

# Chatbots for Human Resources

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## ABSTRACT

A chatbot is a computer program designed to simulate human conversations and interact with users in a natural language format. An HR chatbot is an AI assistant designed to automate complex human resources workflows and provide real-time support to candidates and employees. The primary goal of an HR chatbot is to automate the time-consuming and repetitive manual HR tasks and processes, thereby elevating employee experience and reducing the burden on the HR support team. These chatbots can also assist in gathering employee feedback, conducting surveys, and facilitating employee self-service, allowing HR agents to focus on more complex and strategic responsibilities. This paper introduces the readers to the various uses of HR chatbots.

**KEYWORDS:** chatbots, human resources, automation.

## INTRODUCTION

A chatbot is any software application used to conduct an online chat conversation through text or text-to-speech. While chatbots have found utility in various industries, their application in the field of human resources (HR) has proven to be particularly beneficial. A chatbot utilizes natural language processing (NLP) to interpret intent, answer queries instantly, and streamline tasks such as recruitment, onboarding, and benefits administration. HR departments are incorporating chatbots and virtual assistants to modernize and streamline various tasks, notably in the recruitment process. HR chatbots are now used across the entire employee lifecycle—from the moment that a candidate applies for a role to the final steps of offboarding at the end of their tenure. Chatbots have emerged as valuable tools in the field of HR, offering a wide range of benefits to both employees and HR professionals. From streamlining recruitment processes to providing on-demand support and personalized training, chatbots enhance operational efficiency and improve employee engagement [1].

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## CONCEPT OF CHATBOTS

Chatbots are also known as conversational agents, interactive agents, virtual agents, virtual humans, or virtual assistants. Chatbots, as part of AI devices, are computer programs designed to carry on a dialogue with users using natural languages. Healthcare has become an attractive market for chatbot applications. The main purpose of healthcare chatbots is to help patients in less time and for less money than it would take to visit a medical professional. Healthcare chatbots have great potential, but they still have a long way to go to win over consumers.

The first chatbot (Eliza) was developed in 1966 by Joseph Weizenbaum for psychiatric patients. Since then, Chatbots have gained popularity in all the domains such as banking, e-commerce, healthcare, education, and smart homes [2]. A chatbot describes a computer system or the situation in which human is chatting with the robot (computer).

Chatbots may be regarded as mimic systems which imitate the conversations between two individuals. They employ different degrees of human-like appearance and behavior, such as facial expressions,

compassion, humor, and tone of voice. Thus, chatbots are computer programs with a conversational user interface capable of emulating natural, conversational interpersonal exchange. Fueled by artificial intelligence (AI), chatbots are becoming a viable option for human-machine interaction.

Chatbots can be integrated into various messaging platforms, websites or mobile apps to interact with customers and prospects in real time. For example, healthcare chatbot can diagnose the disease and provide basic details about the disease before consulting a doctor. It is designed to reduce the healthcare costs and improve accessibility to medical knowledge. Healthcare chatbots depend on natural language processing (NLP) that helps users to submit their health problem [3]. Figure 1 illustrates a chatbot based on three key structures in AI.

There are essentially two types of chatbots: (1) Fixed chatbots: These are programs with fixed information and hence offer limited help; (2) AI-based: These chatbots thrive on dynamic learning and constantly update themselves using various customer interactions. An AI-based chatbot has three domains: databases, natural language processing (NLP), and machine learning (ML). Mostly chatbots are some kind of computer programs that use natural language processing (NLP) for interpreting the user input and generating the corresponding response. In other words, NLP helps users to submit their problem about the health. The aim of the system is to replicate a person's discussion. Chatbots interact with users using natural languages. Chatbot may ask a review of symptoms and relevant information such as past medical or surgical history. It provides response by use of an efficient Graphical User Interface (GUI). The GUI is an artificial creation invented to enable interactions between human and computers. The chatbot system helps users to freely submit their complaints and queries regarding health by voice since customer satisfaction is the major concern for developing this system [4,5].

One may also regard a chatbot as a software system that allows you to simulate real conversations between devices and users by means of a conversational interface [6]. Chatbots use three types of conversation styles [7]: static, semi-automated, and fully-automated conversation dialogue. The static conversation style is rule-based and it is easy to build. Automated refers to the generative-based model, which uses deep learning models to build interaction. This is very complex and requires a lot of training data. The semi-automated automates some parts while the rest is handled by a human. Figure 2 shows some examples of what chatbots can do [8].

