A Guide to Artificial Intelligence for Hotels

PRESENTED BY

AVVIO

CHATBOTS

Chatbots are a method of interacting with computers through a chat platform. Some chatbots use artificial intelligence technology (mainly NLP technology) to process the data, but the majority currently rely on rule-based systems. They are evolving from simple ping-pong-style conversations towards actual conversations and several big names in the industry have already adopted this technology to interact with guests. The most important element of chatbots isn't if they are using advanced artificial intelligence or rules based technology, but how to use them to improve guest experience.

allora

NATURAL LANGUAGE PROCESSING (NLP)

Natural Language Processing is the area of computer science and artificial intelligence that studies the interactions between computers and human languages. One major difficulty in NLP is the ambiguity of human language, where the same term can have different meanings depending on the context. If being able to understand the meaning of words (when in context) is a relatively simple task for humans, computers process language in a whole different way, creating misunderstandings and confusion. NLP algorithms are designed to put the words in context in order to activate the correct action for the computer.

ALGORITHM

Any process or set of rules to be followed by a computer in order to solve a problem. It is loosely used to describe a software or part of a software that solves specific issues. For example, a simple algorithm to ensure that a hotel's rates are always in parity across all distribution channels would scan for rates and, if a disparity is found, it would adjust it or send an alert to the hotel.

NETWORK INTELLIGENCE

Network Intelligence is a machine learning skill that uses the power of many connected computers to learn. Because the system gets alerted that a change is happening on one computer it can optimize the other computers on the system. For example, if a system notices that there is an increase in visitors on several hotel websites (within the network) from Japan, it can inform or change the other websites on the network so they can be optimized for Japanese visitors during that time.

