SECOND ITERATION ENHANCEMENTS GRAPHRAG CHATBOT

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KEY DELIVERABLES

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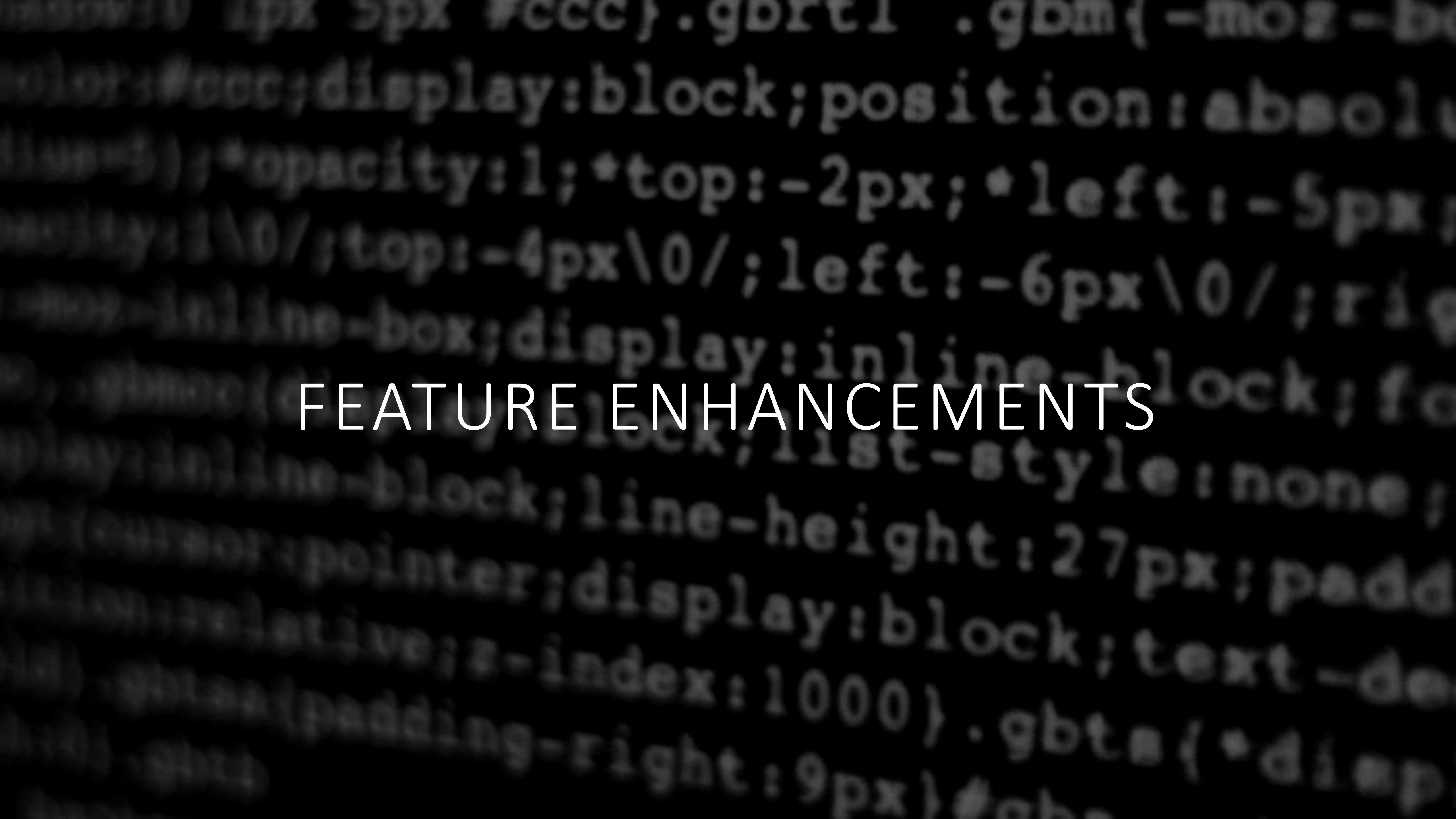
Feature	Description
Structured Query Handling	Support for count-based questions like “How many Nestlé products...”
Geolocation Store Lookup	Finds nearby stores using user coordinates and Google Maps API
Amazon Link Integration	Adds purchase links for mentioned products
UX Improvements	Clean, mobile-friendly interface with Nestlé-inspired design

FEATURE ENHANCEMENTS



INTELLIGENT PRODUCT COUNT RESPONSES

(WAS ALREADY IMPLEMENTED IN THE FIRST SUBMISSION)

Problem:

Retrieval-Augmented Generation (RAG) pipeline should be able to handle structured queries like “How many Nestlé products are listed on the site?”.

Initial Attempts

I experimented with multiple scraped file formats:

- Raw HTML text
- JSON from sitemap-based extraction
- Markdown files converted from web content

However, none performed well when embedded into a vector store. The retrieval often lacked precision, especially for structured “count” or “category” questions.