## CHATBOTS FOR HUMAN RESOURCES

Human resource departments are one of the backbones of any organization. The HR team is responsible for handling crucial processes like recruiting, onboarding, providing training, ensuring a work-life balance, and maintaining payroll responsibilities. In today's rapidly evolving workplace, HR professionals are increasingly seeking innovative solutions to streamline their processes and enhance employee experiences. HR departments manage a wide range of processes-from employee self-service tasks and frequently asked questions to complex workflows involving recruitment, onboarding, and employee engagement. Many of them are repetitive tasks, creating a high volume of support tickets, emails, and more. An HR chatbot is the digital front door to your HR department. Instead of sending an email, calling a helpdesk, or searching through a 200-page employee handbook, employees type or speak their question and get an immediate answer. Figure 3 shows that a chatbot is designed to answer questions with proper answers [9].

Chatbots are computer programs designed to simulate human conversations and interact with users in a natural language format. An HR chatbot automates support tasks such as answering policy questions, managing leave requests, onboarding new hires, and handling benefits inquiries. Today's HR chatbots incorporate artificial intelligence (AI) technologies, including natural language processing (NLP), generative AI, and conversational AI, to handle routine multiple tasks. They provide instant responses to employee queries and access company policies without waiting for an HR professional. HR departments use these tools to modernize recruitment by automating resume screening and interview scheduling. Beyond hiring, they use chatbots for employee engagement, gathering feedback via pulse surveys and delivering personalized career development suggestions. Figure 4 shows a representation of chatbot in human resources [10].

In today's fast-paced digital landscape, selecting a powerful AI chatbot platform is no longer just a step forward for HR departments; it is a strategic necessity. Most HR chatbots integrate with platforms your team already uses, like Slack, Microsoft Teams, or your company website. HR professionals can also use chatbots to offer personalized learning paths, recommend training resources, and track progress.

## TYPES OF HR CHATBOTS

HR professionals are increasingly seeking innovative solutions to streamline their processes and enhance employee experiences. Chatbots play a pivotal role in

reshaping HR practices. There are different types of HR chatbots. Common types include [11]:

1. Recruitment chatbots
2. Onboarding chatbots
3. HR helpdesk
4. Surveys and feedback chatbots
5. Employee engagement chatbots
6. Wellbeing chatbots
7. Training and development chatbots
8. Performance management chatbots
9. HR analytics chatbots

## APPLICATIONS OF CHATBOTS FOR HUMAN RESOURCES

HR chatbots are AI-powered virtual assistants designed to perform various human resources inquiries and tasks. They handle employee support through natural language conversations. Typical use cases span the entire employee lifecycle: recruitment and initial screening, onboarding, offboarding, benefits enrollment, leave management, performance tracking, feedback collection, employee engagement, and self-service. Common applications include the following [1,11-14]:

- *Interview Scheduling*: Interview scheduling is one of those tasks that seems simple but devours an absurd amount of time. Coordinating availability between a candidate, a hiring manager, and possibly a panel of interviewers involves endless back-and-forth emails that can stretch over days. AI chatbots with calendar integration solve this by letting candidates self-schedule. The chatbot checks interviewer availability in real time, presents available slots, and books the interview.
- *Recruitment*: Recruitment is a crucial aspect of HR, and chatbots can revolutionize the process. Recruiting requires managing multiple candidates, as well as constant communication and coordination. HR chatbots make it easier by automating many of the early steps in the hiring process. They can ask pre-screening questions about experience or work authorization and collect basic information before a recruiter needs to be involved. They can also help with time-consuming tasks like interview scheduling, finding mutually available time slots, and managing back-and-forth emails, improving the candidate experience along the way.
- *Onboarding and Offboarding*: The onboarding process is critical for new hires to acclimate to their roles and integrate into the organization seamlessly. Once a candidate accepts an offer, chatbots help new hires navigate onboarding by providing step-by-step instructions on paperwork, account setup, HR systems access, and any required training programs. Chatbots can also answer questions about company policies or onboarding processes. Instead of searching through intranet pages or dense handbooks, new employees can simply ask basic questions like “Where do I upload my tax forms?” or “What should I do before my first day?” and receive immediate answers. On the offboarding side, chatbots collect feedback from departing employees, guide knowledge transfer, and automate admin tasks such as revoking system access and generating final paperwork. Chatbots can collect company assets, initiate account deactivation workflows and gather employee feedback through exit surveys.
- *24/7 Employee Support*: Employee engagement and support are vital for the overall success of an organization. Chatbots can provide round-the-clock assistance to employees, answering their queries regarding policies, procedures, benefits, and more. Whether it is a simple question about leave balances or a complex inquiry about company policies, chatbots can provide instant responses and ensure that employees receive consistent information. This availability of on-demand support contributes to employee satisfaction and productivity.
- *Training and Development*: Continuous learning and development are essential for employee growth and skill enhancement. Chatbots can deliver personalized training and development modules to employees based on their specific needs and goals. By analyzing individual performance data, chatbots can recommend relevant training programs, courses, and resources. This personalized approach saves HR professionals time and ensures that employees receive targeted learning opportunities tailored to their requirements.
- *Self-service*: Self-service is where HR chatbots deliver the most immediate cost savings. Employees can check leave balances, submit requests, update personal information, and retrieve documents like pay slips or tax forms through simple conversations. No tickets, no waiting. This reduces the administrative burden on HR teams and gives employees instant access to the HR information they need.
- *Human Capital Management (HCM)*: Chatbots are gaining significant importance in human capital management (HCM) as they offer advantages such as automating repetitive HR tasks. The implementation of chatbots enhances efficiency, minimizes human error, and improves

