly online programming contest organized by the Association of Computer Science and Engineering Students (ACSES) club of Walchand College Of Engineering. The series will consist of domain-specific contests, on JAVA, C++, SQL Query, Data Structure,

mathematics, etc.)

Issuing Organization: ACSES, Walchand College Of Engineering, Sangli.
Issue Date: July 2015.
Credential URL: Verify Achievement

Media Coverage

- **Featured in DNA News, 8 February 2018.**
  Editor: Kranti Vibhute

- **Featured in Sakal Sangli Today, 5 February 2018.**

Coverage on Professional/Social Platforms

- **Analytics India Magazine**.
  September 2020.

- **Walchand College of Engineering Annual Report 2017-18.**
  June 2019.

- **Who is the best programmer of the Walchand College of Engineering, Sangli?**
  3 March 2017.

- **ACSES Weekly Club Service: Trees and Graphs**.
  24 January 2017.

- **ACM ICPC Amritapuri Regionals 2016**.
  24 December 2016.

- **ACSES CodeFusion 1 Winner**.
  10 August 2015.

References/Advisors

- **Smriti Bhandari, PhD.**
  Head of the Department, Computer Science and Engineering,
  Annasaheb Dange College of Engineering & Technology, Ashta.
  Email: shb_cse@adcet.in

- **Prof. Manik Chavan,**
  Controller of the Examination and Professor,
  Department of Computer Science and Engineering,
  Walchand College of Engineering, Sangli.
  Email: manik.chavan@walchandsangli.ac.in

- **Mr. Abhinav Mahajan,**
  Principal Software Engineering Manager,
  Microsoft India R&D, Hyderabad, Telangana, India - 500032.
  Email: abhinavm@microsoft.com

NOTE: Kindly check out my other **professional recommendations** from my colleagues at my **LinkedIn profile: Deepak Ahire.**