Samsung Prism Generative AI Hackathon

Theme: Multimodal AI

Team Name- DataVista

Team members-

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The Problem: The Knowledge Fragmentation Crisis

- **We all have a “second brain,” but it's broken.** We save our most valuable knowledge as screenshots, PDFs, and notes. This digital memory is scattered, disconnected, and fundamentally unsearchable.

- **Our brains think in context; our tools think in keywords.** We remember what we saw—"that chart about Q3 revenue"—but our tools force us to remember where we put it and what we named it. This is a fundamental mismatch.

- **This creates a "Cognitive Tax" on productivity and creativity.** The constant search for fragmented information breaks our focus, kills momentum, and traps valuable insights inside files we can no longer find.

- **The Result:** Our most important knowledge is trapped in a digital attic. We are capturing more information than ever, but understanding less. This is not a file storage problem; it's a knowledge access crisis.

Project Context: The On-Device Second Brain

- **Proactive & Automated Indexing**: Context is a resilient background service that works silently on your device, automatically understanding and indexing your personal files (images, PDFs) the moment you save them—no manual organization required.

- **Deep Multimodal Understanding**: Our state-of-the-art AI pipeline moves beyond keywords to true comprehension. It uses a CLIP-based model to grasp deep visual context and an NER model to extract factual entities (people, companies, topics).

- **Dual-Database Knowledge System**: All understanding is stored in a private, on-device dual-database: a vector database (ChromaDB) for lightning-fast semantic search and a relational database (SQLite) for user-curated visual knowledge maps.

- **Privacy-First Architecture**: Built to be 100% on-device. Your files and the AI's understanding of them never leave your machine.

- **We're not building a better search bar. We're building an OS-level extension of human memory.**

Unique Selling Propositions (USPs)

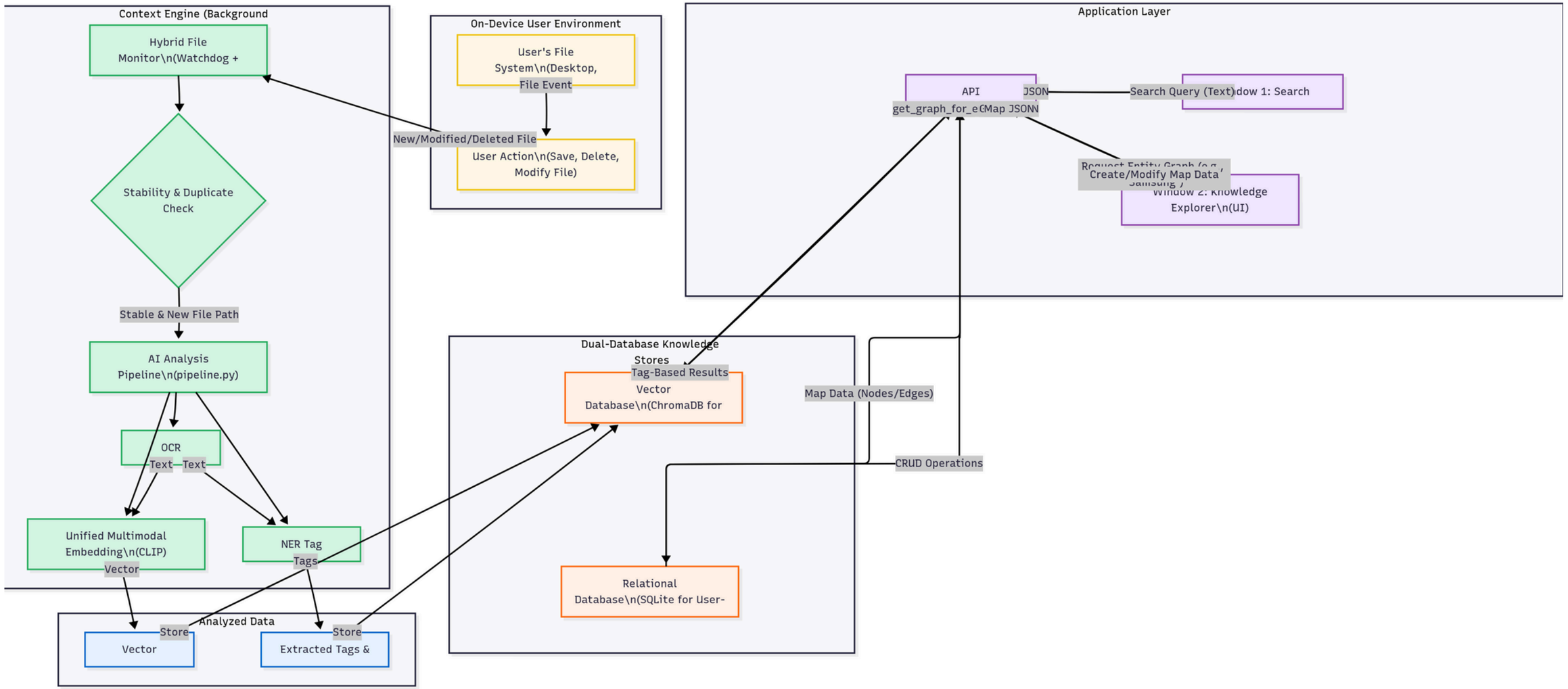
- **Proactive Hybrid Monitoring Engine.** Our system doesn't wait to be asked. It uses a resilient, hybrid event-driven and polling architecture to proactively and reliably index information in real-time, ensuring the user's knowledge base is always effortlessly up-to-date.

