SITARAM IYER

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Software Engineer · Search Infrastructure · AI innovator

Distinguished Software Engineer renowned for developing scalable, low-latency, mission-critical web and knowledge graph indexing infrastructure. Spearheaded initiatives that aid underprivileged communities with job search, education, financial wellness, and social justice. Skilled at cross-organizational collaboration while navigating complex stakeholder environments leading to innovative and impactful solutions. Leveraging AI to launch an AI education website (aitrends.live) and business contract analysis tools (samvid.ai).

Notable Achievements

At Google:

- Two generations of Google's web search indexing system, resulting in a 2x fresher 1 trillion web page index
- Google's Knowledge Graph indexing system, leading to fresh, varied composition of facts for Knowledge Panels
- Google's Job Search, with 30M monthly active job seekers and 10x greater job postings and salary transparency
- Google's College Search platform guiding 50 million underprivileged students to optimize their education choices
- Google's Big Moments, for deeper context on 1000s of News events worldwide, with AI-orchestrated chatrooms

After Google:

- AI Trends (aitrends.live), a site built using and powered by AI to teach AI with 5k page views and 600 users
- Samvid.AI (samvid.ai), enabling a high-quality chat over business contracts with embedded structured data
- Applied LLMs to visual decision making (slideinto.ai), discovery and user growth, guided conversations, creative brainstorming and meta-writing, reducing hallucinations, inspirational shopping, and legal assistance

Core Competencies

- Large-Scale Infrastructure
- Search Strategy
- Search Crawl / Indexing
- LLMs & Applied AI
- Knowledge Graphs
- Cross-org Collaborations
- Product Vision
- Social Impact Search
- Job & Education Search
- Shopping & Legal Search
- Distributed Systems
- Search Engine Optimization

Experience

Google - Social Impact Search 2014 – 2023

Distinguished Engineer (L9)

Pursued different missions to help underprivileged and marginalized groups through job search, education, financial wellness, and social justice. Navigated stakeholders, policy and legal challenges, and external partners, creating space for engineers and product mangers to build useful and compassionate products.

- **Big Moments (2020 – 2023):** Created and led a Google Search project with a team of 25 to provide deeper context on major and sensitive News events, such as the BLM movement, Roe v Wade overturn, Ukraine war, etc. Press coverage.
- **Financial Wellness (2020):** Led and advised teams to help with unemployment benefits especially for job seekers during the pandemic, and created features that improved financial literacy. Google blog post from 2021.
- **College Search (2017 – 2019):** Led a team to launch search features for colleges and category queries, to guide underprivileged students to make informed education choices factoring in career goals, ROI, cost and income, and student life. Helped avoid predatory schools and notified students for financial aid. Blog posts June 2018 and August 2019
- **Job Search (2015 - 2017):** Led a team to launch Job Search for queries like "accountant jobs near me", building an ecosystem of job postings, salary transparency, and remote jobs, and enabling users to search, filter, and apply to jobs. Blog posts from June 2017 and Nov 2017.

Google - Search Infrastructure 2003 – 2014

Member of Technical Staff (L4) to Distinguished Engineer (L9)

Led search infrastructure projects like web and knowledge graph indexing. Built large, fast, and complex systems.

- **Foundation (2014 – 2015):** Led effort to unify all of Google's Search infrastructure including private/public, structured/unstructured, crawl/indexing/serving systems into a single "*database of everything*" and shared business logic with modular APIs and microservices, to enable the Search pivot towards real-world tasks.
- **Livegraph (2012 – 2013):** Built the incremental indexer for the Knowledge Graph, with low-latency reconciliation and composition. This powers Knowledge Panels and many other Search features.
- **Alexandria (aka Caffeine) (2007 – 2013):** Led the team to build the incremental indexer for Web Search that scaled to 1 trillion web pages, averaged 1 min latency, and reduced staleness by 50%. It was built on a 250 PB Percolator based transactional data store running on 15,000+ machines, processed 1M+ txns/sec, with innovative techniques to handle diverse content types, redirects, duplicates, hyperlinks, page rank, web errors, and hacked sites. Blog post from 2010.
- **Indexing pipeline (2005 – 2010):** Built a batch indexing pipeline that scaled to 250 billion web pages at 36-hour latency, implementing a virtual segmented 10 PB repository that was needed to ingest a continuous crawl.
- **Index scaling (2003 – 2005):** Launched 8 billion web page index over 3 weeks on the eve of Microsoft's 5 billion index.

Education

Ph.D., CS / Operating Systems, Rice University, Houston, TX 2001 - 2003

- **Dissertation:** Application-assisted physical memory management Grad date 2005.
- **Related publication:** Practical, transparent operating system support for superpages. Juan Navarro, Sitaram Iyer, Peter Druschel, Alan Cox. Symposium on OS Design and Implementation (OSDI), Dec 2002, Boston, MA.

MS., CS / Operating Systems, Rice University, Houston, TX 1998 - 2001

- **Thesis:** Anticipatory disk scheduling
- **Publication:** Anticipatory scheduling: A disk scheduling framework to overcome deceptive idleness in synchronous I/O. Sitaram Iyer, Peter Druschel. Symposium on OS Principles (SOSP), Sep 2001, Banff, Canada.

B.Tech., CS / AI, Indian Institute of Technology, Bombay 1994 - 1998

- **Thesis:** Xority: A measure of separability of training sets for neural network size estimation.
- **Publication:** Xority: A measure of separability of training sets to estimate hidden layer size in neural networks. Sitaram Iyer, Pushpak Bhattacharyya. Intl. Conf. of Knowledge Based Computer Systems (KBCS), Dec 1998, Bombay, India.