the user experience for candidates, employees, and hiring managers throughout the recruitment process, onboarding, and daily HR tasks. The practical implementation of HCM is crucial for organizations to attract, retain, and cultivate the best workforce, improve productivity and engagement, and achieve their business objectives. In the context of HCM, chatbots can automate many routine and repetitive HR tasks, such as answering common employee questions, providing on-demand training and development resources, and streamlining the performance management process. Chatbots can also improve the employee experience by providing a more personalized and responsive HR service and allowing employees to access HR information and support anytime from any device.

## BENEFITS

Chatbots are making HR practices more inclusive, unbiased, and efficient. They contribute significantly to enhancing the efficiency and responsiveness of HR services, driving forward a new era in workforce management. AI chatbots play a critical role in sending automated notifications about essential events and deadlines, ensuring employees are well-informed and engaged. Chatbots serve as virtual HR assistants, handling repetitive administrative tasks while enabling HR professionals to focus on strategic decision-making. Other benefits of HR chatbots include the following [11,15,16]:

- *Automation:* Chatbot is one of the most versatile options for automating HR services. AI chatbots automate the repetitive side of HR - screening candidates, scheduling interviews, answering policy questions, and onboarding new hires. By automating routine HR tasks, AI virtual assistants drastically cut down the resources, time, and effort required for administrative processes. This leads to notable cost savings, allowing HR departments to allocate their budget more efficiently. AI and automation for HR not only offload repetitive tasks from HR professionals but also inject speed and precision into critical HR operations. The automation of benefits enrollment via chatbots simplifies the process for employees, offering them a user-friendly platform to access and update their benefits. Think of chatbot as augmenting your team, not replacing it.
- *Cost Savings:* Chatbots can help reduce administrative costs associated with HR tasks, such as responding to inquiries, scheduling interviews, and updating employee records. By automating these tasks, organizations can save time and money while improving the quality and speed of HR services.
- *Real-time Support:* One of the most significant benefits is 24/7 employee support, allowing workers to access HR assistance at any time. An HR bot is always available. It provides immediate employee support to a global workforce across different time zones, eliminating the need to wait for an HR professional to become available during business hours. This employee self-service model empowers workers to get instant answers to their questions, leading to higher employee satisfaction. By providing instant responses, chatbots reduce dependency on HR personnel and streamline the onboarding experience.
- *Enhanced Accessibility:* Chatbots offer 24/7 access to information and support so that employees' concerns can be addressed promptly.
- *Better Decision-making:* HR chatbots collect valuable data from employees' interactions, so HR can identify areas for improvement. HR chatbots collect and analyze employee data, providing HR leaders with valuable metrics to inform decision-making. For example, chatbots can identify common employee pain points or measure the effectiveness of HR services.
- *Enhanced Productivity:* The introduction of HR chatbots significantly boosts employee productivity by offering immediate, personalized, and accurate answers around the clock. This allows HR professionals to concentrate on more complex strategic issues.
- *Equity in Hiring:* One of the most compelling arguments for AI chatbots in recruitment is their potential to reduce unconscious bias in the early stages of hiring. Human recruiters - no matter how well-intentioned - are susceptible to bias. A University of Chicago study found that resumes with traditionally white-sounding names received 50% more callbacks than identical resumes with Black-sounding names.
- *Promote Inclusivity:* Chatbots can support multiple languages and provides accessible options for employees with disabilities, catering to a diverse workforce. It also eliminates potential biases in information delivery, which is impossible with human interaction.
- *Consistency:* A chatbot answers by using its knowledge base-which is synchronized with official HRIS data and policy documents. This process reduces the risk of human error or inconsistent information being shared, ensuring

that all employees receive compliant and accurate guidance.

