Master in Planning and Management of Tourism Systems

Applications of AI to Tourism

Nicola Cortesi

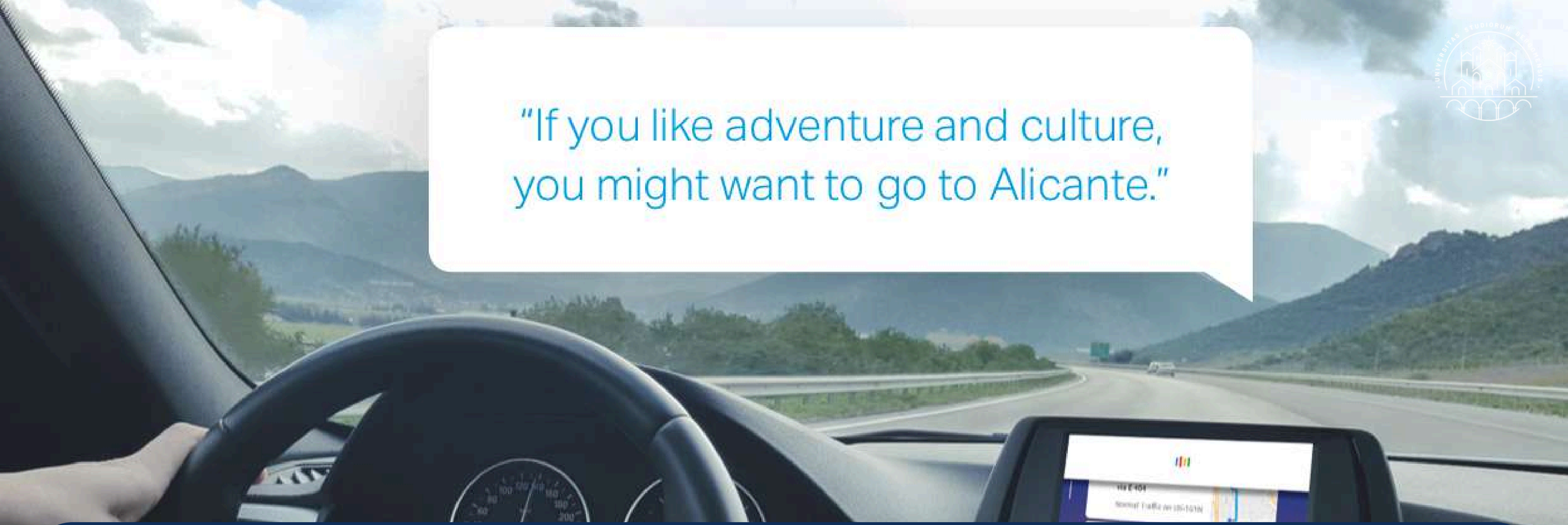
IMPACT OF AI ON TOURISM

1. LLMs can generate personalized travel itineraries, replacing many traditional guides and travel agents

IMPACT OF AI ON TOURISM

ChatGPT prompt example:

“I'd like to visit Barcelona for a week and see the Sagrada Familia. I'm on a budget. I’d spend most time visiting at least 4 locations or shops per day related to escape rooms or board games. Specify the web sites too”



2. Smart travel assistants as Roadtrippers are app that have access to the user's data (i.e., his/her location, preferences, interests, availability) and are able to provide suggestions on-demand anticipating the user's needs!

IMPACT OF AI ON TOURISM

3. AI can be integrated in travel apps to make them smarter (e.g: find a nearby trek that you didn't do already)

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4. LLMs help tourists with language and cultural barriers that prevent them from exploring the local culture: they will become an additional attraction instead

AI FORECASTS OF TOURISTIC DEMAND

5. The first step of every forecast model, is to identify which are all the variables that may influence the target variable, e.g: the number of tourists in Bergamo

AI FORECASTS OF TOURISTIC DEMAND

In this case they may be the period of the year, fuel prices, room prices, flight prices, train prices, but also rainfall and temperature and the presence of holidays, events, and exhibitions

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6. AI may become an important tool to develop hotel position, marketing strategies, financial management and allocation of human resources

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7. Hopper is an app based on AI to predict optimal flight and hotel prices that provides recommendations on whether to buy it now or wait for a better price

Only 5% of all user-generated touristic content is already in database form. The rest comes from online booking data and reviews, images, videos, roaming data, cookies, GPS, ...