Final Solution

I transformed a manually cleaned and structured file: madewithnestle_content.txt

This version:

- Explicitly separated URLs, titles, headings, metadata, and categories
- Included extracted image alt-text, structured product sections, and internal links as attributes
- Recorded entity-like metadata such as:

    Product/recipe names

    Associated categories (e.g., Boost, Aero, KitKat)

    Section counts (e.g., 82 total pages)

Benefits enabled a mock metadata index that allows the chatbot to:

- Count the number of products
- Filter based on category (e.g., coffee, chocolate)
- Reference URL sources

STORE LOCATOR VIA GEOLOCATION

Browser Geolocation API: Captures user's location (lat/lng).

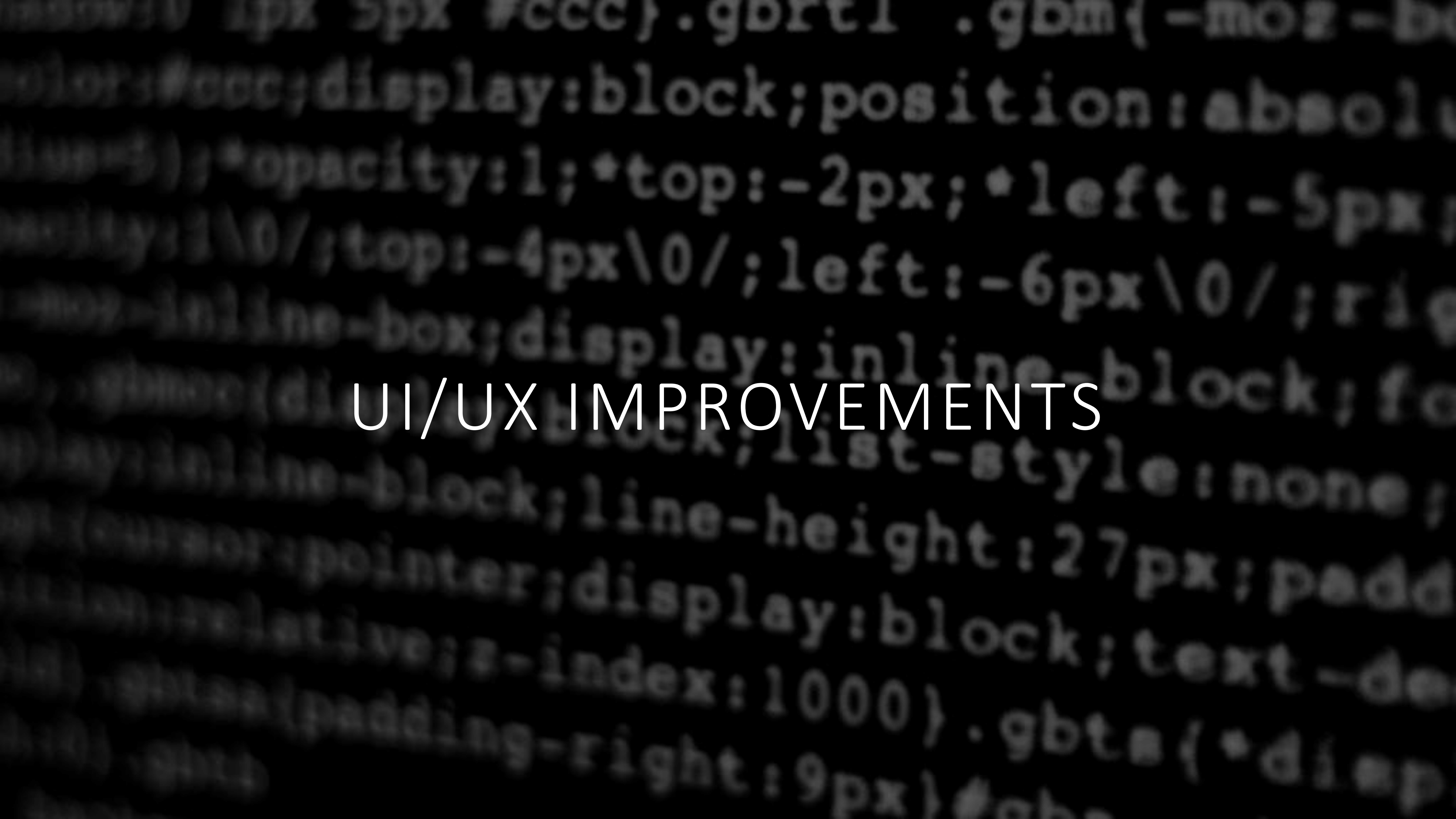
Google Maps Nearby Search API: Fetches nearby stores selling specified products.

Dynamic Output:

- Name, distance (km), status (Open/Closed), address.
- Link to Google Maps for navigation.

AMAZON PURCHASE LINK FALLBACK

- When physical store data is unavailable or if user prefers online options.
- Dynamically generates product-specific Amazon search links.
- Ensures consistent UX for all product inquiries.



