Abhijay Mitra

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EDUCATION

B.Tech	Institute	Grad Year	CGPA
Major → Electrical Engg. (Instrumentation) **Minor → Computer Science and Engg.**	IIT Kharagpur, India	2022	**8.98 / 10** **9.10 / 10**

INTERNSHIPS

Software Engineering Intern | Salesforce — Summer' 21

Project: TeleHealth Application | Manager : Kishore Srirambhatla

- Aimed to **recognize**, **analyse** and **store data automatically,** directly from **medical conversations**.
- Developed a prototype app for **healthcare registrars** that mitigated their role in **registering**, **updating** or **fetching patient details**.
- Executed **automatic conversation with patient** (through **phone call**) **without any manual intervention** from registrar except confirmation of the **patient data analysed from the conversation** before saving the data, for update or new patient registrations.
- Integrated **Google Speech to Text** and **Einstein NER** APIs to eradicate requirements of any manual intervention in the process.
- Demonstrated the fully operational app to **SVP, Industries, Salesforce HQ** and the **leaders of Health Cloud, Salesforce India**.

Software Developer | Kharagpur Winter Of Code — Winter' 20

Project: Salesforce Batch to Delete Records | Manager : Vipul Goyal

- **Created a Salesforce library** using **Apex** as well as **lightning components** to delete multiple records of objects through **batches**.
- **Custom conditions** for record deletion, along with the **number of records** to be deleted, and **batch size** could be specified, as per convenience depending on the other processes triggered while calling the batch deletion method, and was handled using **SOQL**.
- Augmented the library by enabling the freedom of **choice of mode** of record deletion i.e.with **sharing or without sharing**.
- **Languages** used → Apex, SOQL, Javascript, SOSL, **Frameworks** used → Lightning Components

Problem Setting Intern | Algo Zenith — Winter' 20

- Developed **problem statements, descriptions and complete solution editorials** of **100 algorithmic programming problems**.
- Wrote **clean working code in C++** and their corresponding I/O for easy understanding of students (batchmates, juniors and seniors)
- Covered topics like **Greedy algorithms, DP, Graphs, Square Root Decomposition, Segment Trees** in detail in editorials.

Software Engineering Intern | Proficient Vision Solutions — Winter' 19

Project: Real time HD video processing | Manager : Prof. Sudipta Mukhopadhyay (Dept of ECE IIT Kharagpur)

- Aimed to **remove rain and fog** from **HD video streams** in **real time**.
- **Developed license for product** (encryption of machine details like MAC Id, hard disk id, date of installation) along with user provided details such as id, password, number of concurrent users, and unique details cameras to be granted access.
- Implemented the **RSA algorithm** from scratch for licensing the software, built the pre-processing steps of the fog removal code.
- Incorporated **histogram equalisation** and **stretching**, in **CUDA C** to enhance speed of computation multiple folds.
- Demonstrated the product at **WBP Telecom Office** under foggy conditions generated by smoke from fire.

PROJECTS

Term Project | Selected Topics in Algorithms — Spring' 21

Guide: Prof. Partha Bhowmick, Project: Voronoi Diagram with Visual Restriction

- Explored the paper by Fan et al. **Formulated pseudocode** and researched on the **bounds** of **cardinality of V and E**.
- Illustrated analogy with **real life geometric applications** and **provided** intuitions to the algorithm and **drafted a report and slides**.

Term Project | Genetic Algorithm in Engineering Process Modeling — Spring' 21

Guide: Prof. Nirupam Chakraborti, Project: TSP (2-opt) using Simulated Annealing

- Researched on **Simulated Annealing** and its use in finding an **exact solution** to the **Travelling Salesman Problem** in non polynomial time. **Improved time complexity** and rendered existing algorithms more efficient by applying **2-opt** heuristic in the **local search paradigm**. Mentioned about results and difference between initial and final **tour cost** in **report**.

COMPETITIONS

- **Won** the **InTurn Hackathon** organized by **Salesforce** for its interns. **2021**
- **Globally Ranked 443** in Round D in **Google Kick Start** **2020**
- **Globally Ranked 731** in Round C in **Google Kick Start** **2020**
- **Globally Ranked 931 (99.2 percentile)** in Qualification Round in **Google Code Jam** **2021**
- **Globally Ranked 70** in **April Lunchtime Division 2** organised by Codechef **2021**
- **Globally Ranked 42** in **Summer Code Challenge** held at Codechef **2021**
- **Globally Ranked 101 in June Cook-Off 2021 Division 2** organised by Codechef **2021**
- Among top **5 %** candidates in **Global Coding Contest** by **Credit Suisse** **2020**
- Qualified for **Facebook Hacker Cup - Round 2**. **2020**
- Finalist of **Overnite Kshitij IIT Kharagpur**, a night long **ACM certified** team competitive programming contest **2020**
- **Globally Ranked 5** in June Data Structure and Algorithms Contest and **10** in August Easy organized by **Hackerearth** **2020**