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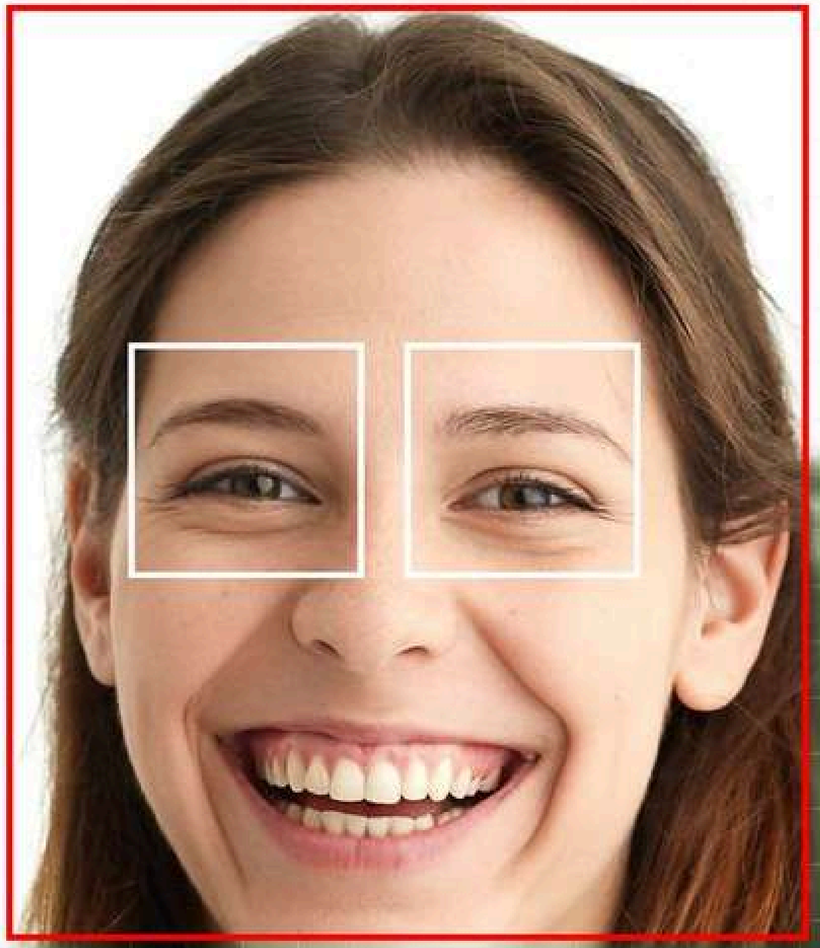
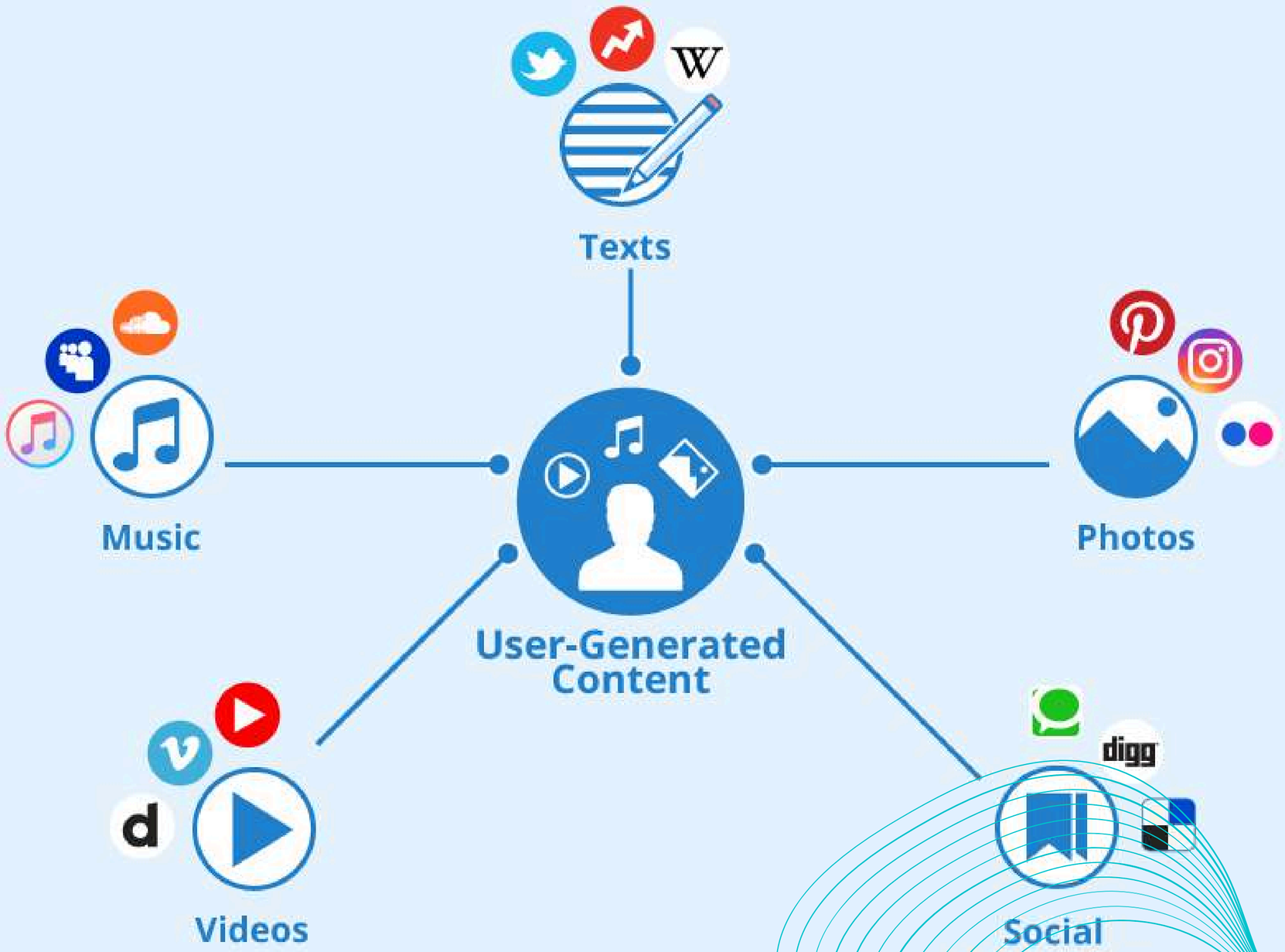


AI tags characteristics of pictures, audios, or videos shared by users and can also identify sentiments from textual or visual information



These techniques makes user-generated content much more useful, by providing information not only from text sources