UI/UX IMPROVEMENTS

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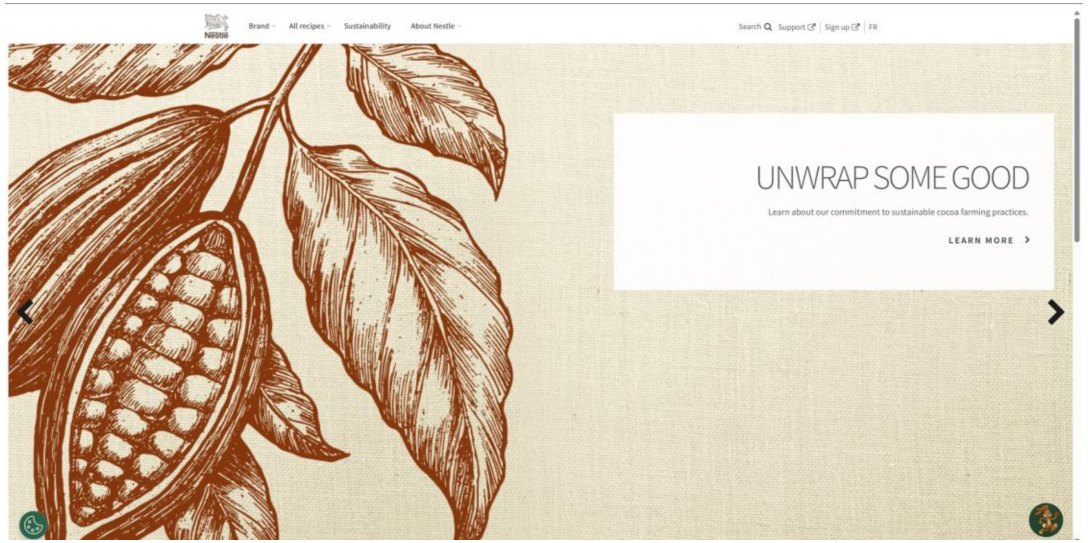
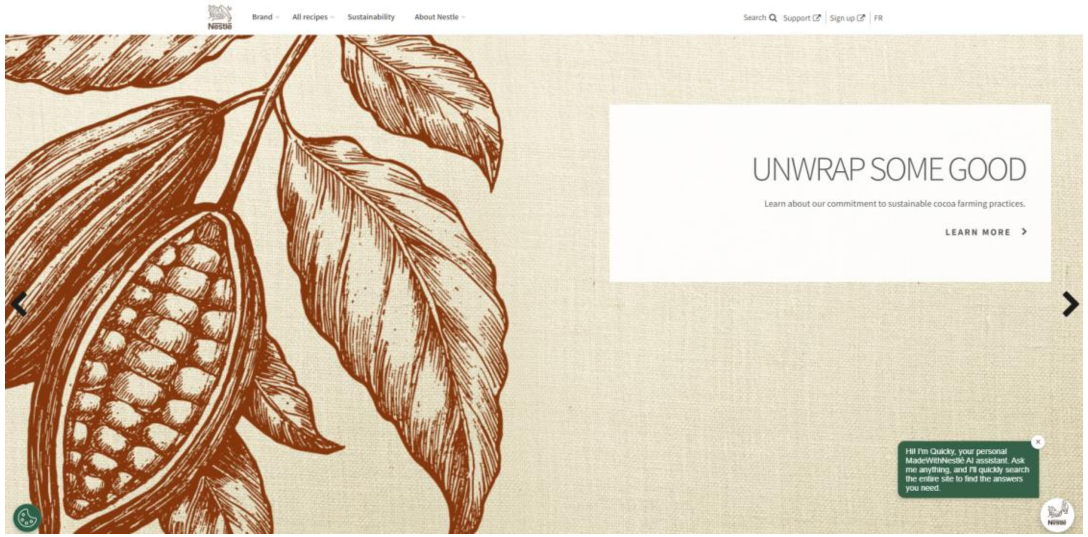
First Submission:



UNWRAP SOME GOOD

Learn about our commitment to sustainable cocoa farming practices.

Second Iteration:



UNWRAP SOME GOOD

Learn about our commitment to sustainable cocoa farming practices.

Hi! I'm Quicky, your personal MadeWithNestlé AI assistant. Ask me anything, and I'll quickly search the entire site to find the answers you need.

UI/UX IMPROVEMENTS

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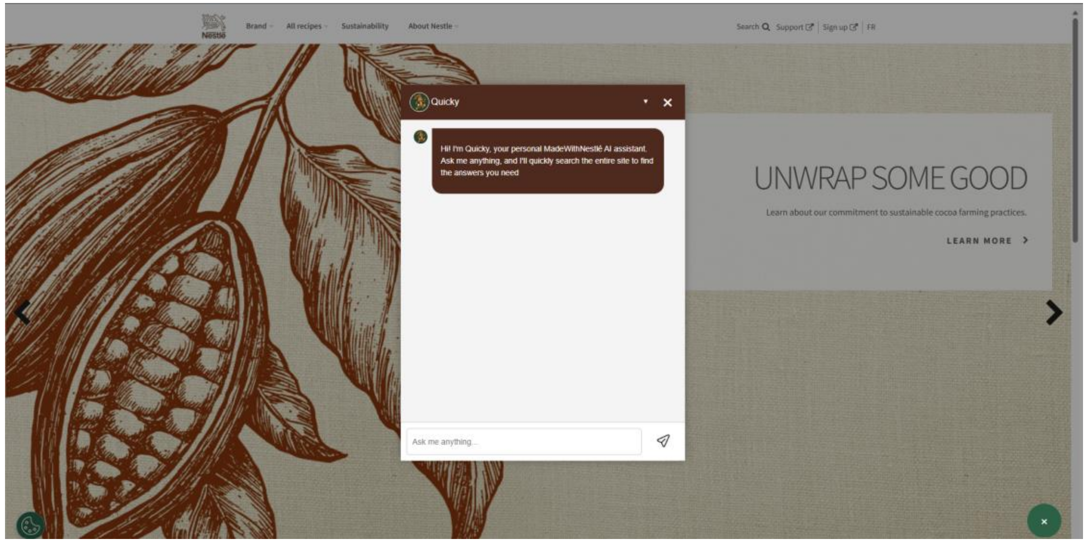

