SANDEEP SINGH

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Senior Software Engineer with **9+ years** specializing in large-scale search systems and ML infrastructure. Expert in distributed systems, search optimization (Solr/Lucene), and ML model deployment (T5/mt-5). Strong focus on system design, performance optimization, and technical leadership.

EDUCATION

B.Tech in Computer Science and Engineering   2012 – 2016
Motilal Nehru National Institute of Technology (MNNIT), Allahabad

KEY ACHIEVEMENTS

- Architected search systems handling **6000 QPS** and **300M queries on Black Friday** for 900+ enterprise clients
- Led **Python 2→3 migration** across microservices with zero downtime, reducing infrastructure costs by 20%
- Pioneered multilingual NLP capabilities using **mt-5 models**, extending search to non-English languages
- Improved search relevance by 30% through **Solr** optimization and ML-based ranking formulas

EXPERIENCE

Bloomreach India - Senior Software Engineer   April 2025 – Present
Discovery - Search & Recommendations — *Team: 6 engineers including 2 Staff Engineers*

- Architected **T5**-based ML pipeline for BRIP (Bloomreach Inferred Product Type) extraction, processing 10M+ products daily for improved product categorization
- Designed and implemented custom **Solr** ranking formulas with ML optimization, improving search relevance by 30% across enterprise deployments
- Leading system design for next-gen semantic search infrastructure with focus on latency optimization and scalability
- Collaborating with 2 Staff Engineers on technical roadmap for search quality improvements and ML model integration

Bloomreach India - Software Development Engineer 2   August 2021 – April 2025
Discovery - Search & Recommendations

- Pioneered multilingual search capabilities using **mt-5 models** and **Solr**, extending advanced features like query relaxation and precision modes to non-English languages
- Architected ChatGPT integration for automated content generation with hallucination detection system, achieving **95% accuracy** in content validation
- Built real-time "Recently Viewed" feature using **Kafka** and **Spark Streaming**, processing 1M+ events daily with sub-second latency
- Spearheaded infrastructure modernization: **Python 2→3** migration across services, EC2→VPC transition, reducing infrastructure costs by 20%
- Implemented **Istio service mesh** for Django REST API microservices, improving system observability and reducing debugging time by **40%**
- Re-architected **Airflow** data pipelines for multi-tenant support, migrating from Qubole to AWS **MWAA**, improving SLA compliance from 85% to **99.9%**

Soroco India - Senior Software Developer   September 2018 – August 2021

- Architected 11 enterprise automation systems for Fortune 500 clients using distributed architecture and event-driven design
- Led team of 6 engineers through technical design reviews, code reviews, and mentoring, improving team velocity by **35%**
- Designed distributed automation framework with event-driven architecture for high-throughput data processing

Soroco India - Software Developer   February 2018 – August 2018

- Built distributed automation systems using microservices architecture and message queuing
- Championed TDD practices achieving **85% code coverage**, reducing production incidents by 60%

MakeMyTrip - Android Developer   June 2016 – August 2017

- Developed critical features for Android app with **10M+ downloads** including filtering, sorting, and GST implementation
- Designed and implemented sophisticated filtering algorithm reducing search time by **50%**
- Architected app using **MVVM** pattern with data binding, improving app performance by **30%**

TECHNICAL EXPERTISE

System Design	Distributed Systems, Microservices, Event-Driven Architecture, API Design
Search & ML	Solr, Lucene, T5/mt-5 models, NLP, Semantic Search, Query Understanding
Languages	Python, Java, Go, Scala — Frameworks: Django, FastAPI, Spring Boot
Data & Scale	Kafka, Spark, Airflow, Redis, PostgreSQL, DynamoDB, Cassandra
Infrastructure	AWS, Kubernetes, Docker, Istio, Terraform, CI/CD, Monitoring (Datadog/Grafana)

CERTIFICATIONS & TECHNICAL CONTRIBUTIONS

- **CodeChef CCDSAP** - Advanced Data Structures & Algorithms, Distinction (2017)
- Technical interests: System design at scale, Search relevance, Real-time ML serving, Platform engineering