- **Unified Multimodal Vector Pipeline.** We don't just analyze text; we understand visuals. Our pipeline generates a single, unified vector from both an image's pixels and its text, enabling a deep, contextual search that simple OCR or captioning can't match.

- **Dual-Database Knowledge Architecture.** The AI provides the foundation, but the user perfects it. Our planned user_caption feature will allow users to layer their unique personal context on top of the AI's understanding, creating a search engine that becomes powerfully and uniquely tailored to an individual over time.

- **On-Device by Design.** Every line of code is built for a private, local-first future. This guarantees user privacy, ensures offline functionality, and lays the groundwork for a deeply integrated, high-performance experience on future Samsung devices.

Architectural Diagram



Vision: Short Term Goals

- **Launch a Polished Desktop Application.** Our first step is to move beyond a web prototype. We will package our application using a framework like Electron or Tauri to deliver a seamless, native desktop experience for both Windows and macOS, establishing "Context" as a permanent fixture in the user's workflow.
- **Activate the Full "Human-AI Collaboration" Loop.** We will fully implement our user_caption feature through polished, non-intrusive system notifications. When a new file is detected, the user will be able to add their personal context instantly, creating the powerful feedback loop that makes their knowledge graph uniquely their own.
- **Deploy the Interactive "Context Maps" Canvas.** We will build out the complete UI for our user-curated knowledge maps. This includes a full-featured canvas where users can drag-and-drop files from their search results, create and label connections, and visually organize their most important projects—transforming "Context" from a retrieval tool into an active thinking tool.
- **Integrate Advanced Query Capabilities.** The UI will be upgraded to support more than just keyword search. We will implement simple filtering based on our AI-generated tags (e.g., filetype:pdf, tag:Samsung), allowing users to perform more complex, precise queries and demonstrating the power of our structured metadata.

Vision: Long Term Goals

- **Deep OS Integration:** Evolve "Context" from an application into a core intelligence layer, deeply integrated into native Samsung apps like Gallery, Notes, and system-wide search.

- **The Mobile-First Brain:** Deploy a lightweight, quantized version of our AI pipeline to make the Galaxy phone the central, indispensable node of the user's second brain.

- **Seamless Cross-Device Continuity:** Launch a secure, end-to-end encrypted sync service, allowing a user's knowledge graph to be seamlessly unified across their Galaxy phone, Tab, and Book.

- **Hardware-Accelerated Intelligence:** Achieve unparalleled performance by re-engineering our AI models to run directly on the Neural Processing Units (NPUs) within Samsung's Exynos chips.

- **The Extensible Contextual Platform:** Transform "Context" into an extensible platform, enabling apps like Samsung Calendar and Browser to intelligently contribute to the user's unified knowledge graph.

Prototype:

https://drive.google.com/file/d/1AssfY95TpCXMOYwQ54Xm0_oq4rAWi0YF/view?usp=sharing

https://github.com/atharv1945/Context