Project proposal : Geo-Info Agent for LLM in Browser

Abstract

This project aims to develop a browser-based agent framework designed specifically for large language models (LLM) to better understand and process geographic data. By providing spatial analysis interfaces and dynamically generating geographic descriptions, the framework will help LLMs offer more accurate answers in a spatial context.

Research Questions & Methodology

1. How does the agent framework ensure accuracy, especially regarding spatial relationships?
    - The framework provides essential function interfaces (such as converting mathematical relationships into language descriptions) and will be built using JavaScript, allowing direct execution and validation in the browser. This minimizes the chances of generating inconsistent or confusing results by the model.
2. How to convey map information to the LLM?
    - By referencing the user's current viewport center, zoom level, and contextual keywords, the framework will generate descriptive statements centered on the user's location, incorporating spatial relationships such as direction, distance, and additional context-specific information.
3. How is the framework extensible?
    - The framework will feature modular design, offering different sets of functions for various tasks.
4. How is error handling managed?
    - The framework will include a function editing feature where function snippets generated by the LLM are first presented to the user for review and will be explicitly executed outside the UI thread (e.g., using Web Workers).