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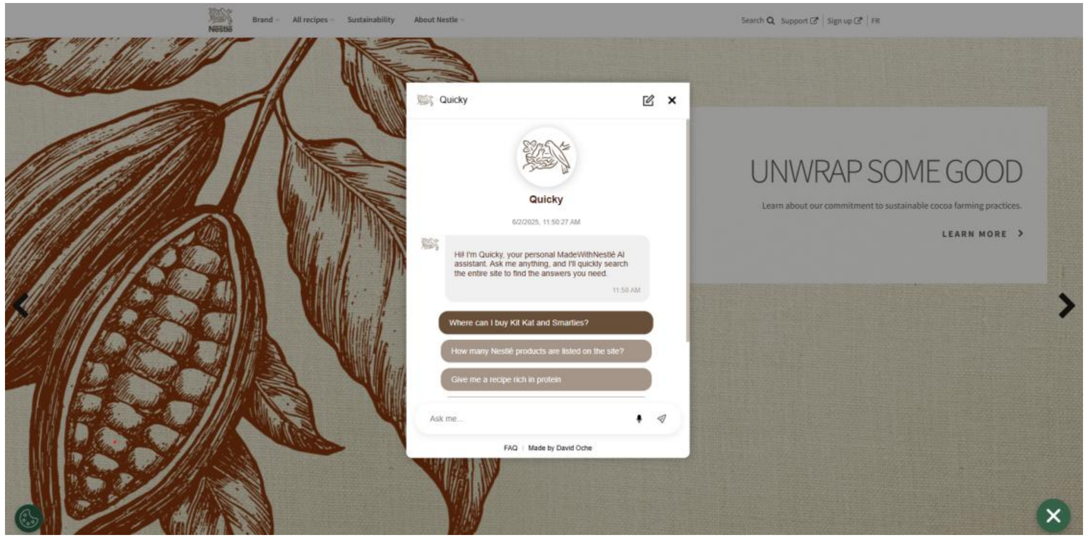


6/2/2025, 11:50:27 AM

Hi! I'm Quicky, your personal MadeWithNestlé AI assistant. Ask me anything, and I'll quickly search the entire site to find the answers you need.

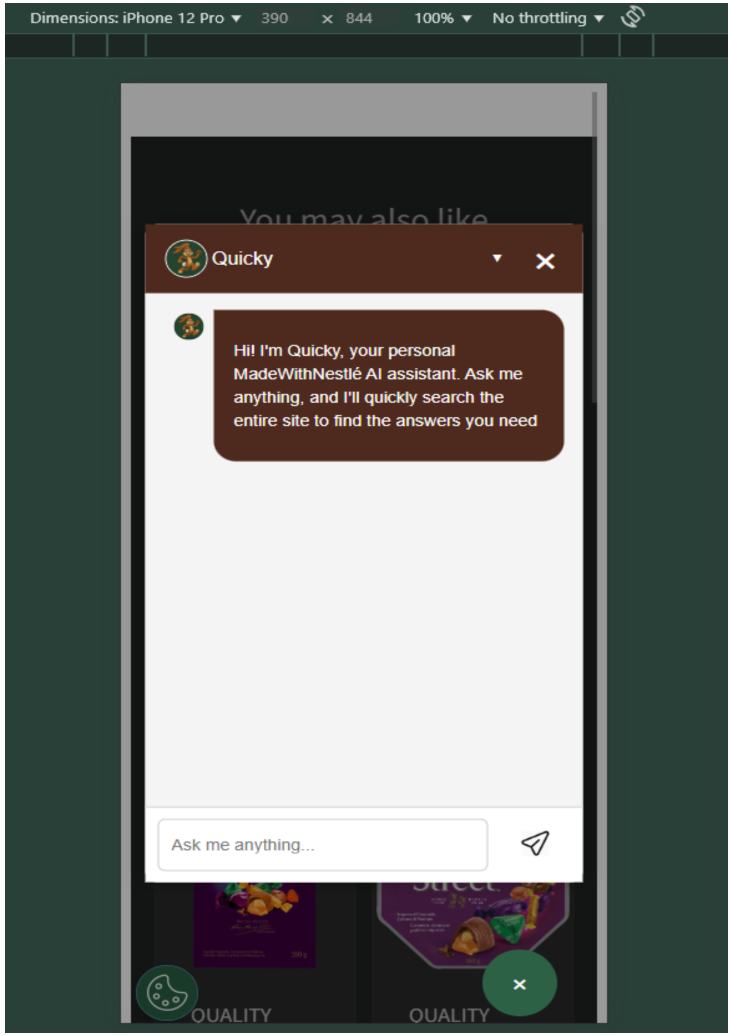
11:50 AM

Where can I buy Kit Kat and Smarties?