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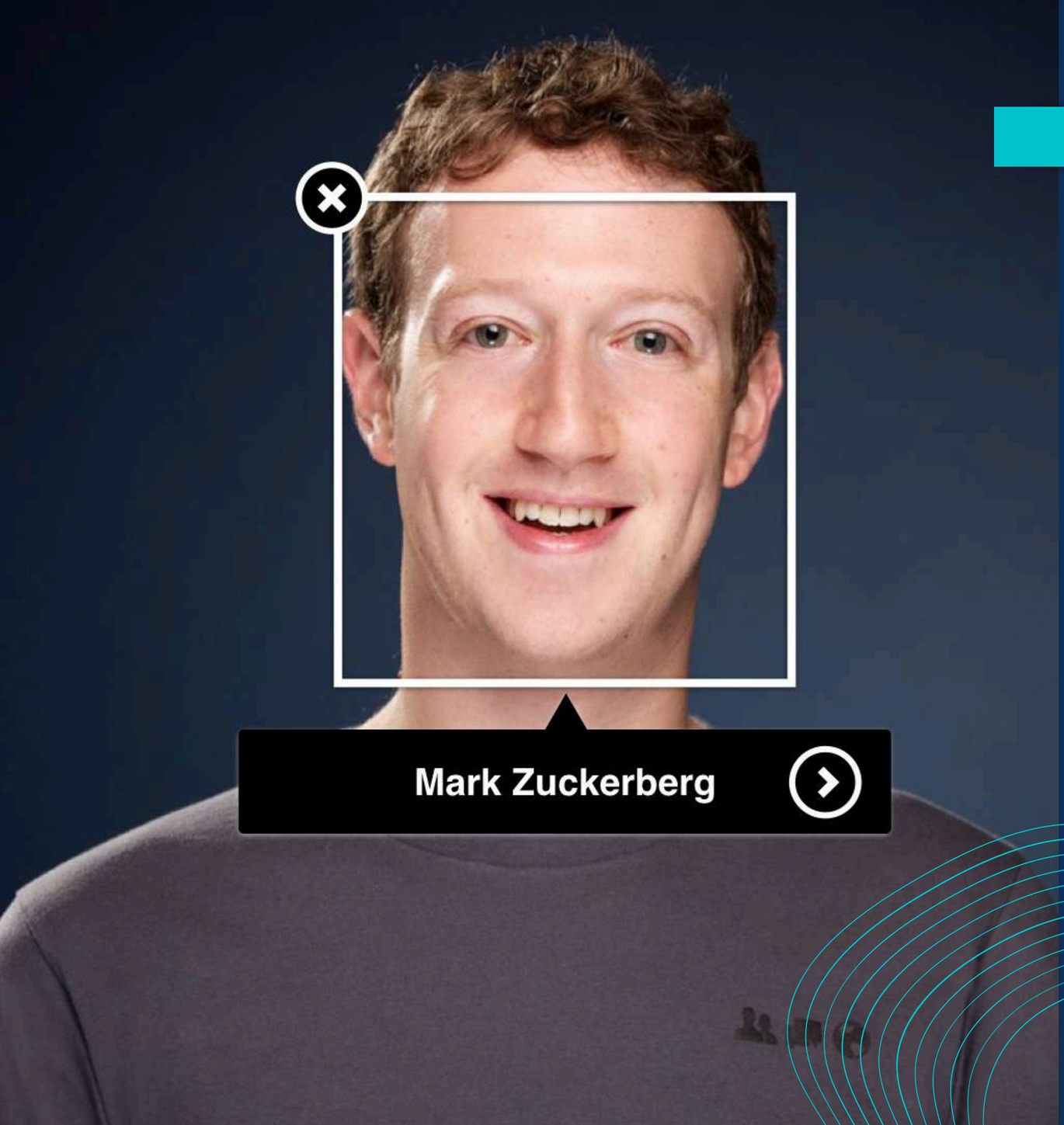

