HMM in my Capstone project

My capstone project is about building a LocalGuide AI agent to help tourists and locals in Rwanda explore places, find shops and services, and navigate using rich data from Google Maps and local websites. The system is meant to act like a digital tour guide that can answer user questions and make smart suggestions.

After studying how Hidden Markov Models (HMMs) work, I realized that my project does not require this type of model. HMMs are best used when there is a clear sequence of time-based data with hidden states that can be inferred, such as in speech recognition, gesture tracking, or disease progression.

In my case, users are not following a strict time-based sequence. Their behavior (searching for a restaurant, asking for a market nearby, etc.) is based on context and location, not on a predictable path over time. So, using HMM would not make sense for the main logic of the agent. However, if I had to apply HMM, I could imagine using it to model a user's visit history over time. For example, if the user visits a coffee shop, then a museum, and then a souvenir store, HMM could try to guess their current intent (e.g., tourist, shopper, casual explorer). In that case:

- The observations would be the places visited or queries made.
  The hidden states would be their inferred travel "mode" or purpose.
- The type of task would be unsupervised, since we don't know user intent in advance.
- What is unknown and must be learned are the actual hidden user intents, the probabilities of moving from one hidden state to another (transition probabilities), and the probabilities of seeing each observed behavior given a particular intent (emission probabilities).
- During training, the algorithm would update the internal HMM parameters, including the transition matrix (A), emission matrix (B), and the initial state distribution (π), which determine how user behaviors unfold over time.

Still, I believe better tools like recommendation systems, retrieval-based NLP, or intent classifiers are more suitable for this project. HMM doesn't match the goal or structure of my LocalGuide AI agent.