Karthik Kumar Viswanathan

Contact

Email - karthikkumar@gmail.com Web - karthikkumar.org LinkedIn - [vkaku](https://linkedin.com/in/vkaku)

Cisco

Engineering Leader 2022 - 2023

Joined the CX Cloud Org to build a Massive Data Platform to bring our customers self-service ML/AI capabilities. I was responsible for the Technical Ownership of the platform, leading and executing with 20 Engineers across 3 Groups and interacting with 3 Vendors.

- Set Engineering Roadmaps with Product Heads and Program Managers, guiding Overall Execution across different projects.
- Delivered Specifications for ML Ops Frameworks and ML APIs for Multi-tenant Multi-cloud Inference Servers. Focus is on Format/Framework Interoperability among Implementations, Feature Extraction and On-the-fly I/O encoding.
- Standardized and transitioned our Organization into Cloud-Agnostic, GitOps-based Workflows. Tasks include ML Training Datasets, Infra-As-Code and Tests.
- Handled Cloud and Security Incidents with a team of SREs. Worked with the Security Teams on responsible disclosures.
- Bootstrapped the Product Recommendation Engine with a team of 6 Engineers. Worked with multiple partner teams to enable Broad Adoption. Directly responsible for 25% increased TCV in multiple segments.
- Responsible for Software and Infrastructure for Training, Tuning and Quantizing Parameters for Large Language Models. Focus was on measuring on Costs, Cloud Provider Comparisons and Accuracy.
- Coached and Worked with Architects and Senior Engineers on Infrastructure, Implementation and Security.

PencilData

Director of Engineering 2019 - 2021

Responsible for Product and Infrastructure. Led a team of 15 Engineers directly and with Vendors (35+ Vendor Engineers).

- Set Roadmaps and responsible for overall Execution, Recruitment and Budgeting for the same. I have shipped 2 Enterprise Products and 2 Consumer Products.
- Recruiting and Developing the Organization. Helping grow the team, giving feedback and setting accountability. Responsible for the Personal and Professional Growth of the people working with me. Scaled the Organization to 4 teams - Integrations, Infrastructure, Product and Backend.
- Interviewed and built the team.

- Involved in Onboarding and Documentation for all new team members. Wrote extensive design documents, drove a transparent process and set standards.
- Worked with many of our customers on Pre-Sales and Support Calls. Communicated back to our teams and Built the roadmap accordingly.
- Responsible for bringing in Customers and Revenue through the Products.
- Delivered a Distributed Marketplace for NFTs. It allowed roll-ups (L1 or L2 rollup), fully token-gated storage on IPFS as well as key recovery from various social media accounts.
- Responsible for end to end CI/CD and secure deployments for all of our services. Implemented the Build Scripts, Containerized Deployment across On-Prem and Cloud versions of our software.
- Wrote custom toolchains, Infra-As-Code, CI/CD scripts and best practices.
- Responsible for Cost optimization, Infrastructure security and reporting. Worked with our AWS account managers and brought credits for the AWS Startup Program.

Zenefits

Lead Software Engineer 2017 - 2018

Core Benefits and Infrastructure Work. Led a team of 3 Software Engineers.

- Led the team on processes with a focus on reducing Incidents. Guided them on issues related to Infrastructure, Metrics and Concurrency.
- Designed and Wrote a Shared Memory-Mapped Caches implementation in Python. Used it to dramatically speed up the loading of Critical Data in our code.
- Worked on issues in CPython related to Garbage Collection. Reduced memory footprint overall from 1GB to 32MB per process. Written in C.
- Worked on reducing the number of Django apps that were loaded per process, enabling us to load them as smaller, observable Micro-Services.
- Work on Re-Architecture and reducing Technical Debt. Focussing on Concern Separation and Data Quality. Own the Core Benefits, Life and Disability Product Lines with a focus on Architecture.

Walmart Labs

Site Reliability Engineer (Lead) 2015 - 2017

Infrastructure Reliability, Security, Analytics. Led a Systems Team of 15 Engineers.