8. Face recognition can be used in the check-in process to speed it up automatically recognize guests

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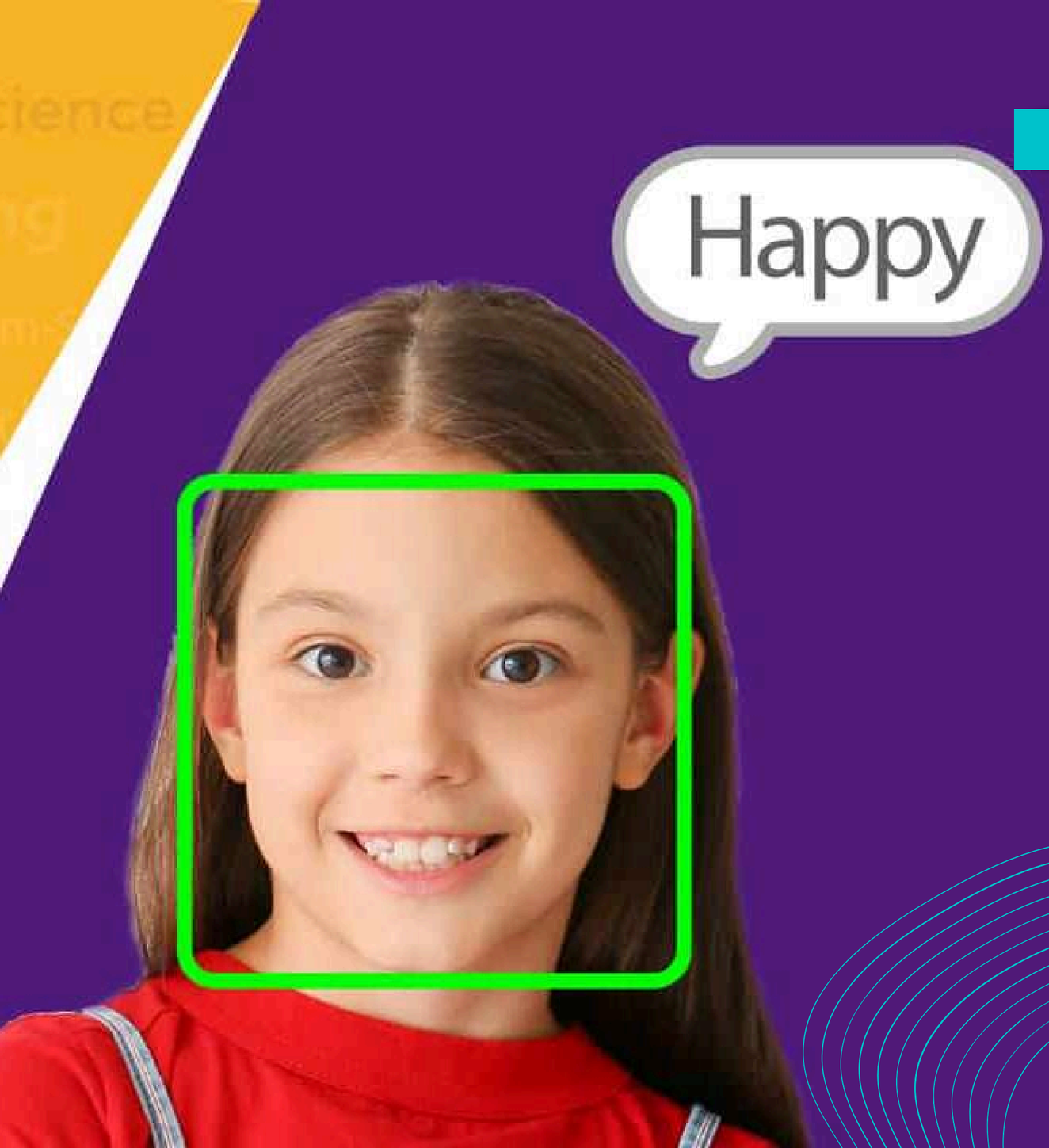
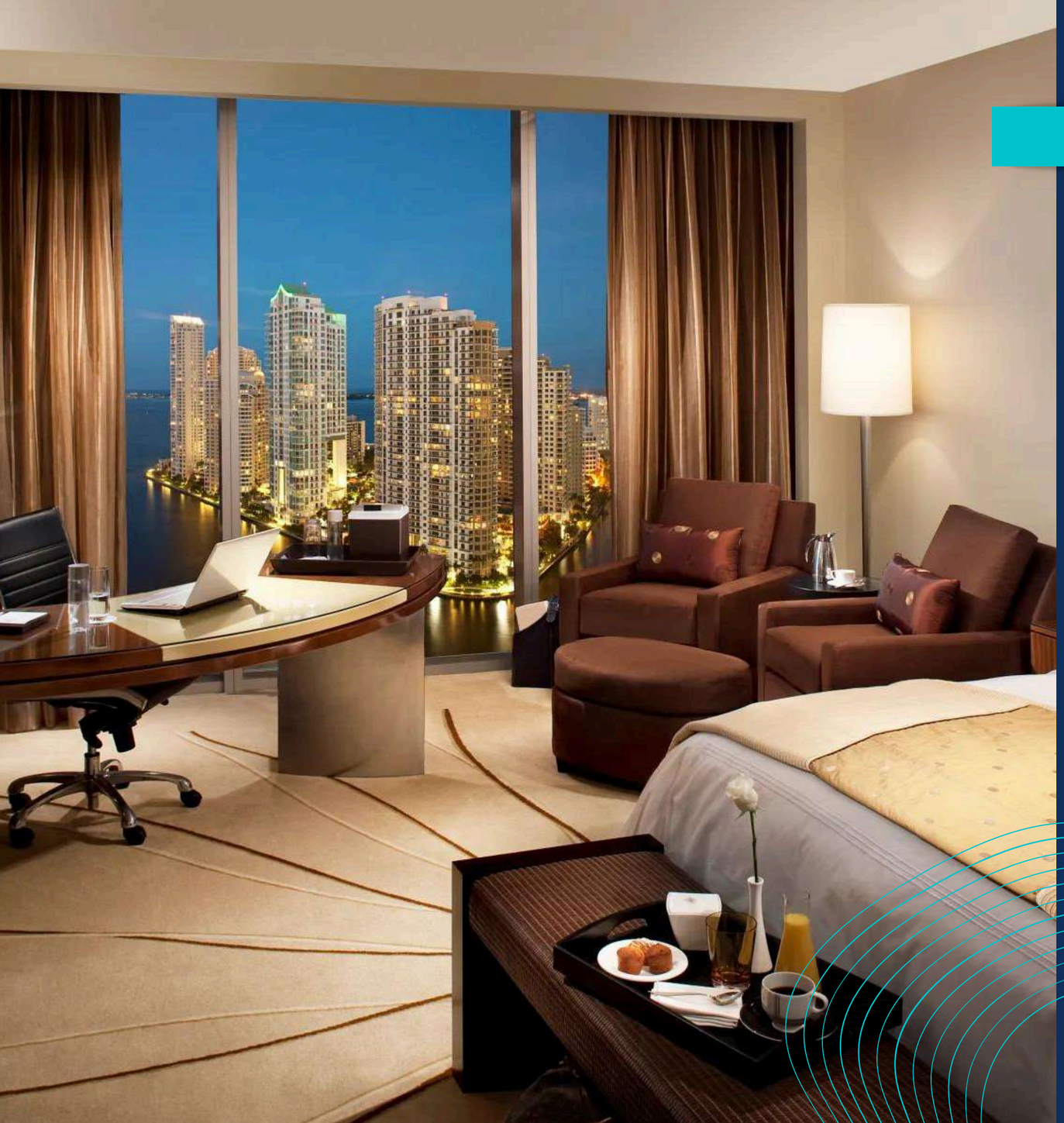


9. It can also be used to count the number of people in a certain area and even to detect emotions in the people who pass by a certain point (e.g: happiness of those leaving the breakfast buffet)



