Ayush Kashyap

Chandigarh, India
Email — +91 9163519554 — GitHub — Portfolio

Education

Punjab Engineering College (PEC), Chandigarh Aug 2023 – May 2027
B.Tech in Mechanical Engineering CGPA: 8.28 / 10

Technical Skills

Languages: JavaScript, TypeScript, Go, Python, C++, C#, Java
Frameworks & Libraries: React, Next.js, Node.js, Express.js, React Native, REST APIs, GraphQL
AI / ML: TensorFlow, OpenCV, LangChain, LangGraph, Retrieval-Augmented Generation (RAG), Reinforcement Learning, Deep Q-Networks (DQN), Vector Databases
Systems & DevOps: Git, Docker, Redis, PostgreSQL, Firebase, Vercel, WebAssembly, CI/CD, Microservices, Async Processing

Experience

Software Engineer — Constructure AI Dec 2025 – Apr 2026

- Architected and shipped RESTful backend APIs and microservices for LLM-driven applications, reducing average API response latency by **35%** through caching and async workflows.
- Designed scalable ETL data pipelines to ingest, transform, store, and retrieve large 3D construction datasets (BIM/IFC), handling files averaging **500 MB+** per project.
- Built multi-agent AI orchestration workflows using LangGraph, coordinating **4+ specialized agents**, improving system modularity and cutting error propagation by **40%**.
- Implemented hybrid RAG retrieval systems combining semantic vector search (pgvector) with structured SQL queries, improving retrieval precision by **28%** over baseline embedding-only search.
- Optimized end-to-end system performance via Redis caching, connection pooling, and asynchronous job queues, reducing p95 latency from **1.8s to under 600ms**.

Projects

GoChess Engine Live Demo
High-performance chess engine compiled to WebAssembly, playable in the browser

- Implemented Minimax search with Alpha-Beta Pruning in Go, cutting the effective search tree by **60%** and enabling depth-5 analysis in under **200ms**.
- Integrated Zobrist Hashing + Transposition Tables to cache **100K evaluated positions** per game, improving move quality and reducing redundant computation.
- Added Quiescence Search to resolve tactical instability (horizon effect), increasing positional evaluation accuracy in dynamic positions.
- Compiled engine to WebAssembly (WASM) for zero-install browser execution and integrated with a React-based UI.
- Parallelized move generation with Web Workers, achieving a **2–3x speed-up** versus single-threaded evaluation.

PyGit — Git Clone (Python) GitHub
Ground-up re-implementation of core Git internals in Python

- Implemented content-addressable object storage with Blob, Tree, and Commit objects, replicating Git's DAG-based version tracking.
- Built SHA-1 hashing persistence layer supporting repositories with **100+ commits** and O(1) object lookup.
- Designed a CLI supporting core Git commands: **init, add, commit, log**, matching developer workflows.

Pacman AI — Reinforcement Learning Agent GitHub
Autonomous game-playing agent trained via deep reinforcement learning

- Built an RL agent using Q-Learning and Deep Q-Networks (DQN) with experience replay, achieving stable gameplay after **500 episodes**.
- Engineered reward shaping and state representations that reduced episode length by **30%**.
- Applied ϵ-greedy exploration with decay scheduling, achieving a **2x** higher score than random baseline.