allora

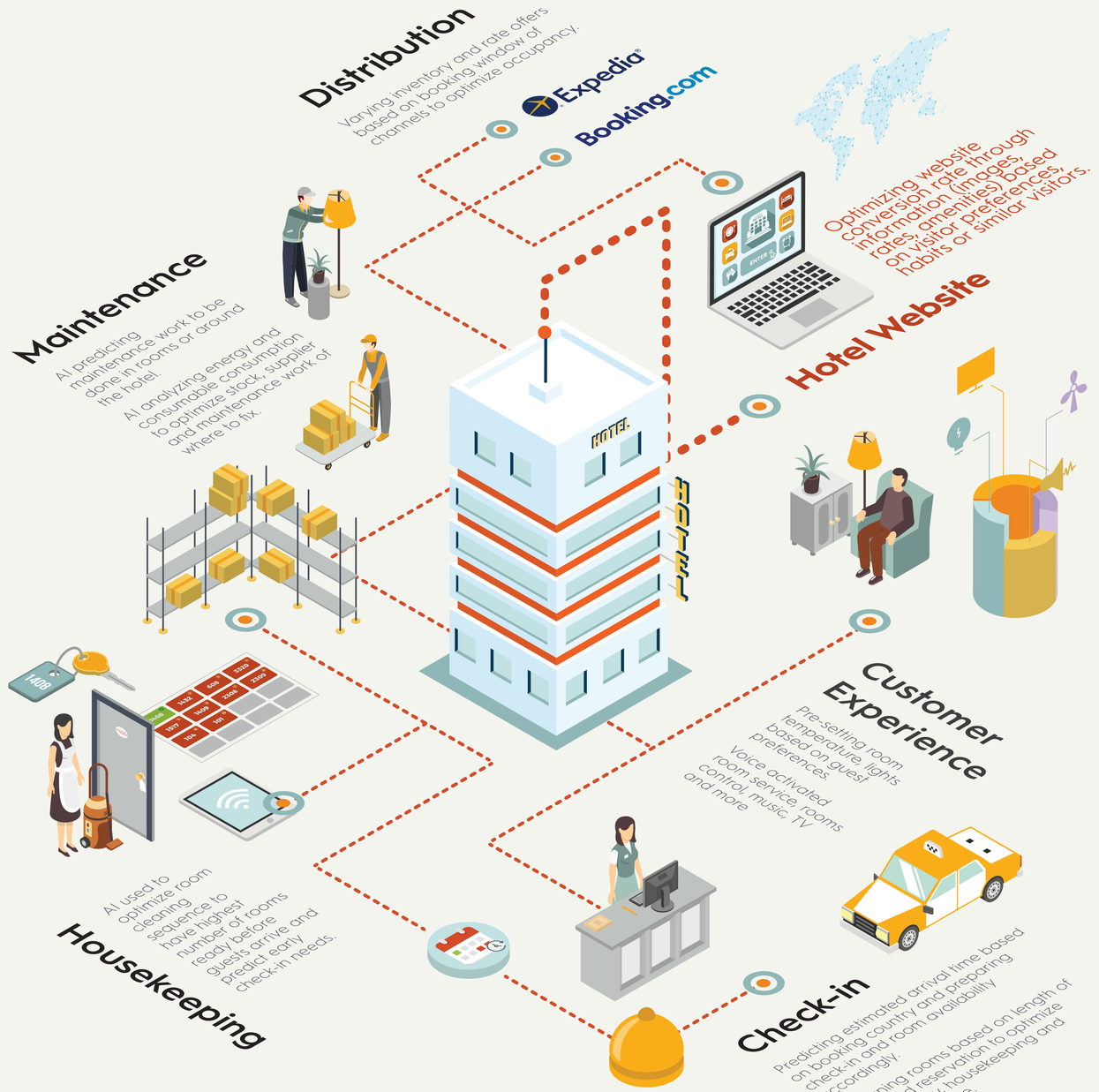
RECOMMENDER ENGINE

Also known as Recommendation engines, these are the algorithms or series of algorithms that have been programmed to analyze the information received from multiple machine learning programs and suggests changes to improve performances. For example: a recommendation engine would test different scenarios based on country, call to actions, etc. and then optimize the experience on the website and booking engine in real time. If it analyses that visitors coming from Italy often search for information about breakfast, it would recommend changes accordingly.

allora

ARTIFICIAL INTELLIGENCE (AI)

The subject of computers able to learn and decide on actions to take without human interference. AI is a vast subject and included all the various topics within it. Machine Learning, Neural Networks are systems used by artificial intelligence. Sometimes AI is used as a noun, in this sense it represents a specific set of programs that have been developed to solve specific issues. For example a revenue management system could have an AI that learns and develops solutions to solve pricing issues as related to event patterns.



NEURAL NETWORK

A neural network is a system inspired by the human nervous systems. It is composed of interconnected computers (neurons) working to solve specific problems. Imagine a large number of interconnected computers, all testing various options to achieve a shared goal (solution to a problem). For example: there are five computers constantly testing different approaches to, let's say, open a door. Meanwhile, another computer is overviewing and measuring the results, noting which method(s) have achieved the highest success. Each time a computer succeeds more than the others, that method is sent to the 5 other computers until the problem is solved.

MACHINE LEARNING

Machine Learning is the ability of computers to progressively improve performance on a specific task ("learn") without being explicitly programmed by humans. This ability is called Machine Learning and can be achieved using neural networks or less sophisticated methods such as rule-based systems. For example if someone is checking rates and availability on your website. The computer notices that the abandonment rate is higher when the rooms are presented in descending price order but, by inverting the order, the abandonment rate drops significantly. Thus the system learns which is the optimum method of displaying rates.

allora

MACHINE LEARNING MODEL

Machine Learning Models are the different methods that are developed to learn if results are improving or not. There are different types of models: binary classifications ("will the user book the Junior Suite?"), multiclass classifications ("which room type is the most interesting to this user?"), regression model ("what rate will this room sell for?") and many more. A typical example of a learning model can be found in online advertising: if the advertising platform is instructed so the most important objective is revenue, the platform can then adapt where and when to display ads in order to generate more revenue.

allora

RULES BASED SYSTEM

The term "rule-based system" presupposes the use of human-created rule sets. At its essence, therefore, these kind of systems are not really intelligent, just artificial. They are instructed by humans to respond with pre-programmed replies if specific conditions are met. Many basic chatbots use such systems today. If a guest asks what are the rates for next Friday, for example, the computer is programmed to reply with a preset answer. Even though these systems behave similarly to artificial intelligence, they simply react to preset rules and do not learn by themselves.

allora

MULTI-VARIANCE TESTING

Multi-variance testings are all those systems set up to offer multiple solutions and, over time, measure which one is best. They are largely used by OTAs when experimenting with different colors, button placements or messages to evaluate if a specific variant is more efficient than another. The best one is then adopted. Even though this is not considered artificial intelligence, it is the method used by all AI systems to test, learn and improve results (in human terms we could call this trial and error). Computers have the benefit of being able to run thousands of tests simultaneously and much faster than humans.

allora

AVVIO