

# ROSHAN RATHOD

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## EDUCATION

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**California State Polytechnic University**  
Masters of Science, Computer Science

Pomona, California, USA  
Sep 2013 - Apr 2016

### Publications

Rathod, Roshan, and Yu Sun. "A model-driven approach to automate the development of communication channels for Internet of Things applications." Internet of Things and Applications (IOTA), International Conference on. IEEE, 2016.

<http://ieeexplore.ieee.org/document/7562731/>

## TECHNICAL SKILLS

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**Languages:** Python, C#, VB.NET, Ruby, Java, Golang.

**Search Engine:** Elasticsearch, Logstash, Kibana, Mustache, Endeca.

**Database:** PostgreSQL, AlloyDB, Neo4j, Spanner, MySQL, MSSQL, DB2

**Infrastructure:** Kubernetes, Docker, Terraform, Apache Beam, Apache Kafka, Kustomize, Google Cloud Platform(GCP), Datadog, PagerDuty, Atlantis.

**Other tools and technologies:** Git, Bash, ASP.NET, JavaScript, jQuery.

## WORK EXPERIENCE

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### BenchSci

Senior Software Engineer – Search

Remote  
April 2022 - Present

- Technologies in use: *Python, Kubernetes, Elasticsearch, Postgres, AlloyDB, Spanner, Neo4J, BigQuery, PubSub, Terraform, GCP workflows, Cloudbuild and Apache Beam.*
- Responsible for building and supporting the search infrastructure and the data ingestion pipeline used by the internal teams. Led the evaluation and integration of **vector search** and **graph search** capabilities, designing and implementing **new data pipelines** with self-serve indexing capabilities to power Retrieval-Augmented Generation (RAG) for **semantic** search.
- Led efforts to optimize **search performance** across indexing and querying. Reduced query response times from **5s to 500ms** by optimizing query aggregations and index mapping. Introduced incremental transfers and parallelization, cutting **indexing** time from **16h to 4h**. Improved snapshot and restore performance—reducing **snapshot** times from **5h to 10m** by tuning settings, increasing threads, and optimizing recovery throughput.
- Led the initiative to establish **monitoring** and **alerting** for Elasticsearch clusters and the search data pipeline. Defined key metrics, created **dashboards**, and introduced **Prometheus** for improved **observability**. Collaborated with external teams to implement monitoring across the fleet, set up **PagerDuty** alerts with actionable **playbooks**, and ensured **proactive issue detection** where none existed before.
- Led cost optimization initiatives, proactively analyzing hardware usage and making infrastructure more **ephemeral**. Scaled down DB instance disk size by 50%, optimized CPU and memory, and adjusted Elasticsearch clusters and databases to dynamically rebuild when needed. Implemented backup retention policies to remove old data, saving thousands per month. These efforts resulted in annual infrastructure cost **savings exceeding \$500K**.
- Define on-call **responsibilities** and write **playbooks** for handling production alerts and incidents.

## Shopify

Production Engineer – Search Platform / Infrastructure

Remote

March 2020 - April 2022

- As a production engineer, my job was a mix of **systems and software engineering**. Sometimes I might be working on creating/building infrastructure like **kubernetes** clusters management or CI setup or creating **docker** images and other times I might be working on creating software to help manage or improve our search infrastructure like libraries for developers to query and ingest into search infrastructure.
- Build and manage a robust, scalable and multi-region search infrastructure of **250+ elasticsearch nodes** with **Terabytes** of **data** on **Kubernetes** using **terraform** on Google cloud(**GCP**).
- Build software and systems to manage search infrastructure. Ex: Custom **Docker** images, Libraries for developers, **Kubernetes Custom Controllers** in GoLang for automated elasticsearch cluster deployments.
- Build, manage and improve our **data ingestion pipeline**. We use **kafka**, **ruby** and **logstash**.
- Help internal teams with search **deployments, querying and ingestion**.
- **Measure** and **optimize** search performance, with an eye toward pushing our capabilities forward, getting ahead of customer needs, and innovating to continually **improve** our infrastructure.
- Deep dive into elasticsearch internal workings for **performance tuning**.
- Setup **datadog** integrations using statsd and other libraries to create datadog dashboards for system monitoring.
- Participate in on-call rotations. Investigate and resolve production issues. Reduce team toil through **automation**.

## Ingram Micro

Senior Software Engineer – Search

Irvine, California, USA

Jan 2017 - Feb 2020

- As a **search engineer**, my main responsibility was to mentor a small team of engineers and help design the system **architecture**, develop **solutions** related to the search engine, do code reviews and make sure the design, coding **guidelines** and best practices are followed.
- A typical day at work would include a combination of tasks such as design/develop front end using AJAX, JavaScript, jQuery, HTML, CSS or design/develop back end APIs using various .NET technologies or design/develop search engine features using **ElasticSearch**.
- My exposure to some critical features allowed me to learn and become a **subject matter expert** for ElasticSearch for my team.
- Designed and developed a **search engine** management portal for business users for managing merchandising rules such as product recommendations.
- Worked on **elasticsearch queries with aggregations** for implementing **facets** and filters on the e-commerce site.
- Involved in **Machine Learning** project for taxonomy mapping of product catalog.
- Other activities include – brainstorming and designing system architecture, creating technical design documents, writing **SQL** queries, creating **windows services**, optimizing **database** queries.

## Uni-Point LLC

Software engineer

Remote, California, USA

Aug 2014 - Dec 2016

- **Full stack** development on ASP.NET applications. Front end using AJAX, JavaScript, jQuery, HTML, CSS, Kendo and other Telerik tools. Back end and APIs across various .NET frameworks.

## California State Polytechnic University, Pomona

Teaching Assistant

Pomona, California, USA

Sep 2013 - Apr 2014

References will be provided upon request.