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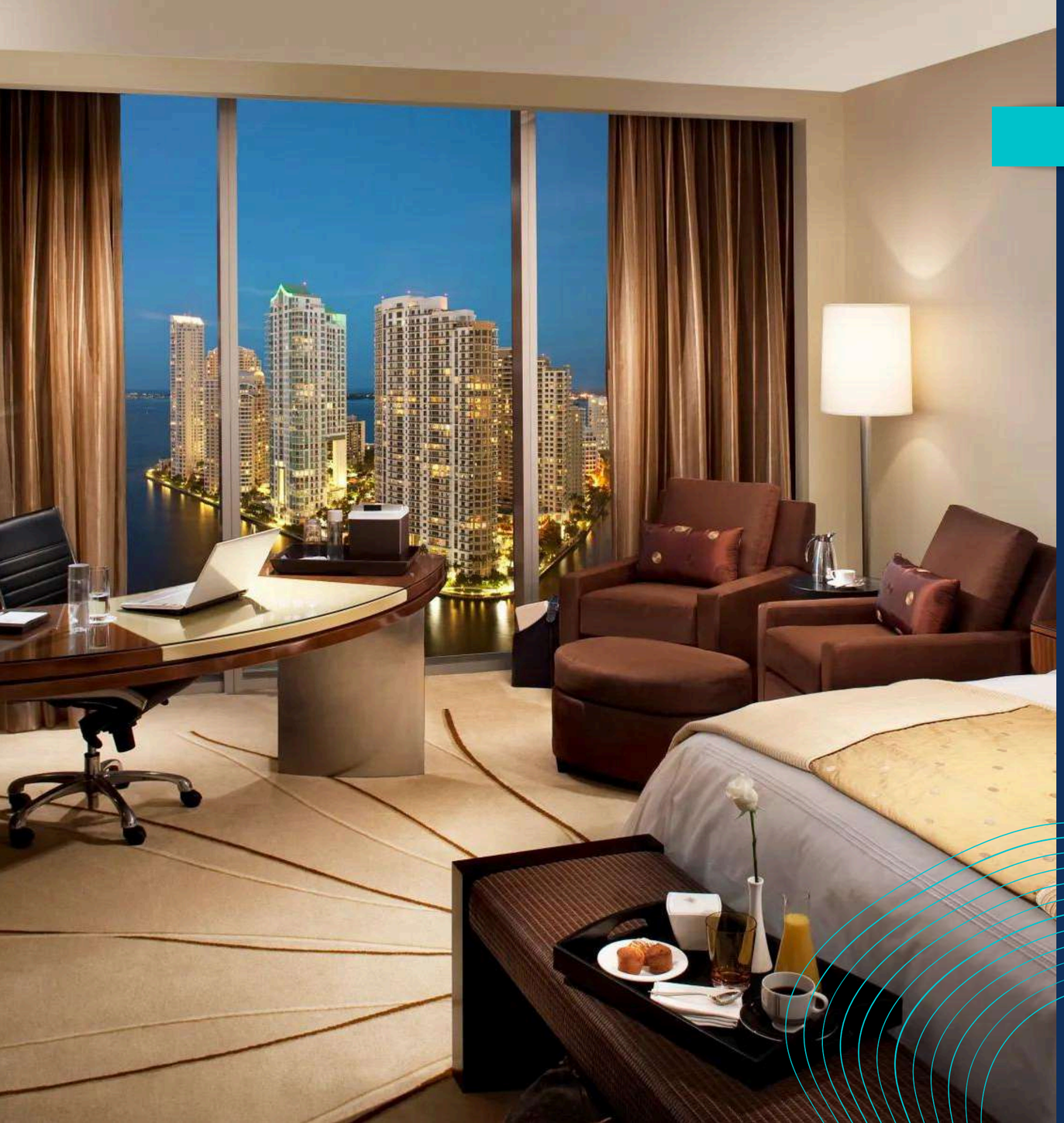
10. AI may allocate hotel rooms according to guest value and preferences, and can adapts the cuisine available in restaurants to the tastes of the customers



