Anmol Yadav

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Technical co-founder building AI agent platforms and multi-tenant database systems on Kubernetes. Creator of **Starship**, an open-source blockchain orchestration platform with **$225k** in grants, adopted across the Cosmos ecosystem. Previously MLOps at Toyota Woven Planet and cloud platform at Rakuten. IIT Bombay '18.

Experience

Constructive — Oct 2023 – Present

Co-Founder & Head of Infrastructure

AI Agent Infrastructure

- Built **Calvin**, an AI automation platform on Kubernetes (GKE + NVIDIA L4 GPUs) that automates issue triage, PR review, CI debugging, and cross-repo failure analysis. **Eliminated the need for a dedicated PM** and reduced QA turnaround significantly.
- Deployed self-hosted LLM inference via vLLM: Gemma 3 12B and GLM-4.5 Air (**106B MoE**) with **32K–128K context**, OpenAI-compatible APIs, and tool calling.
- Built Go sidecars for agent infrastructure: multi-provider OAuth PKCE credential manager (Anthropic, OpenAI, Google) and a workspace introspection HTTP server.
- Architected a **skills-as-code system**: agent capabilities packaged as versioned markdown runbooks, deployed via init containers with persistent storage.
- Designed **AgenticKit** (TypeScript) and **MCP tooling** for multi-provider LLM streaming and structured agent-tool integration.

Platform & Developer Infrastructure

- Built **Constructive**, a multi-tenant database platform with **134+ packages across 3 monorepos**, enforcing tenant isolation through a session-aware security layer (PostgreSQL RLS + JWT claims).
- Architected **SPRT** (Security Predicate Resolution Tables), an authorization system that reduces recursive permission lookups from $O(n^d)$ to $O(\log n)$ across a three-level hierarchy (app/org/group).
- Designed a **bitstring permission model** for $O(1)$ authorization checks via bitwise operations, materializing multi-source permission bundles into a single bitmask per actor-entity pair.
- Built **pgpm**, a package manager for SQL modules with npm-style dependency resolution and deterministic migrations backed by a content-addressable object store.
- Architected a **GraphQL plugin ecosystem** with 14+ custom plugins covering unified search (full-text + vector + trigram), geospatial queries, file uploads, and LLM/RAG integration.
- Designed a composable **authentication system** supporting password, OAuth/OIDC, magic link, OTP, WebAuthn/passkeys, and TOTP 2FA.
- Built a cross-repo integration testing system using git submodules as a "known-good stack pointer." CI/CD state machine with rolling PRs and automated merge. **175+ automated cycles**, **67% of PRs fully automated**. Eliminated manual integration testing.
- Maintained widely-used open-source tooling: **pgsql-parser** (221 stars), **libpg-query-node** (75 stars), **postgres-ast-deparser** (39 stars), and **KubernetesJS** (27 stars).

Starship — Feb 2023 – Present

Creator & Lead · Open Source

- Created **Starship**, the **first orchestration agent for blockchain development environments**, predating modern AI agent harnesses. Open-source Kubernetes-based platform that spins up multi-chain networks for testing and development.
- Widely adopted in the Cosmos ecosystem, backed by **Cosmos Hub** and funded by the **Interchain Foundation**. Core teams built on it: Neutron for integration testing, Osmosis for cross-chain flows, Agoric for smart contract E2E validation.
- Expanded beyond Cosmos into Solana (agave-validator) and Ethereum (geth + prysm), becoming a truly multi-ecosystem orchestration platform.
- Designed init container coordination protocols for bootstrapping distributed validator networks, with exposer sidecars for cross-pod state sharing and ConfigMap-based service discovery.
- Built a gRPC + HTTP service registry conforming to the chain-registry standard, enabling ecosystem wallets and explorers to work against ephemeral test environments without modification.
- Architected a deep-merge configuration system with JSON Schema validation and TypeScript type generation supporting **30+ chain types** with fundamentally different runtime shapes.
- Secured **$225k in grants** from Osmosis and Neutron grant programs. **100+ users** across teams, **10,000+ downloads**.

