

# Nikhil Rai

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## Experience

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### Limeroad

Software Development Engineer 2

Gurgaon

Nov 2022 – present

### Search and Recommendation

- **Led development** of a scalable semantic search & recomm. system for **5M+ products**, handling **100K+ RPM**.
- **Reduced search response times** to **sub-30 ms** by migrating **Solr** to a distributed cloud setup with **HTTP-proxy caching**, and using an **event-driven architecture** for real-time product data updates with **Kafka**.
- **Boosted** product recommendation **CTR by 20%** using a hybrid **vector search** model with text & image embeddings.
- **Cut search infra costs by 50%** with an **auto-scaling strategy** leveraging **AWS spot instances** for Solr cluster.

### Ads Monetization Platform

- Spearheaded development of an **ads system** enabling vendors to bid for premium spots (homepage, search, banners).
- Designed a **scalable bidding engine** with **Vickrey auctions**, integrated with search and product pipelines.
- Boosted **revenue by 12%** and vendor engagement via **real-time bidding** and **spend analytics dashboards**.
- Achieved **high availability under load** using **Redis** for bid caching/rate limiting and **Kafka** for bid event streaming.

### Payment Service

- Developed a **payment-gateway agnostic S2S payment service** with **Spring Boot** utilising the **strategy pattern**.
- Enhanced reliability with **Resilience4j** by implementing **circuit breaker pattern** to prevent cascading failures.
- **Reduced server load** by using **Server-Sent Events (SSE)** for real-time payment updates, eliminating short polling.
- **Improved checkout conversions by 8%**, via introduction of **Pay with Rewards** feature using third-party APIs.

## Technical Skills

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**Backend Development:** Java (8+), Spring Boot, Hibernate, Kafka, RabbitMQ, RESTful APIs, JavaScript, Node.js

**Databases & Caching:** MySQL, Amazon Redshift, Amazon RDS, MongoDB, Redis, Solr, Aerospike, ZooKeeper

**Cloud & Infrastructure:** AWS services, Docker, Kubernetes, Nginx, Varnish, Jenkins, NewRelic

**Core Engineering:** Git, Data Structures & Algorithms, System Design, Design Patterns, Microservices Architecture

## Education

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### Delhi Technological University

B.Tech in Mechanical Engineering (Minor in Computer Engineering)

New Delhi

July 2019 – June 2023

- CGPA: 9.30/10.00, ranked 3rd in Department

### Sarvodaya Co-Ed Sr. Sec School

CBSE (Class-XII) in Science (PCM)

New Delhi

May 2017 – May 2018

- Secured 92.8%, ranked 1st in Class

## Achievements

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- Recognized as a Smart India Hackathon (**SIH**) **finalist** for developing innovative solution for the **Indian Coast Guard**.
- Led a team of **4** to secure **2nd place** overall in **Vihaan 2021**, a national-level hackathon organized by **IEEE DTU**.
- Ranked **3rd** in the Department, securing **Merit-Cum-Means scholarship** by Delhi govt. for the 4 years of graduation.
- Achieved top **3.7** percentile, amongst the qualifiers of JEE mains 2019 (total 1.2 million qualified candidates).