IMPACT OF AI ON TOURISM

11. It also helps improving the energy management of the hotel, as for smart homes

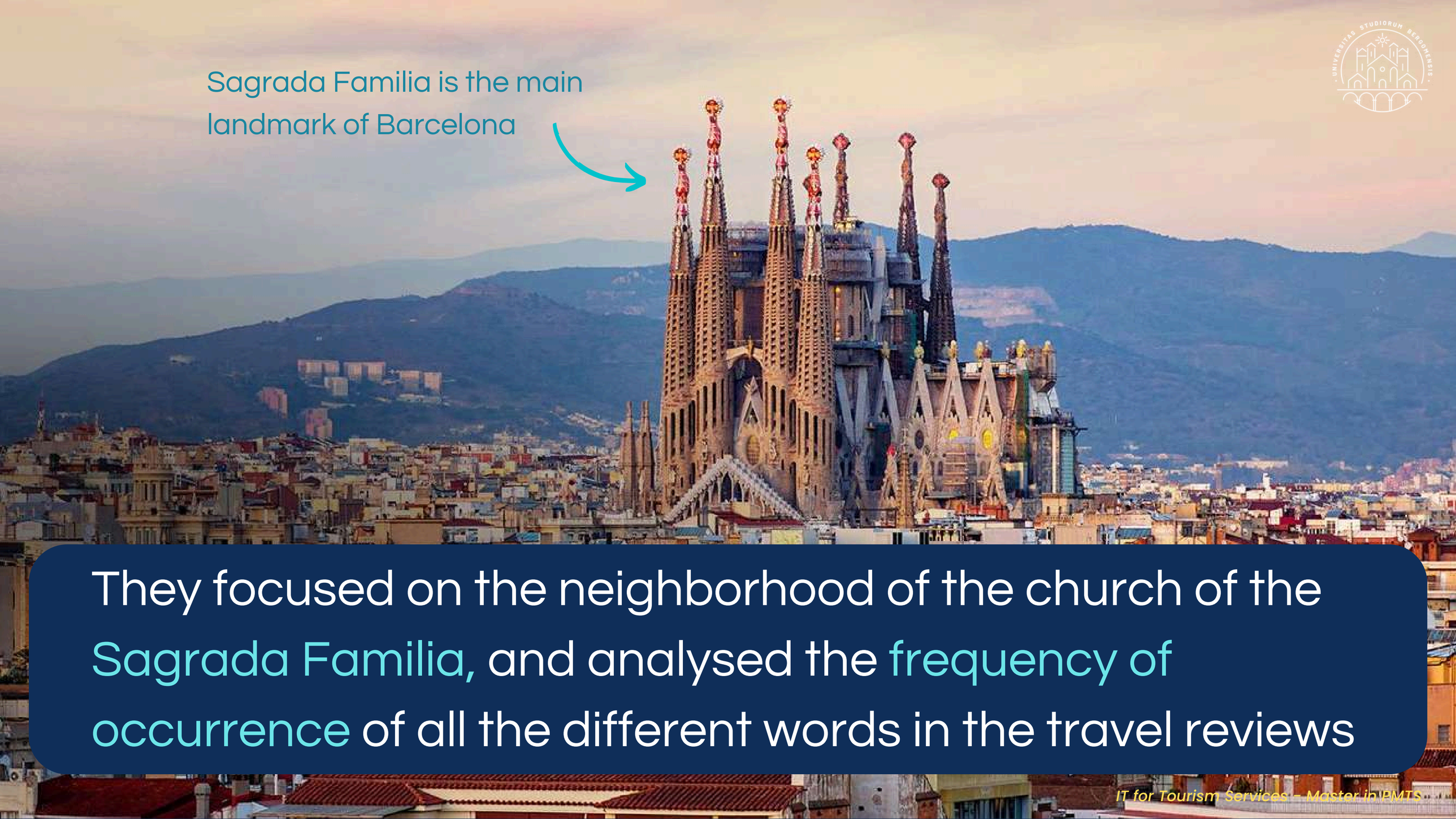
IMPACT OF AI ON TOURISM

12. Big data and AI are also used to identify the socio-economical profile of tourists of a destination to provide better segmentation and targeting of the market

IMPACT OF AI ON TOURISM

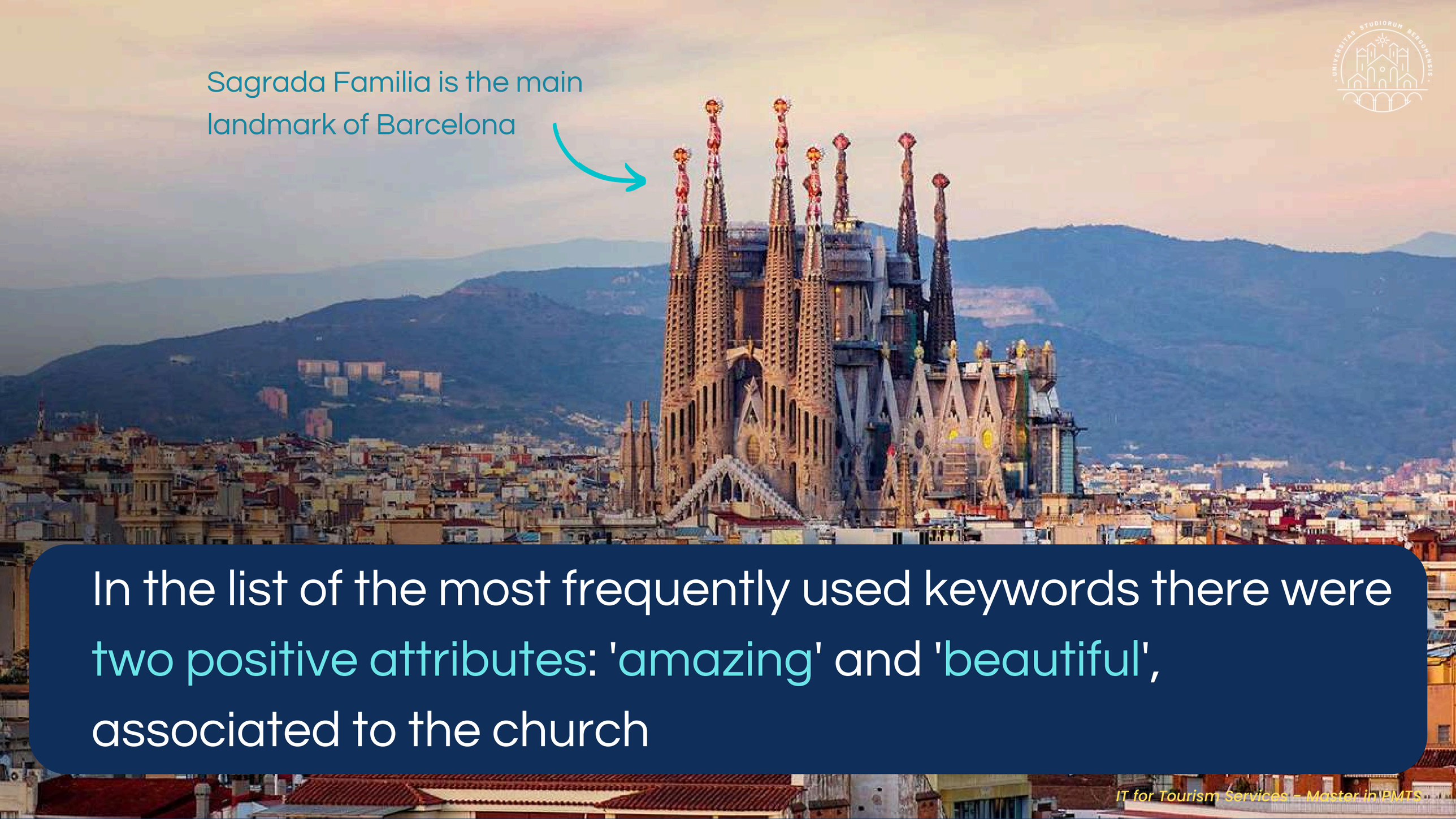
13. Smart Destinations are a new paradigm in tourism: touristic destinations that rely on both Big Data and AI to analyse user-generated content, to improve the touristic experience and reduce overtourism