- *Scalability:* HR chatbots can handle a high volume of queries simultaneously, making them ideal for large organizations or during peak periods like recruitment drives.

Figure 5 shows some of the benefits of deploying HR chatbots [17].

## CHALLENGES

The effectiveness of AI-driven chatbots depends on their ability to integrate with existing HR systems, provide accurate responses, and ensure user-friendly interactions. Data privacy and security concerns remain a major issue, as chatbot interactions involve sensitive employee information. Another challenge is the limitation of AI chatbots in handling complex HR issues. While chatbots can answer routine queries, they may struggle with nuanced employee concerns that require human intervention. As AI continues to grow in HR, there is an increasing focus on regulatory scrutiny and the ethical use of AI. Additionally, employee resistance to AI-driven HR services can hinder chatbot adoption. Other challenges include [11,15,18]:

- *Costs:* Initial development and implementation can be too expensive. It also requires data integration and employee training. Evaluate the pricing of chatbot solutions and calculate the potential return on investment (ROI) based on time and cost savings.
- *Limited Capabilities:* Might not be able to understand nuanced or complex employee concerns, which requires human judgment. It may not understand sarcasm, emotions, or the context completely.
- *Lacking Human Touch:* Can feel impersonal, especially when handling sensitive issues. Cannot replace empathy and authentic human interaction.
- *Privacy Concerns:* Data collected by chatbots needs proper handling and observance of privacy and security measures. Data usage must also be transparent to avoid breaching employee privacy and trust. Organizations must implement robust data protection measures to safeguard confidential HR data.
- *Integration:* An HR chatbot that cannot talk to your existing systems is a chatbot that creates more work, not less. Ensure that the chatbot integrates seamlessly with your existing HR systems communication platforms. Pre-built integrations, like those offered by IBM's HR agents, can significantly reduce the time and

complexity of implementation by enabling smooth data flow across your existing tech stack.

- *Customization:* Customization matters just as much. Your HR chatbot should match your brand's tone and language, and support complex HR workflows specific to your organization. Choose a chatbot solution that can be tailored to meet your organization's specific needs and scale as your workforce grows. Look for platforms that allow HR teams to configure and customize the chatbot without requiring extensive technical expertise.
- *Collaboration and Communication:* A better communication system between employees and management gets issues resolved quickly and increases employee morale, productivity, and commitment. HR chatbots with conversational AI capabilities allow organizations to engage with employees in transactional engagements and run day-to-day operations. Employees can view pay slips, swap shifts with colleagues, or ask for information about paid time off through a chatbot.
- *Regulatory Compliance:* HR chatbots handle sensitive employee data, so compliance with regulations like GDPR, CCPA, and HIPAA is non-negotiable. HR teams are responsible for ensuring employees understand and comply with a growing web of regulations - from GDPR and data protection to health and safety, anti-harassment policies, and industry-specific compliance requirements. If an employee does not know the correct data handling procedure, they might make an error that leads to a regulatory fine. A chatbot that is always available, always accurate, and always up-to-date with the latest policies significantly reduces this risk. It serves as an always-available compliance resource. It provides consistent and accurate information on policies and procedures, lowering the risk of human error and ensuring adherence to laws and regulations.

## CONCLUSION

An HR chatbot is a software application that simulates conversation with employees to answer questions, process requests, and guide them through HR tasks, all without requiring a live HR representative. HR chatbots are AI-powered tools designed to help human resources teams automate and streamline various HR functions. Adopting HR chatbots is no longer just a "nice-to-have," it has become a necessity for businesses aiming to boost employee satisfaction while cutting administrative overhead. Chatbots have enhanced how companies attract, serve, and retain employees. HR chatbots can

help HR professionals with admin intensive tasks, freeing up valuable time that can be better spent in providing value for the business. HR professionals should keep in mind that chatbots should not replace the human touch in human resources.

HR chatbots' adoption increases due to their ability to enhance efficiency, reduce manual workloads, and improve employee satisfaction. The future of HR is in AI Agents to supercharge efficiency, talent acquisition, and employee experience. As technology advances, we can expect even more advanced and effective chatbots to further improve HR functions and employee experience. The future of HR support lies in real-time, AI-driven assistance that not only reduces costs but also delivers a superior employee experience. More information about chatbots in human resources can be found in the books [19-21].