How many Nestlé products are listed on the site?

Give me a recipe rich in protein

First Submission:



Dimensions: iPhone 12 Pro ▾ 390 × 844 100% ▾ No throttling ▾

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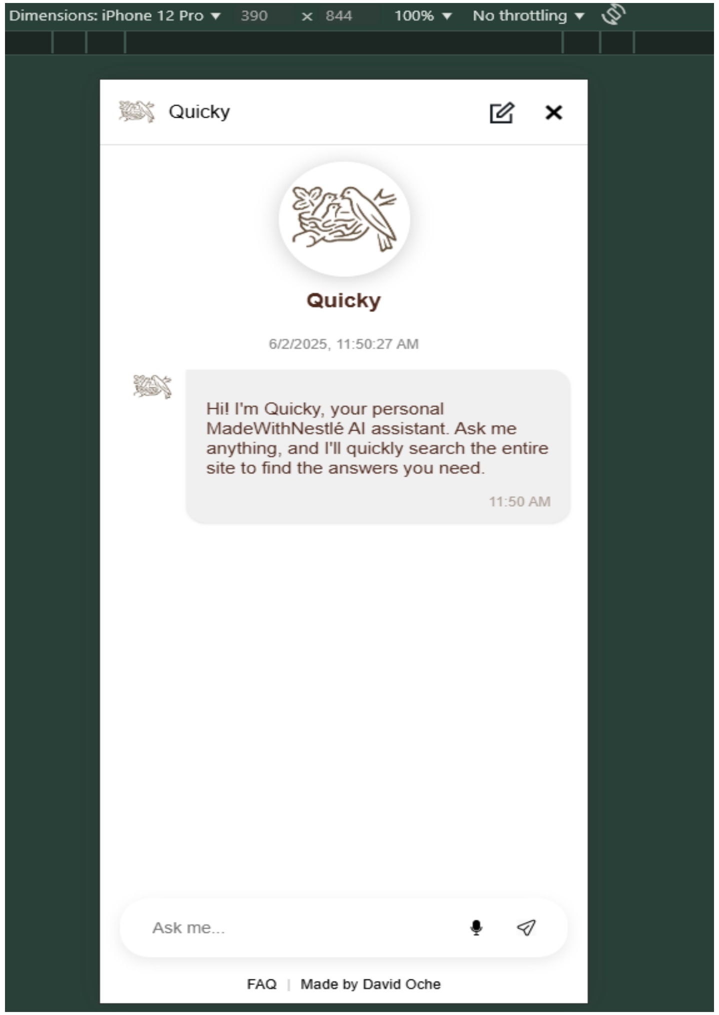
Highlight Differences:

- Persistent FAQ button with dynamic toggle.
- Message bubbles auto-scroll and animate on arrival.
- Speech-to-text mic button with typing preview and voice input.

Second Iteration:



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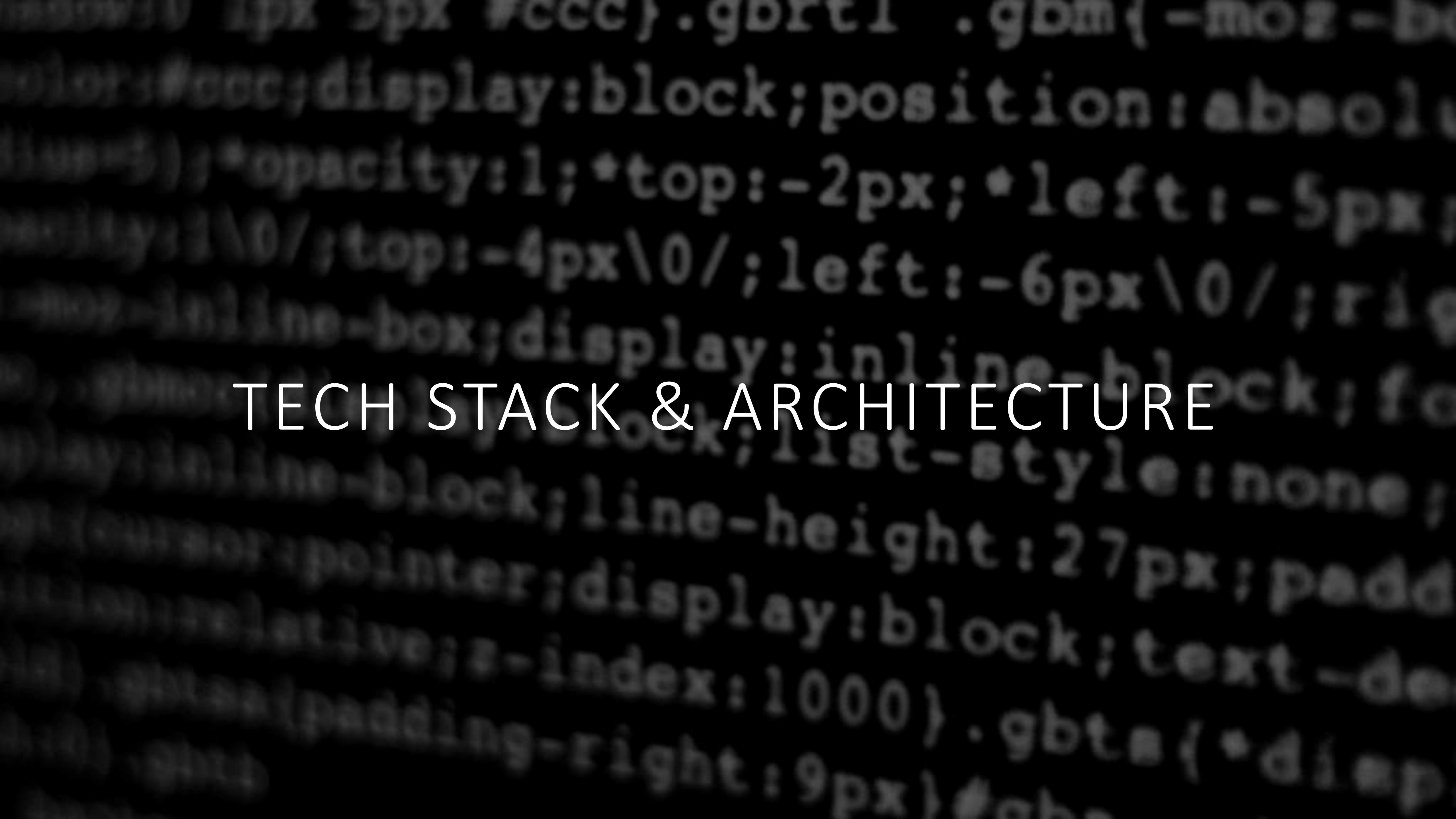