Barcelona was one of the first destinations to employ big data to better understand tourist behaviour: they collected 100.000 travel reviews published on social media and travel blogs from tourists of previous years



They focused on the neighborhood of the church of the Sagrada Familia, and analysed the frequency of occurrence of all the different words in the travel reviews

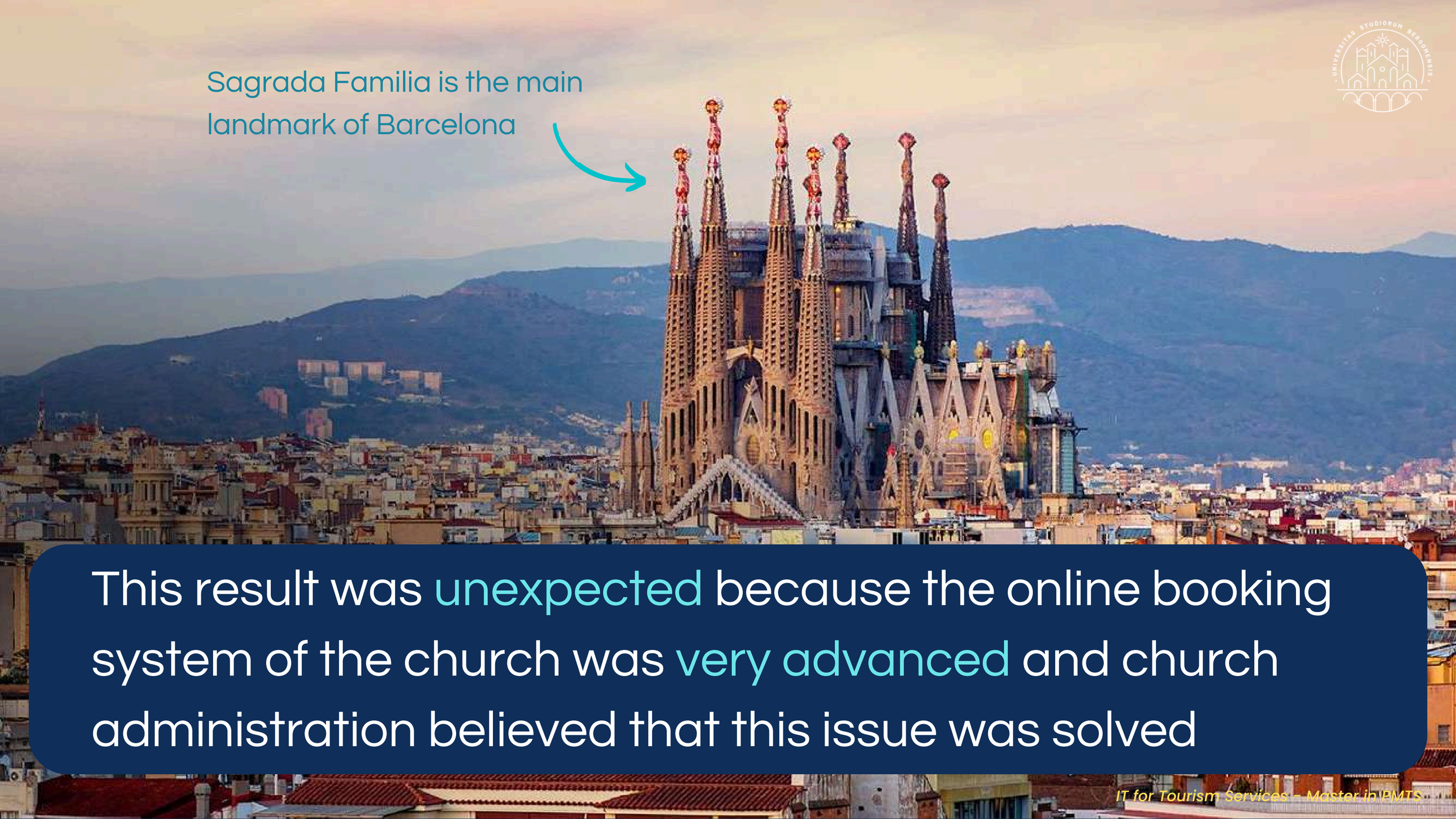
The most frequent keywords were: Sagrada Familia, Barcelona, tickets, amazing, visit, Gaudì, online, beautiful, towers, church, building, tour, queue and booking



In the list of the most frequently used keywords there were two positive attributes: 'amazing' and 'beautiful', associated to the church

However, four keywords of the list were related to planning and management of the visit to the church: 'tickets', 'online', 'queue' and 'booking'

That means that tourists spent more time mentioning the problems of purchasing tickets and waiting in the queue than mentioning the beauty of the church



This result was unexpected because the online booking system of the church was very advanced and church administration believed that this issue was solved

This analysis demonstrated that this issue was not solved yet, providing valuable information to the managers of this destination from the point of view of the tourists

Then, they repeated the experiment for the others neighborhoods of the city, grouping all keywords in seven categories: food, recreation, nature, sport, sea, urban environment, heritage

...and find out which were the more popular categories in each neighborhood of the city (e.g: the areas with more night entertainments, the areas with more sports, etc).

