Sachin

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Education

Year	Degree/Board	Institute	GPA/Marks(%)
2019-2023	B.Tech in Computer Science & Engineering	Indian Institute of Technology, Delhi	9.407
2019	Class XII, CBSE	Star Public School	97.40%
2017	Class X, CBSE	Lords International School	10

Work Experience

Mastercard Gurugram, AI Intern: *Entity driven Representation learning* Jun, 2022 - July, 2022

- Designed Entity based feature representation of transactional data using LSTM, usable on any downstream problem
- Utlized four party model of mastercard to design enitities and get transaction level and card level embeddings
- Used hierarchical softmax for extreme class classification, gross domestic value and TPP problem for testing

Schoslastic Achievements

- **Department Change**: One of 13 students in IITD to secure discipline change to CSE on a merit basis 2020
- **Outstanding Grade**: One of 29 students in IITD to score 10 CGPA in every course in frst semester 2019
- **IITD Semester Merit Award**: Conferred for ranking amongst top 7% students in frst sem IITD 2019
- **JEE Advanced**: Secured All India Rank 168(OB) among 0.22 million candidates 2019
- **JEE Mains**: Secured All India Rank 190(OB) among 1.15 million candidates 2019
- **Olympiads**: School Gold Medalist and 2nd level selection in SOF Science and Mathematics Olympiad 2017

Projects

Driver Profiling | *Prof. Rijurekha Sen*: Dec, 2021 - Apr, 2022

- Detected rash driving on Delhi buses by profiling driver behavior using supervised learning on unlabelled data
- Simulated the GPS data on Unity in real-time to visualize data and performed anomaly detection of faulty sensors
- Developed heuristics to label the ground truth and used labeled data to perform classification using random forest

Shell based Operating System | *Prof. Sorav Bansal*: Feb, 2022 - Apr, 2022

- Developed a shell-based kernel from scratch that takes input from I/O devices and perform basic math operations
- Implemented Coroutines, Fibres, Non-Preemptive and Preemptive scheduling and multi-core functionality

Template Search in image | *Prof. Subodh Kumar*: Mar, 2022 - Apr, 2022

- Implemented an algorithm to determine the position of potentially rotated query image on input image concurrently
- Used CUDA for parallel computation, bilinear interpolation to compute rotated coordinates, and RMSD for error

Restaurant dashboard | *Prof. Maya Ramanath*: Feb, 2022 - Mar, 2022

- A web-based dashboard for restaurants that allows users to log in with diferent levels and query or edit data
- Developed front end using HTML and CSS, back-end using fask and PSQL to support highly customizable queries

SML Compiler | *Prof. S.Arun Kumar*: Mar, 2021 - May, 2021

- Developed a compiler and evaluator for toy language of boolean algebra and integer arithmetic, using LR(0) parser
- Language supports type checking, variable declaration, lambda calculus, recursion, and functional programming

Trafc Density Estimation | *Prof. Rijurekha Sen*: Feb, 2021 - Mar, 2021

- Computed queue and dynamic trafc density on a given road by fnding diference in frames using OpenCV in C++
- Used optimizations like background subtraction, changing homography, parallel computation using pthreads
- Reduced computation time on a benchmark video by a maximum of 58.8% (0.5% RMS error) and by 25%(no error)

MIPS Simulator | *Prof. Preeti Ranjan Panda*: Feb, 2021 - May, 2021

- Simulated single cycle multi-core processor that interprets and then executes multiple MIPS programs parallelly
- Used optimizations like background subtraction, changing homography, parallel computation using pthreads
- Implemented non-blocking DRAM timing model, 1st level cache and instruction reordering reducing CPI by 50%

Technical Skills

Languages: C/C++, Python, Java, SQL (Postgres), SML/NJ, Rust
Familiar: MIPS(Assembly), VHDL, HTML, CSS, JavaScript, C#, Prolog, Bash
Libraries: CUDA, MPI, OpenMP, OpenCV, Pytorch, TensorFlow, Sklearn, Pandas, MatplotLib, NumPy, SDL, Yacc, Lex
Software & Tools: Unity, Git, LaTeX, Linux, Vivado, QtSpim, Blender, AutoDesk Inventor

Relevant Courses

- **Computer Science**: Virtualization & Cloud Comput, Natural Language Processing, Operating Systems, Parallel & Distributed Programming, Database Management System, Theory Of Computation, Computer Networks, Principles Of Artificial Intelligence, Analysis & Design Of Algorithms, Data Structures And Algorithms, Computer Architecture, Programming Languages, Design Practices, Discrete Mathematical Structur, Mini Project, Btech Project, Digital Logic & System Design
- **Matematics & Other**: Probability and Stochastic Processes, Signals and Systems, Linear Algebra & Application, Algebra, Introduction to Calculus, Fundamentals Of Language Sciences, Introduction to Electrical Engineering

Position of Responsibility

Executive, DevClub: May, 2022 - Nov, 2022

- Organised 3 days long GameJam event in Tryst 2022 as a part of Game Development Club IITD
- Helped in the smooth working of game-dev part of the club and developed multiple PC games using Unity

Student Mentor, BSW: July, 2021 - May, 2022

- Counseled 5 freshers to acclimatize them with institute activities, ensuring smooth transition into IIT Delhi