- Recruited and Led a team of SREs, Systems and CRC Engineers. Mentored and trained teams on Infrastructure and Python. Transitioned the teams to a proactive mode.
- Liaison between worldwide service teams and directed them to fix systemic issues. Worked with Problem and Change Management and implemented better processes.
- Led PCI Project for Systems. Worked with a team of SAs to implement portions of our homemade Compliance Tool. Achieved the Compliance Objectives for the year. It was written in Python, Expect, Bash and Chef.
- Architected and Implemented Walku - our own Inventory and Metrics Telemetry System. It reported on Storage, Processor, Network and Memory utilization and error rates. It was written

in Python, Flask, Celery, Bash, Redis, Cassandra, AngularJS and HighCharts.
- Wrote the OneOps Services Movement Dashboard. Written in Go, Materialize and jQuery.
- Fixed issues in Kubernetes (k8s) Seed Provider for Cassandra. Submitted a patch to Datastax and RedHat. Written in Java.
- Metrics Trending Dashboard. It scraped OPS, RUM and related metrics to automate if flows were trending up, down or following. Written in Python, Flask and Numpy.
- Modernized the Remedy 7 CRQ Dashboard. Unified the reporting. Added features. Migrated it to be API only. Written in Java, Jersey and Spring 3.
- On-Call for entire Unix Systems Infrastructure, handling a fleet of 15000 physical machines.
- Reduced the number of actionable team alerts by 20x, to 5% of its original volume. Talked to various product and infrastructural teams and routed alerts to them directly.

Freshworks

Technical Architect 2014 - 2015

Architected an Enterprise SaaS Product. Managed a Systems Team of 4 Engineers.

- Headed the Security team to do auditing and help the Organization adopt an ethical and responsible disclosure policy. Worked across IT, Product and Infrastructure teams to improve product security. We were able to pass the Safe Harbor compliance test.
- Designed and Implemented a Serverless λ Enterprise Product. Wrote the initial code and mentoring the team on Scalability, Multi-tenancy, Security and Code Quality aspects when maintaining the Product. Written in Java, JRuby and Docker. Onboarded our first customers with our Ruby based SDK.
- Guided the NOC on handling P0 incidents and DDoS attacks.
- Wrote the initial Config Scripts for App, Squid, Syslog, Varnish and ElasticSearch. Created Dockerfiles for packaging. Onboarded teams on Chef, Opsworks and Beanstalk.

Bharti Softbank

Principal Software Engineer 2013

Architected and Implemented the core Platform. Built the Backend and Infrastructure teams. Managed 2 Engineers.

- Did performance, cost and user-based planning for launch and growth time infrastructure. Used various benchmarking tools to verify network, disk and memory usage before deployment.
- Designed systems and processes to scale every bit of Infrastructure with no single points of failure.
- Designed, Implemented and Shipped the core platform, messaging and analytics engine. In Java, HBase, HDFS and Hadoop.
- Led the team in creating SDKs, reliability and monitoring services. In Android, Java, Scala and C++.
- Wrote Scripts and App metrics to emit information about various data stacks, error rates and response rates in real-time. Worked to set up Zabbix monitoring for the same. Added Alerts for custom Business Components.

- Creates various boot and synchronization scripts. Documented the same, brought up DevOps and Infrastructure Teams to start using and contributing to the guide.

Zynga

Senior Software Engineer, Mobile 2011 - 2013

Developed and Maintained Systems, Made Games for Web and Mobile across Zynga. Managed 6 Interns and 2 Engineers.

- Designed and Implemented TurnTable - synchronous game and presence server based on WebSockets. Demonstrated Crazy Pool with this framework. With a team of 4 Engineers. compatibility on IE 6-8 with a polyfill written with a JavaScript-ActionScript Bridge.
- Migrated Treasure Isle from FBML to HTML/XFBML for Business Continuity. Resulted in a multi-million dollar revenue game sustaining for another year. Wrote a flexible Tag Library in PHP. Performed code maintenance and bug fixes.
- Worked on a data re-sharding tool for zBase (now Couchbase) in C++. Helped save millions of dollars in recurring Infrastructure cost.
- Led a team of Interns to work on Treasure Isle CMS Automation. Work involved porting the CMS server code to work on Windows and Mac, as well as integrating Map Generation and Editor functionalities. A lot of error checking was added to reduce grunt effort and make it easy for the team to add new content.
- Set up infrastructure for various new PoC projects and responsible for their uptime. Worked with the SRE team on automating some of the provisioning processes.
- Reduce our server and storage footprint for Treasure Isle by 50%. Helped save millions of dollars in recurring Infrastructure cost.
- Led the Implementation for Mobile 3D Pinball, written in Flash and Away3D. We Optimized it so that the Physics Engine could run at 250 frames a second on target mobile devices. With a team of 2 Engineers.

Amazon

Software Development Engineer, Kindle, Topaz Engineering 2010 - 2011

Enhanced and Maintained a Distributed Conversion Pipeline for e-books sold on Amazon.com.