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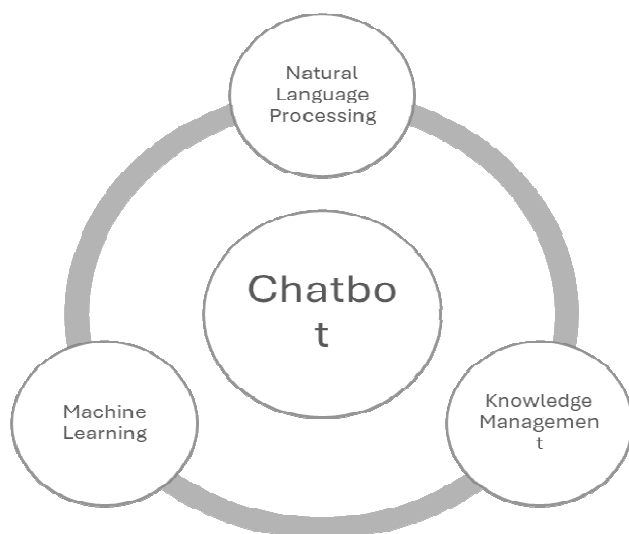


Figure 1 A chatbot based on three key structures in AI [5].

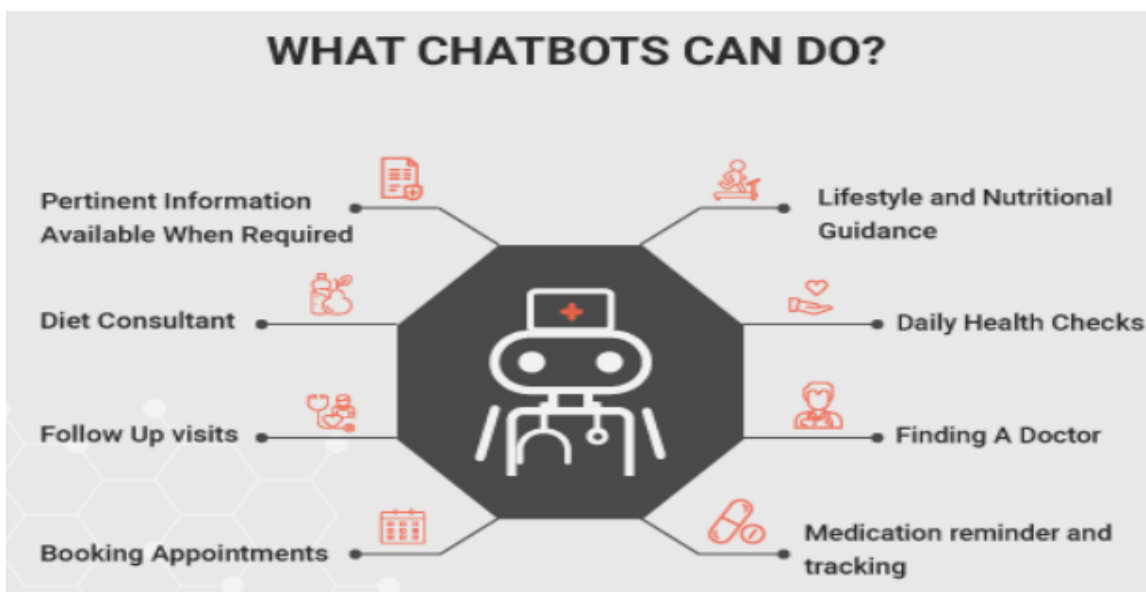


Figure 2 Typical examples of what chatbots can do [10].



Figure 3 A chatbot is designed to answers questions with proper answers [11].



Figure 4 A representation of chatbot in human resources [10].

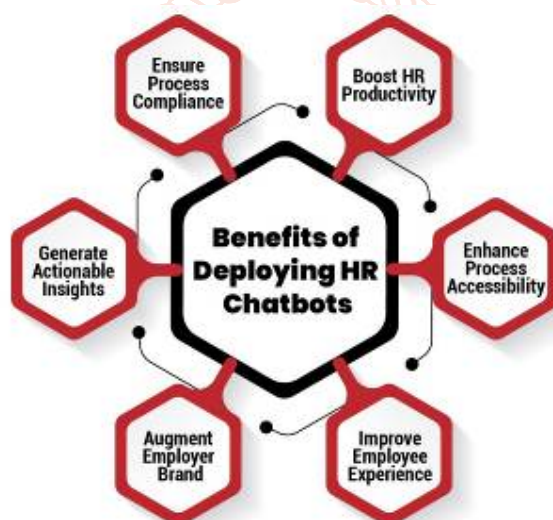


Figure 5 Some benefits of deploying HR chatbots [17].