AWARDS and ACHIEVEMENTS

- **Expert** with max rating **1821** on Codeforces (id → abhj). **2020**
- **5 star** with max rating **2030** on Codechef (id → abhj). **2021**
- Have been **#1 on IIT Kharagpur Stopstalk Leaderboard** (id → abj) (Competitive Programming) for **over 2 years** **2021**
- Undertook a **Software Engineering Virtual Experience** provided by **JP Morgan Chase and Company** **2020**
- Secured All India Rank **2157** (**99.88 percentile**) in **JEE Advanced** **2018**
- Secured Rank **92 (99.91 percentile)** in **WBJEE**. **2018**

COURSEWORK INFORMATION

- **Computer Science**: Algorithms I*, Programming and Data Structures*, Selected Topics in Algorithms, Genetic Algorithm in Engineering Process Modeling, Computer Architecture and Operating System
- **Mathematics**: Probability and Stochastic Processes, Transform Calculus, Mathematics I, Mathematics II
- **Electrical and Electronics**: Introduction to Electronics*, Signals and Networks*, Analog Electronics*, Measurements and Electronic Instruments*, Digital Electronics*, Control Systems and Engg.*, Instrumentation Devices - I*, Instrumentation Devices - II*, Data Communication, Embedded System*

*** Includes Laboratory along with Theory**

- **MOOC**: Competitive Programmer's Core Skills | Saint Petersburg State University, Software Development Processes and Methodologies | University of Minnesota, Computer Vision Basics | University of Buffalo, Game Theoretic Solution Concept with SpreadSheets | Coursera, Number Theory and Cryptography | UC San Diego, Divide and Conquer Sorting and Searching and Randomized Algorithms | Stanford, Graph Search Shortest Paths and Data Structures | Stanford, Machine Learning | Stanford.
- **Trailhead**: https://trailblazer.me/id/abhjiitkgp (Ranger → The highest possible rank)

SKILLS and EXPERTISE

Languages : C, C++, Java, Python, Apex, SOQL, SOSL, HTML5, CSS, MATLAB, CUDA C, Javascript, Octave, React JS, JQuery, PHP, Assembly Language (AVR Micro - controller)

Software : Proteus, Tina TI, CircuitMaker, LTSpice, Heroku, XAMPP, AutoCAD, Soldiworks

Platform: Salesforce, Github, Heroku

Database: PostgreSQL, MongoDB, MySQL

IDE : IntelliJ IDEA, Spring Tools Suite, Eclipse, Visual Studio Code, Pycharm, Arduino IDE, ATMEL Studio

Frame Work: Spring, Spring Boot, Maven, Spring MVC, Hibernate, Bootstrap, Thymeleaf Lightning Web Components, Aura Components

Others: Git, REST API, Bulk API, SOAP API, Postman, SOAP UI, Software Development Life Cycle, AWS, Metamind Einstein, Amazon Comprehend, Google Cloud, Multithreading, Number Theory, Cryptography, Security Operations, Image Processing, Computer Vision, Parallel Programming, Web Development, Simulink, Machine Learning, Competitive Programming, Amazon Web Services, Computer Architecture, Operating System, NP Algorithms

POSITIONS of RESPONSIBILITY

Technology Transfer Group (TTG), IIT KHARAGPUR (core team member) 2019 - 2020

- Worked alongside a team of 18 members directly under the **Dean of Sponsored Research and Industrial Consultancy**.
- Conducted several **IPR** (Intellectual Property Rights) Workshops and contacted many companies for sponsorship.
- Engaged progressively towards achieving initiatives like **IndAc** that aims at commercialising the patents of the institute

Kshitij (KTJ), IIT KHARAGPUR (volunteer) 2018 - 2019

- Conducted, invigilated and evaluated several olympiads and had hands-on experience on **Fest management**.

EXTRA CURRICULAR ACTIVITIES

- **Mentor | Student Welfare Group** - Guiding and providing insights about career and academics at IIT to 3 freshers of the Department of Electrical Engineering. **2020 (ongoing)**
- **Member | LBS Hall Chess Team** - Represented LBS Hall in inter-hall general championship. **2018 - 2019**
- **Member | LBS Hall Math Olympiad Team** - Participated in olympiads conducted by the Hall **2018 - 2019**
- **Tutor | Student Welfare Group** - Programming and Data Structures teaching and doubt clearing sessions **2019**
- **Author | Quora** - Have written advisory answers related to JEE (over 0.7 million content views). **2018**
- **Cadet | 3 Bengal Tech Air Squadron NCC** - Actively participated in weekly parades and blood donation camps. Also camped in Combined Annual Training Camp 2018 **2018 - 2020**