HARSH AGRAWAL

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	B.Tech in Computer Science & Engineering	Indian Institute of Technology, Delhi	9.909
2019	CBSE	SRDAV Public School	97.6%
2017	CBSE	Seth Anandram Jaipuria School	10

SCHOLASTIC ACHIEVEMENTS

- **Department Rank 4:** In 106 students of Computer Science and Engineering department (Four Year B.Tech Programme)
- **IIT Delhi Merit Award:** For being in the top 7% among 1000+ students in semesters I, II and III
- **Joint Entrance Examination (JEE) Advanced 2019:** All India Rank **120** among 165,000 candidates (99.93 percentile)
- **Joint Entrance Examination (JEE) Mains 2019:** All India Rank **404** among 1.1 million candidates (99.96 percentile)
- **KVPY Fellow:** All India Rank **120** in KVPY(SA) 2017 conducted by Department of Science and Technology, Govt of India
- **NTSE Scholar:** Among the top 1000 students in the National Talent Search Examination 2017 conducted by NCERT

INTERNSHIPS

- **National University of Singapore** | *(Prof. Ben Leong)* : *EvaCC: Environment Aware Congestion Control*
  - Implemented an evolutionary **network testbed** to test the environment awareness of congestion control algorithms
  - Evaluated metrics like **throughput and fairness** of clients sharing a bottleneck link with varying buffer capacity
  - Configured clients and server to stream *Dynamic Adaptive Streaming over HTTP (DASH)* videos over a bottleneck link

PROJECTS

- **Maze simulator game** | *Prof. Rijurekha Sen*
  - Developed an interactive multiplayer Pacman-like maze simulator game with random mazes in **C++** using **SDL** library
  - Implemented modules like **Collision Engine**, **Animation Engine** and a **Networking Interface** for seamless integration
  - Devised an **application layer network protocol** for synchronising the game state across a peer to peer connection
  - Designed abstractions for game objects using **Object Oriented Programming concepts (OOP)** like inheritance
- **Traffic Density Estimation** | *Prof. Rijurekha Sen*
  - Developed a road traffic monitoring system using **OpenCV** to auto detect traffic density from realtime CCTV captures
  - Implement algorithms to measure the queue and dynamic density using **Background Subtraction** and **Optical Flow**
  - Designed an efficient **producer-consumer model** using semaphores for spatial and temporal multithreading
  - Analyzed performance and accuracy tradeoffs imposed by different parameters in processing video frames
- **Toy SML interpreter** | *Prof. S Arun Kumar and Prof. Subodh Sharma*
  - Implemented a lexer and parser to tokenize and parse input programs written in a subset of the **SML** language
  - Constructed a mechanism to evaluate recursive and non-recursive functions with support for **lambda functions**
  - Designed a **static type checking** mechanism with the ability to flag SML-like syntactical type errors
- **Dynamic Memory Allocator (DMA)** | *Prof. Rahul Garg and Prof. Rijurekha Sen*
  - Implemented the DMA using various data structures. like **Doubly Linked List, Binary Search Tree and AVL tree**
  - Benchmarked the performance of the DMA using complexity analysis and experimental time measurements
  - Devised a strategy to incorporate the **First Fit** and **Best Fit** Split algorithms in these data structures
- **Common Account Sign-In** | *DevClub*
  - Developed a **Single Sign-On** system in NodeJS to authenticate users once across multiple shared DevClub services
  - Utilized **JWT** tokens (RFC 7519) with asymmetric keys and stored them in same-site cookies for authentication
  - Designed middlewares for frameworks like Django, NodeJS, Flutter to integrate SSO with all other services

TECHNICAL SKILLS

- **Languages**: C++, Java, Python, HTML, CSS, Javascript, Dart, SML, Go, VHDL, MIPS assembly, LaTeX
- **Frameworks**: Git, Django, NodeJS, Android, Flutter, Unity3D, NumPy, Pandas, Wireshark, AutoDesk, GNUPlot

EXTRA CURRICULAR ACTIVITIES

- **HackMIT 2020**: Placed **First** for the CMT sponsor challenge in the international hackathon organized by **MIT**
- **DevClub Campus Hackathon:** Placed **First** for developing a voice enabled music player for the visually impaired
- **I4 challenge, IRD IITD**: Designed a Quarantine Facility Administration System with intelligent group allocation scheme

POSITIONS OF RESPONSIBILITY

- **Developer and Executive, DevClub** (September, 2020 - May, 2021)
- **Executive, ACES-ACM** (September, 2020 - May, 2021)

Disclaimer: All the information on this page is entered by student.

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IIT COURSE

Degree	Institute	CGPA
B.Tech in Computer Science & Engineering	Indian Institute of Technology, Delhi	9.909

COURSES DONE

Linear Algebra & Diffe. Equa., Calculus, Probability & Stochastic Pro., Microeconomics, Principles Of Elect. Materials, Data Structures And Algorithms, Digital Logic & System Design, Discrete Mathematical Structur, Programming Languages, Introduction To Psychology, Computer Architecture, Design Practices, Signals And Systems

QUALIFYING EXAM

- **Joint Entrance Examination (JEE) Advanced Rank:** 120 AIR

POSITIONS OF RESPONSIBILITY

- Developer, DevClub PORs 20-21 (September, 2020 - May, 2021)