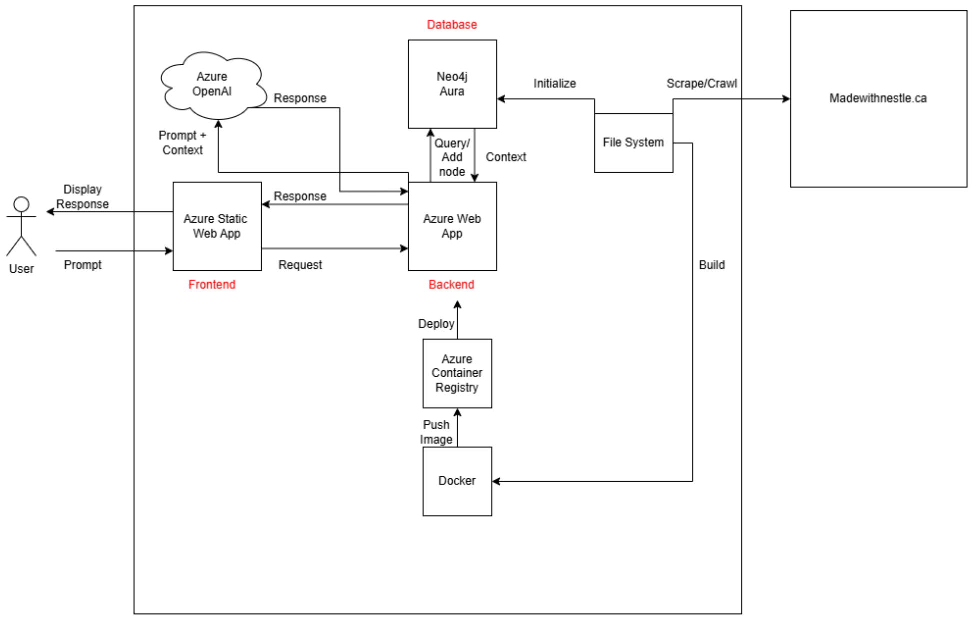
TECH STACK & ARCHITECTURE

TECH STACK

Layer	Tool/Framework
Backend	Python, FastAPI, LangChain, Neo4j, Azure OpenAI
Frontend	React (Vite), HTML/CSS, JavaScript
Deployment	Azure Static Web Apps, Azure Web App, Docker + Docker Compose, Azure Container Registry
APIs	Google Maps API, Amazon.ca, Navigator Geolocation
DevOPs	GitHub Actions, Docker

ARCHITECTURE

First Submission:



