Disaster Response Coordination Platform

Project Overview

This project is a backend-heavy MERN stack application designed to support disaster response coordination. It uses Node.js, Express.js, and Supabase for geospatial queries, real-time social media updates, and integration with APIs like Google Gemini for location extraction and image verification.

Key Features Implemented

1. Disaster Data Management (CRUD)
2. Location Extraction with Gemini API (mocked)
3. Geocoding via OpenStreetMap API
4. Social Media Monitoring using mock Twitter API
5. Supabase Geospatial Resource Mapping
6. Official Update Aggregation (mocked with Cheerio scraping)
7. Image Verification (mocked with Gemini API)
8. Real-time updates via WebSockets
9. Supabase caching for API responses
10. Structured logging and error handling

Supabase Configuration

Tables:

- disasters (with GEOGRAPHY location)
- reports (user reports with images)
- resources (shelters, help centers)
- cache (to store API results for 1 hour)

Indexes:

- Geospatial GIST index on location fields
- GIN index on tags
- Normal index on owner_id

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Backend API Endpoints

Disasters:

- POST /disasters
- GET /disasters
- PUT /disasters/:id
- DELETE /disasters/:id

Others:

- POST /geocode
- GET /disasters/:id/social-media
- GET /disasters/:id/resources
- GET /disasters/:id/official-updates
- POST /disasters/:id/verify-image

Frontend (Minimal HTML + JS)

A simple frontend is created using HTML and JavaScript with forms to test all backend functionality, including disaster creation, report submission, and triggering geocode, verification, and real-time views.

AI Tool Usage (Cursor/Windsurf)

Cursor AI was used to auto-generate routes, Supabase queries, and WebSocket logic for rapid prototyping and integration of external APIs like Gemini and OpenStreetMap.

Deployment

- Backend: Deploy to Render.com
- Frontend: Deploy to Vercel
- Ensure Supabase URL and keys are set as environment variables
- GitHub repo must include README, code, and this PDF