

How the convergence of AI, Big Data, and Web 3.0, ushers the next generation of travel recommender systems

White Paper

Bill Karakostas

VLTN BBVA

January 2018

With IT permeating every facet of human activity, travel is also rapidly becoming an information-based and information-intensive industry. Using websites to plan and purchase travel is now the norm, while the Internet is by far the most successful channel used by consumers to research travel options, compare prices, and make reservations. Since its early days, Web 2.0 with its focus on social networking and user generated content, addressed the travel and tourism sphere. Web 2.0 travel sites have allowed users to contribute content to benefit their fellow travellers, in the shape of travel advice and recommendations. In parallel, recommender systems have become popular with the advent of e-commerce and are routinely deployed by online ‘e-tailers’.

The emergence of Web 2.0 sites has created a myriad of data sources about all aspects of travel. Such user generated content, coupled with transactional content generated by airlines, online travel agents and global distribution systems (GDS) has been exploited by the industry in the first generation of travel recommender systems. For example, Amadeus, the largest GDS provider, has developed for its customers a service called Featured Results that instantly provides the four most relevant, bookable recommendations. More generally, travel related Big Data are now helping the travel industry form better customer relationships and ultimately, more revenue from better-targeted products and services. Through predictive analytics, the most popular destinations, accommodation and eating choices, can be identified for each passenger.

For the travel and tourism industry therefore, recommender systems are on a promising start, as genuinely valuable tools to support potential customers during the decision-making process. Nevertheless, travel has significant differences from other forms of ‘e-tailing’. For a start, extensive knowledge about the offered products (holiday and travel packages) is not sufficient-interactive elicitation of customer requirements is also needed. Also, a variety of customers must be served by the recommender: first-time visitors, occasional users, as well as seasoned travellers with very specific and detailed requirements. Consequently, travel recommender systems can often become highly interactive, adaptive and personalized Web applications, both costly and time consuming to develop.

Web 3.0 and AI with its intelligent chatbot technology enter the stage at this moment. *Wired* magazine defines Web 3.0 the amalgamation of content, commerce, community, and context. Chatbots, the software agents with interactive conversational skills, bring the missing ingredient, to form the truly personalised travel recommenders. True, even the current generation recommender systems invariably employ some artificial intelligence (AI) based technique such as case based and similarity matching. But with the next generation of intelligent chatbots that use techniques such as reinforcement learning, in order to autonomously learn an adaptive interaction strategy, AI finally bridges the current gap in personalisation and interactivity.

Intelligent conversation-based recommender systems can engage with the users in order to elicit their goals, in a natural and intuitive manner. Such systems can employ a flexible interaction strategy that adopts equally well to the needs of the traveller with unsure preferences and requirements, as to the seasoned, expert traveller. Thus, intelligent chatbots become aware of user needs and armed with the huge knowledge base of offered travelled products and options, have the ability to handle any scenario and conversation with ease.

Still, intelligent chatbots have yet to become mainstream. This, together with the practical issues concerning the adoption of Big data and knowledge management tools, represent major obstacles for the widespread adoption of next generation recommender systems, in particular with respect to small and medium-sized companies and e-travel platforms. The EU through its Horizon 2020 programme and its predecessors has funded research in the new generation of traveller assistant systems and this is expected to continue in the following years.

Travelling can be a thrilling and stimulating experience; however, it can also be costly and emotionally draining. We are still in the process of discovering how travellers will respond to this novel amalgamation of knowledge driven, conversation based recommender systems, and whether such systems will empower them or stifle their appetite for new travel experiences.