They demonstrated that big data and AI are a useful tool for the organization of complex destinations, for directing touristic flows, and for marketing campaigns and planning policies, to provide a long-term vision of the destination

Big data and AI are useful not only for the tourism sector but also to make 'smarter' decisions for city planning. Today, the analysis of user-generated content is fundamental in any Smart City model to improve the quality citizens' life

Smart Cities are urban areas that use IT in their strategies of urban planning, mainly to improve services, decrease emissions and optimize the use of resources

For example, the city may have clever urban transports, more efficient ways to dispose waste, heat buildings and light streets, but also safer public spaces and better access to public services

Smart Cities

Smart Destinations

The tools employed are similar in both cases. Some places can be both Smart Cities and Smart Destinations (e.g: Barcelona). Smart Destination are also a type of Smart Tourism

In a Smart Destination, travel companies, tour operators and local administrations work together to collect data and analyse them: they share it

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13. AI also facilitates the use of robots in the front desk, for delivery and stock management

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The role of humans in the hospitality sector will change: they will develop a small set of tasks that are extremely difficult to automate

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Human presence will be used as a distinction and luxury; it will be a differential factor, as is currently the case in gas stations, where you can choose to be served or not

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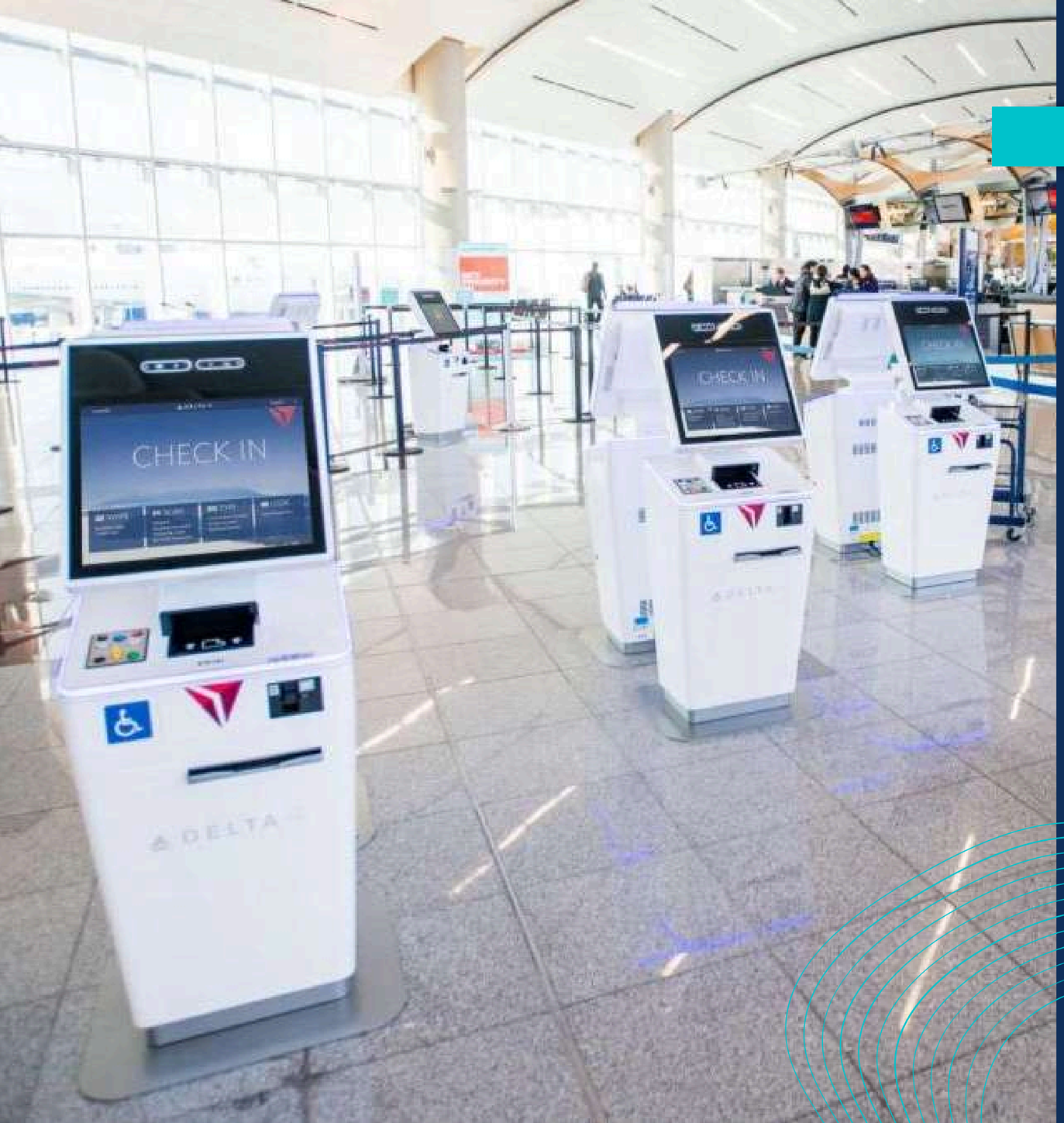
Hotels will AI and robots will loose part of their sense of hospitality, which is one of its core features of Tourism

DRAWBACKS

In some cases, tourists may even pay the same to get a worse overall experience

DRAWBACKS

25% of the workforce in hospitality sector could be replaced by AI and robots in the next decade (Bowen and Morosan, 2018)



DRAWBACKS

On the other hand, there will be cases in which using machines is compulsory and not just an option, as is already occurring in some airports

CONCLUSIONS

AI will allow tourists to prepare their trips more quickly, with lower transaction costs and fully personalized package that suits their needs and interests. Businesses will be able to better understand their customers

NEW ARTICLES & VIDEOS:

Available the Moodle:

- Bulchand (2020): Impact of AI in Travel, Tourism and Hospitality