

Cover Letter

Yu-Wei Tseng

Application for Software Engineer, BigQuery Agentic AI

Dear Hiring Team,

I am writing to express my interest in the **Software Engineer position on the BigQuery Agentic AI team** at Google. The vision of bringing agentic capabilities to BigQuery — enabling AI to reason over data, orchestrate tools, and act autonomously within a query engine — aligns directly with the systems I have been building over the past year.

Agentic Systems Experience

My most relevant project is **AGENTS**, a distributed multi-agent orchestration platform I architected across five languages: C++, TypeScript, Python, Rust, and Go. The system uses a quest-based workflow where an orchestration agent (agent-producer) decomposes high-level goals into executable tasks, assigns them to specialized worker agents running in isolated git worktrees for conflict-free parallel execution, and verifies completion through LLM-based evaluation with human approval gates. I built a 34-tool MCP server for quest and task management, implemented dual-layer memory (local JSON for short-term, ArcadeDB graph database for long-term context and relationship tracking), and designed shadow agents for monitoring and automatic rollback. The platform includes a React + Express dashboard with WebSocket-based real-time updates and Slack/Discord notification pipelines. This gave me direct experience with the core challenges of agentic systems at scale: task decomposition, tool routing, state persistence, fault tolerance, and multi-language interoperability.

Distributed Systems & Infrastructure

My custom C++ game engine (Daemon Engine) features a multithreaded JobSystem with generic and I/O worker pools using bitfield-based task claiming, a networking subsystem supporting TCP/UDP multiplayer sessions, and an embedded V8 JavaScript runtime for hot-reloadable scripting. Designing these systems under real-time constraints has sharpened my ability to reason about large-scale infrastructure and concurrent workloads.

LLM Integration & Systems Thinking

I have practical experience integrating LLMs into production systems — my portfolio site uses the Claude SDK for an AI chatbot, and the AGENTS project uses MCP as the communication protocol between external AI agents and a running game engine over WebSocket. My background in architecture — a five-year professional degree from National Cheng Kung University — trained me to think in systems: how components interact, how constraints propagate, and how to design for both immediate function and long-term adaptability. That perspective is especially valuable when designing complex data workflows and agentic pipelines at scale.

I will complete my Master's in Software Development at SMU Guildhall in May 2026 and am eager to relocate to Kirkland, WA. I would welcome the opportunity to discuss how my experience with agentic systems, distributed architectures, and LLM integration can contribute to the BigQuery team.

Thank you for your time and consideration.

Sincerely,

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