

Artificial Intelligence, Machine Learning, & Robotics in Business

Balancing Efficiency and Human Touch: The Role of AI and Robotics in Hospitality

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Abstract: In the modern “service-now” culture, the hospitality industry leverages AI and robotics to enhance operational efficiency and guest experiences. AI solutions, from intelligent chatbots to service robots, are redefining hotel and restaurant services, streamlining tasks such as housekeeping, food delivery, and customer support. While these advancements minimize wait times and optimize operations, the essence of hospitality—human interaction and cultural storytelling—remains irreplaceable. A hybrid approach, combining AI-driven efficiencies with personalized human service, represents the future of hospitality. By shifting workforce skillsets toward AI training, robotics management, and data analysis, businesses can sustain cultural authenticity while meeting modern demands. This article explores the integration of AI and robotics in hospitality, highlighting benefits, challenges, and strategies for maintaining balance.

Keywords: AI In Hospitality, Service Robots, Customer Experience, Hybrid Solutions, Cultural Storytelling, Workforce Transformation

The “Service-Now” Era in Hospitality

In a service-now culture where elite service levels and guest experience are expected, AI and robots are being used to replicate tasks such as hotel operations, housekeeping, food delivery and preparation, security, and customer care agents. Concierge services are being augmented by intelligent, personalized AI chatbots that have the entire internet as their source of information for recommendations. While these advancements may lead to more efficient and personalized outcomes, the hospitality industry at its core is rooted in human interaction. We travel across the globe in hopes of learning about new cultures, eating new food, and participating in local customs. Having a robot prepare a meal does not illicit the same feelings of hearing the story of the chef and the recipes handed down from generations at the restaurant on another continent. Below are a few examples where AI and robotics can be used to make hospitality companies more efficient and profitable by using technology while improving the guest experience and maintaining the cultural element of traveling.

AI and Robotics in Hotels: Revolutionizing Guest Services

The number of Voice Agent solutions has grown exponentially over the recent years. Companies see the opportunity to replace contact center agents with less expensive technologies and grow their bottom line. What many of these companies fail to recognize is that the lack of human contact may be hurting profitability. Today, AI is not as effective as a live agent who can assess the reason for a call and react with empathy or provide solutions to enhance an experience. Nevertheless, a hybrid solution of AI and Human Interaction is the path forward and, in most cases, it's not eliminating a job but instead shifting skillset. Operating a center of 4 million customer contacts annually, we've learned that AI Chat Box and Voice Agents are the solution for customer service requests such as additional toiletries, hours of operation, dining reservations and other discrete requests. This is most beneficial to our guests as their wait time is minimized as such calls are handled by AI Voice Agents and calls that require human personalization is equally attended to faster, therefore reducing abandoned calls, yielding a better customer experience.

The shift in skillset is from customer care agents to AI training analysts, product managers, and data engineers. AI solutions will always require monitoring and training, at least during this transformational era. While the skillset is different, this gives opportunities for companies to develop their team members into higher skilled roles. In an 'on-the-go' and mobile culture, it is fair to say we have shifted to a 'service now' era and that expectation is defining hospitality. While there are many AI solutions providing a 'now' experience, there is one key solution that is at the intersection of AI and Robotics and that is Hotel and Service Robots.

A guest can now request toiletries via an AI Agent and have them delivered immediately, or at any hour of the day, by a service robot. This allows hotels to optimize their staffing to focus on the human elements and experiences of traveling while using AI & Robotics to attend to the discrete elements of hospitality. We are a long way out from a robot telling us what the steak at your signature restaurant is like or understand what it means when you're 8 months pregnant with twins.

Risks of diminished human interaction in a culturally driven industry

It's easy to quickly assume this is yet another means of replacing an employee, but to be a broken record, it's shifting a skillset from hotel operations agent to robotics manager or robotics engineer to maintain this new area of operations. The ability to attend to more guests in a timely manner while continuing to employ your community is the core of hospitality and that will be unlikely to ever change. At the same time, managing a hotel often comes with turnover, difficulty hiring, scheduling and scheduling conflicts, robotics can be a dependable solution to drive consistent service levels. The strategy does not have to be a full AI/Robotic solution but a hybrid solution that helps fill the voids of a 24-hour, 365-day operation.

Like hotels, restaurants are also changing their service strategy because of service robots. The 'service now' solution at restaurants begins with viewing menus via QR codes on your smartphones and ordering within the same experience. The AI/Robotics experience comes when your order is delivered via a service robot that knows exactly which table you are dining at and communicates with you via its voice agent application. No different than hotels, service robots can also be used as support staff, for example, a waiter may take the order, and a service robot will make the delivery allowing the waiter to move on to another table. Need hot sauce from the kitchen? Make the request and the kitchen staff uses the service robot to deliver immediately.

To take it one step further, let's revert to the QR code for payment options reducing the wait time for a check. While this fulfills the need of today's 'service now' culture, it also allows

restaurants to reduce the time required to turn a table and allow for more covers. The process of leaving a restaurant can often feel like wasted time. A customer needs to find their server and request the bill. They then need to wait for them to return to provide payments. Additional time is wasted while waiting for the credit card to be returned and signed. Today mobile payment options are flexible enough to split the bill, tip and even connect to a company's expense reporting platform. QR code payments options on the bill can help speed up the process by allowing for mobile payments resulting in turning the table over faster and allowing for more covers.

AI is also helping restaurants best utilize the treasure trove of data they possess which has been vastly underutilized to date. From the kitchen ordering platform to the point-of-sale to the loyalty program, much of the customer data has been sitting in disparate data sets leaving valuable insights uncovered. AI companies are bringing this data together to help restaurateurs effectively manage inventory for daily specials, scheduling labor, and supply chain. Sports bars are using AI to effectively program televisions to the appropriate game in order keep customers engaged for longer periods of time. The examples above are just a few cases where AI and technology can be used to provide excellent customer experience in an on-the-go era.



Mr. Pavan Kapur, MBA, was Chief Commercial Officer at Caesars Entertainment, Inc. He is a UF alum and joined our [EFTI](#) Advisory Board in November 2020. Since then, he has participated in UF's first EFTI.Talk: AI/Data Science in Hospitality and the Future and started a scholarship for [THEM](#) students. Pavan's specialties include commercial strategy, predictive modeling, marketing analytics, optimization, data mining, business intelligence, advanced analytics, risk management, customer behavior analysis, competitive intelligence, revenue management, and pricing.



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