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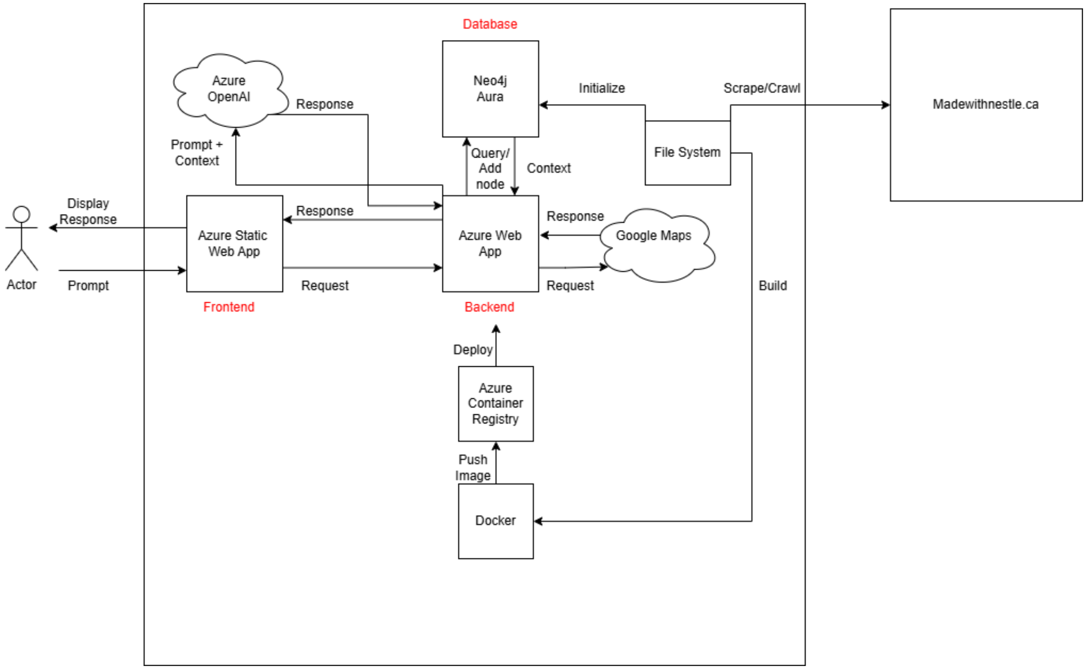

