RAMNEEK SINGH GAMBHIR

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	B.Tech and M.Tech in Mathematics & Computing	Indian Institute of Technology, Delhi	9.211
2018	CBSE	St. Edmunds School, Jaipur	91.2%
2016	CBSE	St. Anselm's Pink City School, Jaipur	9.8

INTERNSHIPS

- **ShunyaOS**, *Systems Programmer* *Jun 2021 - Jul 2021*
  - Implemented a backend using UNIX sockets for automating various OS and networking tasks for embedded devices.
  - Integrated Protobuf into the codebase, replacing JSON for IPC and RPCs to improve transmission & processing speed.
- **D.E. Shaw India**, *Front Office Tech* *Jun 2022 - Jul 2022*
  - Extensively used Java reflections & annotations to develop a DSL for writing broker algorithms. (Reduced LOC by 2x)
  - Created a GUI in Java Swing and used IPC(Sockets, PJrmi) to connect to a backend simulator. (Reduced testing time by 6x)

SCHOLASTIC ACHIEVEMENTS

- **IIT-D Semester Merit Award:** Selected for being among the **Top 7%** of students in semesters 1,3 & 5
- **B-83 Scholarship by IIT-D** : Selected for a Merit Scholarship of Rs.30000 based on academic excellence (2019)
- **Entrance Exams**: JEE Advanced 2018: All India Rank **309** / **225k** | JEE Mains 2018: **870** / **1.5 M**
- **KVPY 2017**: Recommended for the Award of KVPY Fellowship for securing All India Rank 1533

TECHNICAL SKILLS

- C/C++, Java, Python, Scala, Go, Node.js, PostgreSQL, MongoDB, Redis, Kafka, Docker, Kubernetes, Linux, Git, IntelliJ

PROJECTS

- **Virtualization In Key-Value Stores [Redis]** | *Research Project, Prof. Abhilash Jindal, IIT-D*
  - Researching on the use cases of Redis' key space virtualisation, semantic sharding, versioning & forking, using tree-based address spaces & persistent data structures to improve security, scalability, memory sharing & efficiency.
- **Fault-tolerant Sharded Key-Value Store** | *MIT 6.824, Distributed Systems Lab* [https://rb.gy/jhaemp] Go
  - Implemented the RAFT algorithm with persistence, snapshotting, log compaction and conflict detection optimizations.
  - Built a sharded KV store on top of RAFT, supporting dynamic reconfiguration & migration of shards with zero downtime.
- **CheaterStrike** | *IIT-D SIL765, System Security Course Project* [https://rb.gy/nwoi5x] C++, OpenGL, Intel SGX
  - Developed a Prototype 3-D first-person shooter game secure against wall and aim hacks using Intel® SGX technology
  - Based on publication: BlackMirror: Preventing Wallhacks in 3D Online FPS Games
- **Kernel for Disk oriented Database, Bustub** | *CMU 15-445, Database Systems Lab* [https://rb.gy/50isaz] C++
  - Implemented LRU-based Buffer Pool Manager, Concurrent Extendible Hash Index and Query Executors.
  - Implemented a Concurrency Control System with Repeatable, Uncommitted & Committed Read Isolation levels.
- **32 bit kernel on QEMU** | *Personal Project* [https://rb.gy/5hkdzv] C, x86
  - Starting from BIOS developing a simple 32 Bit Kernel with features: BootLoader, Paging, Swapping, Scheduling, File-system, Kernel and User spaces, ELF-Loading, Shell, Memorylib, Disk & Keyboard drivers.
- **µ.Tix.Services** | *Personal Project* [https://rb.gy/gem2ek] Node.js, Docker, Kubernetes, NATS streaming
  - Highly available cloud native ticket buying-selling platform built in a micro-services architecture.
  - Services: Tickets, Orders, Payments, Expiration; each running in a container with MongoDB database.
- **Parallel Programming Projects** | *Stanford CS149, Parallel Programming Lab* [https://rb.gy/a8ez9x] CUDA, OpenMP
  - Implemented a scalable, highly parallel renderer in CUDA for rendering simple animations with ≈ 100k circles
  - Implemented parallel big graph algorithms: Page Rank and Hybrid(top down + bottom up) BFS in OpenMP.
- **Worldwide Temperature Observatory** | *Coursera, Func. Prog. in Scala Capstone* [https://rb.gy/bey6cg] Scala, Spark
  - Used Spark RDDs to process data and RTree2D to interpolate worldwide temperature from a few points.
  - Generated Colored Tiles(Height x Width x Zoom) to visualize absolute temperature and deviations in it across the globe
- **Genome Assembly Challenge** | *Coursera, Data Structures and Algorithms Capstone* [https://rb.gy/4cvaev] C++
  - Used heuristic-based Hamiltonian cycle finding in overlap graph and Eulerian cycle finding in De-Bruijn graph.
  - Used error correction techniques: Bubble and Tip Removal to assemble genome of phi X 174 from random reads.

EXTRA CURRICULAR ACTIVITIES

- **Google Kick-Start 2020**: Secured global rank **133** / **9k** and **179** / **9k** in rounds E and H respectively
- **Facebook HackerCup 2020**: Secured global rank **100** / **30k** in qualification round. Qualified further till **round 2**
- **Codeforces**: **Rated Master (Rating: 2117)**, **Top 0.7%** among all Indian participants on Codeforces
- **Vidya Teaching Project**: Tutored class 10 and 12 students in KV, IIT-D for mathematics board examination.

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

RAMNEEK SINGH GAMBHIR

IIT COURSE

Degree	Institute	CGPA
B.Tech and M.Tech in Mathematics & Computing	Indian Institute of Technology, Delhi	9.211

COURSES DONE

Data Structures And Algorithms, Probability & Stochastic Pro., Operating Systems, Advanced Algorithms, Data Mining, Analysis &design Of Algorithms, Computer Architecture, Computer Networks, Intro. To Logic & Funct. Prog., Theory Of Computation, Cryptography, Networks & System Security, Statistical Methods, Cloud Computing Techno. Funda., Embedded Systems, Multimedia Systems