Persistence — Mar 2022 – Feb 2023

Tech Lead

- Led a team of 4 developers building cloud infrastructure for large-scale validator nodes. **Reduced cloud costs by 50%+** within 2 months.
- Set up software development processes, code review standards, and CI/CD pipelines for effective collaboration across a team of **15+ engineers**.

- Led Cosmos SDK chain development of Persistence's core-1 chain, coordinating with validator operators to upgrade the chain from version 2 to 6 over 6 months.

Woven Planet (Toyota's Autonomous Driving Venture) Aug 2020 – Mar 2022
MLOps Engineer / Software Engineer *Tokyo, Japan*

- Core maintainer of **Inadatron**, an internal ML training platform for object detection, segmentation, and visual recognition tasks. Built automated workflows for triggering ML training on DGX servers on-prem, replacing manual triggers.
- Led development of tools and frameworks for handling datasets and ML model training at scale (MLOps).
- Designed and built an end-to-end automated pipeline for processing satellite imagery to extract lane features, using Pachyderm and Kubernetes. Processed **petabyte-scale data**, scaled to **5,000 workers**.
- Designed ML data handling across the full data lifecycle: annotation processing to ingestion, using Elasticsearch as metadata store for tracking and querying all data.

Rakuten Oct 2018 – Aug 2020
Cloud Platform Department *Tokyo, Japan*

- Core contributor to Rakuten's **OneCloud**, a Kubernetes-based cloud infrastructure platform for affiliated businesses and subsidiaries.
- Designed a graph-based KnowledgeBase for Access Management, RBAC/ABAC, service registry-discovery, and tenant mapping across all OneCloud services.
- Introduced **Open Policy Agent** for local, cached access control. Designed Automation-as-a-Service for deployment self-service using Terraform and Habitat.

Side Projects

Minato | *Go, Kubernetes, Python/FastAPI, Helm*

- Kubernetes-native AI agent provisioning platform. Custom CRDs (Tenant, Workspace) with a kubebuilder operator that provisions isolated per-user namespaces with NetworkPolicy, ResourceQuota, and AES-encrypted credential injection. Sidecar-based skill architecture where agents self-manage K8s resources via MCP tools.
- Includes a radiology DICOM processing service for CT/MRI analysis with multi-window rendering and session-based radiologist feedback loops. Deployed via Helm with GPU support.

Base Chain Games | *Solidity, Ethereum/Base*

- Built and deployed games on Base chain using custody and distribution smart contracts.

Skills

Languages: Go, Python, TypeScript/JavaScript, Bash, SQL
AI/ML: LLM integration (multi-provider), RAG pipelines, agent orchestration, MCP, vLLM, MLOps, DGX/on-prem training, DICOM/medical imaging
Infrastructure: Kubernetes, Helm, Docker, Terraform, GitHub Actions, Pachyderm, GKE
Data: PostgreSQL (RLS, pgvector, pg_trgm), Elasticsearch, Dgraph, Cassandra, Kafka
Tools: gRPC, GraphQL, PostGraphile, Grafana, ELK

Education

Indian Institute of Technology Bombay (IIT Bombay) 2014 – 2018
B.Tech in Aerospace Engineering

Research

Cryptanalysis using Boolean Satisfiability Solver Dec 2016 – Sept 2018
Guide: Prof. Virendra Sule, Electrical Department, IIT Bombay

- Co-authored a research paper introducing a new SAT solving method (eprint.iacr.org/2017/1141).
- Solved a **90-variable biological gene regulatory problem** using the SAT solver to obtain all fixed points.
- Developed a computational algorithm for formation of equations and symbolic operations for Boolean functions.
- Solved Bivium ANF equations to retrieve an **80-bit key within 48 hours** using only 90 equations.