- Implemented a new distributed pipeline for Japanese and German books. Owned the build and deployment of this pipeline. It was written in C++, Java, Bash and some Perl.
- Topaz Pipeline features, performance and yield. Created various imaging algorithms in the process. Used C++ (Boost Lambda/Threads, Adobe PDF SDK), Java, Perl and MySQL.
- Did Topaz Editor releases for various operators. Automated the Installation process. Worked with various stakeholders to solve a variety of end-user deployment issues.
- Was on-call for the Topaz Pipeline, handling a fleet of about 20000+ Machines per Environment. Was able to improve production yield by identifying and fixing various infrastructural errors. Generated periodic reports and sent them to management.
- Wrote brazil scripts to help out as an Environment Ninja.
- Implemented a transparent proxy for S3 in Java, which sped up book conversion by 10-50x.

- Created reusable Hadoop deployment (Apollo) packages. Ran Distributed Book validation with MapReduce. In Java, Python and Bash.

NetApp

Member Technical Staff 2, Advanced Technology Group 2008 - 2010

Was actively researching, implementing and benchmarking NetApp's upcoming OS products.

- Prototyped an idea for novel On-Disk NVLogging for 2x I/O performance.
- Wrote a WAFL FUSE driver for FS code testing. In C and x86 Assembly.
- Ported over FreeBSD SCSI drivers and bootstrapped our OS in VMware ESX.
- Wrote vmsocat - a serial to telnet server for VMs running on VMware, in C. Used by Infrastructure and QA teams for testing our OS Stack.
- Wrote an NVRAM device driver for VMware ESX 4's PCI Passthrough for 5x I/O performance.
- Found and reported bugs in VMware ESX 4's PCI implementation.
- Used to physically install hardware and troubleshoot filers in the NB Data Center for ATG. Worked with the Data Center and Testing teams and was one of the few granted perpetual CoLo access.
- Handled Volume, LUN and Snapshot creation for the team, for performance testing.

Projects

- Wrote GCC's Function Specific Optimization - Shipped in GCC version 4.4, which allows per function Optimization. My code for Automatic dispatch and Function Cloning went into Intel's Cilkplus fork, now available as GCC's Function Multi-Versioning.
- Wrote patches to Hadoop as part of an effort to make Hadoop work on Macs. See HADOOP-9635.
- Open-source contributions to PDCurses, Allegro, Webkit, Colfer, GMQTT and more.
- ChaosSquirrel - A set of scripts that have been packaged to let you easily perform Chaos Engineering on Linux machines and containers.
- GroupEnc - A Group Encryption Vault, that allows members to induct and disown other members and circulate secrets peer to peer.

Skills

- x86 Assembly, C, C++, CUDA, Go. Some Rust
- Java and Frameworks (Dropwizard, Flyway, Hadoop, JPA, SpringBoot)
- JavaScript and Frameworks (RedwoodJS) and Templates (Jinja, Angular, React)
- Python and Frameworks (FastAPI, Django, Torch, Fab, Locust, Celery, Pandas)
- Namespaces and Containers (Docker, LXC, Qemu, Jails, Zones), Kubernetes
- On-Prem Infrastructure (MinIO, Gitea, Rocket.Chat, Keycloak)
- Cloud (Openshift, AWS, GCP, Azure, OpenStack), PaaS (Google App Engine, Heroku, Fly.io)
- Relational Databases (MySQL, Postgres, Oracle, DB2, SQLite and Derby), NoSQL Databases (Redis, Memcache, Cassandra, RocksDB)
- Configuration Management (Terraform, Ansible, Salt, Chef)
- Infrastructure Foundations (DNS, DHCP, IPAM, TFTP, PXE, IPMI)

- Web (HTML 5, CSS), Balsamiq Mockups, GIMP
- Wordpress, Hugo (Markdown)
- Scripting (Bash, Python, Expect)

Talks and Publications

- 'Data Design for Scaling' at Barcamp Bangalore 2015
- 'IoT - Real-Time Information from the Real-World' at BHive, Bangalore 2015
- 'HBase Local Cluster' at Fifth Elephant 2013
- 'Building Mobile Social Games' at Game Developers Conference 2012
- 'Data ONTAP in an ESX VM', NetApp Technical Journal, Volume 5, Number 2, 2008

Other Achievements

- Runner-Up in Cisco Hackathon 2022 (Technology Track), Cisco-wide Competition (Team of Six)
- Consistently got incentives or level-ups every Quarter in Zynga. Won an Emerging Star award.
- Runner-Up in Srujan 2010 (Technology Track), all Amazon India Competition (Team of One)
- IBM Certified Associate Developer (WebSphere Studio 5.0) and Database Associate (DB2 9)