Saksham Goel

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Experience

Virtu Financial   *Austin, Texas*
CORE DEVELOPER   *May 2023 - Present*
- Low-latency infrastructure for algorithmic trading including order-entry gateways, market feeds, and software for radio and ASICs.
- Developed hardware-facing software that powered single-digit nanosecond tick-to-order latency with delegated send and **speculative injection** tactics for several profitable strategies.
- Designed a **stateless market data** protocol that shaved off milliseconds from latency between colocations connected by unreliable **microwave** radio links with limited bandwidth. This was deployed firm-wide for proprietary as well as customer market-making.
- Interviewed candidates and mentored interns. Part of the developer on-call team. Evangelized tools for developer productivity such as caching build farms, symbol table indexing, and split dwarfs.
  Tech Stack: C++, Solarflare onload/ef_vi kernel bypass, shared memory IPC, perf, Intel PT, Linux internals, Python

Netflix   *Los Gatos, California*
SOFTWARE DEVELOPER INTERN   *May 2022 - Aug 2022*
- Features to reduce peak load on Netflix's big data workflow orchestrator, Maestro. Designed an MVP for low-latency workers to reduce p99 launch time by 90%. Improved CockroachDB transactional throughput by 2x for distributed semaphores.
  Tech Stack: Java, Spring Boot, Redis, CockroachDB

Mosaic Research Capital   *Hong Kong*
QUANTITATIVE DEVELOPER INTERN   *May 2021 - Aug 2021*
- Developed concurrent low-latency infrastructure for high-frequency market making in crypto exchanges including Huobi, OKEx, and Binance. Led an overhaul of the order management system, bringing down order-entry tail latency by 20%.
  Tech Stack: C++ 17, Aeron Transport, Linux perf

Uber   *Bangalore, India*
SOFTWARE DEVELOPER INTERN   *May 2020 - Jul 2020*
- Full-stack development to build an MVP of a scalable survey platform. Authored an RFC of a system that provides synchronous client experience over an asynchronous backend achieving **millisecond latency** SLA guarantees. **Used in production** as of Dec 2020.
  Tech Stack: Go, Kafka, Schemaless, WebSocket, HiveQL

AWL Inc.   *Sapporo, Hokkaido, Japan*
SOFTWARE DEVELOPER INTERN   *Nov 2019 - Jan 2020*
- Developed microservices and deployed DNN models on an ARM-based ASIC edge device to provide AI capabilities to conventional Video Management Systems. This work was showcased in the **CES 2020**.
  Tech Stack: C++, RabbitMQ, OpenVINO, Azure IoT Framework

Education

The University of Texas at Austin   **GPA: 4.0 / 4.0**
MS IN COMPUTER SCIENCE | FULLY-FUNDED RESEARCH ASSISTANTSHIP   *Aug 2021 - May 2023*
Verification of Distributed Systems, Advanced OS, Datacenters, Compilers

IIT Bombay   **GPA: 9.59 / 10**
B.TECH. IN COMPUTER SCIENCE AND ENGINEERING (HONS.) | MINOR IN APPLIED STATISTICS   *Jul 2017 - May 2021*
Virtualization, Verification of Concurrent Programs, Haskell. Teaching Assistant for Operating Systems and Calculus.

Research & Publication

Liveness Based Garbage Collection   *IIT Bombay, India*
UNDERGRADUATE RESEARCHER (UNDER PROF. AMITABHA SANYAL)   *2018 - 2020*
- Designed a **liveness analysis** based garbage collection technique for functional languages that showed order of magnitude gains in speed & memory on standard benchmark suites.
- Published and presented as the opening talk of ACM SIGPLAN **ISMM'20 conference** (co-located with PLDI'20).

TU Braunschweig   *Braunschweig, Germany*
RESEARCH INTERN (UNDER PROF. THOMAS DESERNO)   *May 2019 - Jul 2019*
- Designed a system to crowd-source reliable medical image segmentations using expectation maximization algorithms. This was used by 200+ volunteers to generate 5000+ masks. Published in the SPIE Medical Imaging Conference 2020.

ISMM 2020   **Garbage Collection using a Finite Liveness Domain**, A. Bansal*, *S. Goel**, P. Shah*, A. Sanyal, P. Kumar
SPIE 2020   **WeLineation: Crowdsourcing Segmentations for Ground Truth Estimation**, *S. Goel*, Y. Sharma, M. Jauer, T. Deserno

Honors & Awards

2021	**J N Tata Scholar**, for pursuing higher education in computer science		*India*
2020	**Institute Academic Award**, for excellent academic performance (Top 7 out of 121)		*IIT Bombay*
2020	**Undergraduate Research Award**, for exceptional research work and publication		*IIT Bombay*
2017	**All India Rank 25 in JEE Advanced**, amongst more than 1 million candidates		*India*
2015	**National Talent Scholar**, a scholarship by NCERT, Government of India Top 1000 out of 1 million+)		*India*