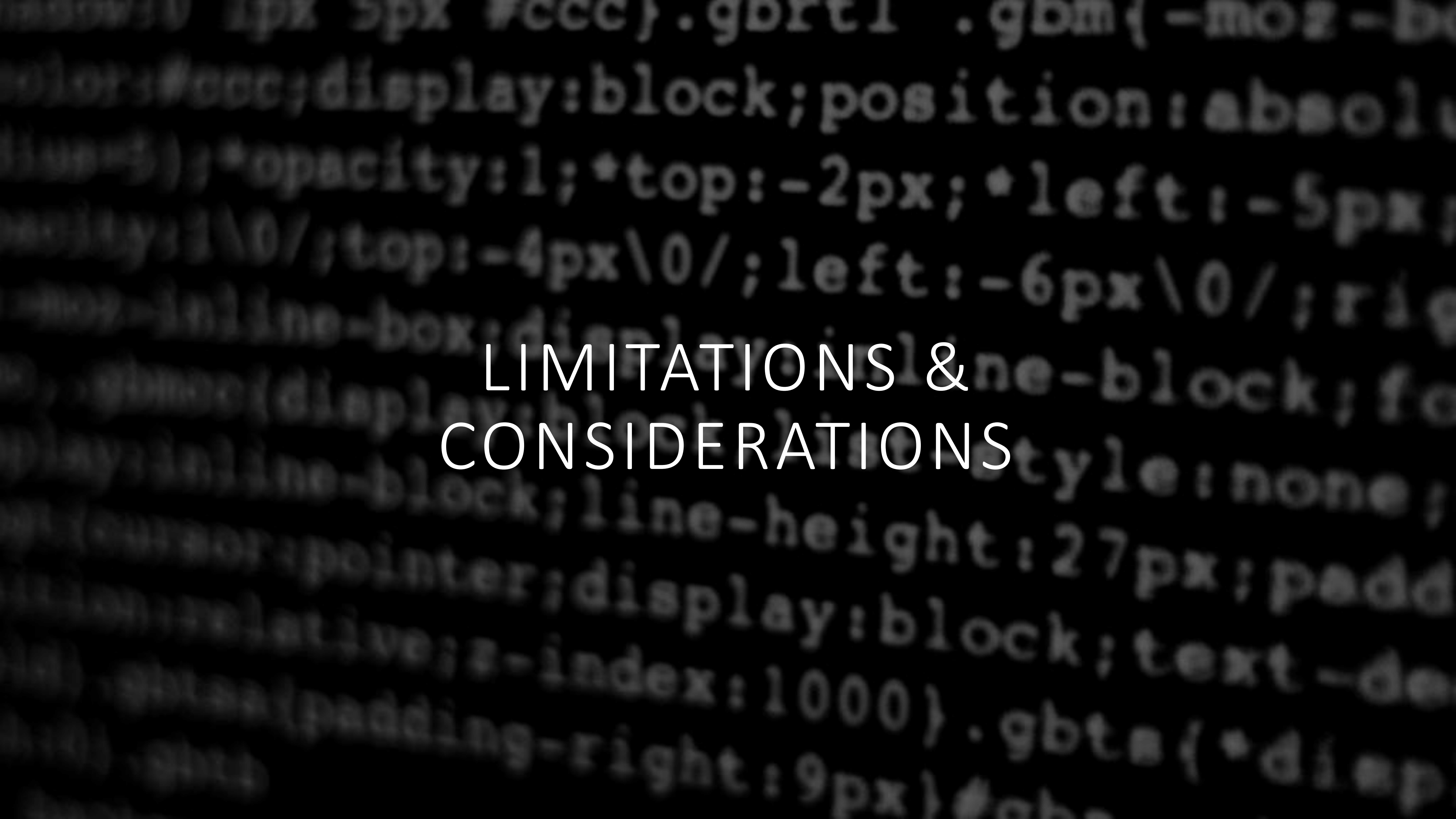

LIMITATIONS & CONSIDERATIONS

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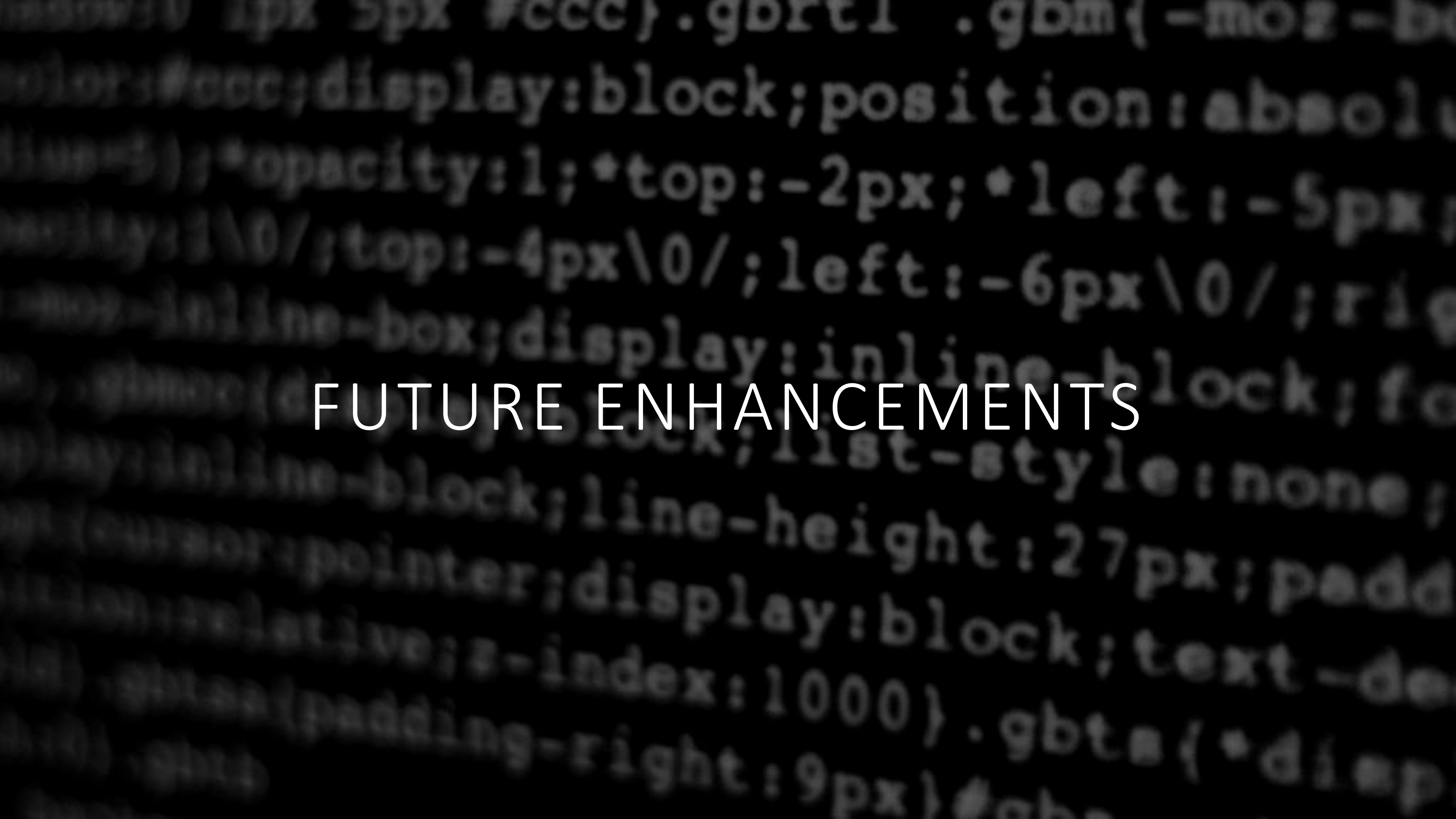
- Geolocation results depend on Google’s API quota and the product keyword quality.
- The scraped content represents a subset of madewithnestle.ca due to resource limits.



FUTURE ENHANCEMENTS

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- ADD A TEXT-TO-SPEECH MODULE SO THAT THE CHATBOT SPEAKS ITS RESPONSES ALOUD, ENABLING USERS TO HAVE INTERACTIVE, VOICE-ENABLED CONVERSATIONS.
- PERSIST USER PROFILES FOR PERSONALIZATION (BOT NAME, ICON, LANGUAGE).
- OPTIMIZE BACKEND PERFORMANCE TO REDUCE LATENCY AND IMPROVE RESPONSE TIMES, ESPECIALLY DURING HIGH TRAFFIC OR CONCURRENT USER SESSIONS. THIS MAY INCLUDE CACHING FREQUENT QUERIES, BATCHING VECTOR LOOKUPS, AND IMPROVING ASYNC I/O EFFICIENCY.

THANK YOU FOR THE OPPORTUNITY TO DEVELOP THIS SOLUTION.

-David Oche