

# Robotic Automation in Healthcare

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## ABSTRACT

Governments and healthcare stakeholders are making further efforts to build a strong and prosperous society by establishing a strong and easily accessible healthcare system. The primary objective of robotic process automation (RPA), a recent technological innovation, is to eliminate monotonous activities from employees' organizational responsibilities. Robotic process automation uses a variety of technologies.

Artificial intelligence, optical character recognition (OCR), intelligent character recognition (ICR), machine learning (ML), natural language processing (NLP), and [1] process mining technologies are all combined in robotic process automation (RPA). RPA is a recently developed, quick robotics technique. On this criterion, the researchers conduct extensive study. This essay defines RPA's use in the healthcare industry and illustrates its essential ideas. Every year, clinic expenses rise, and more medical staff is required due to the anticipated growth in patient volume. It has an impact on how healthcare workers, patients, and everyone else involved in the sector live their everyday lives.[2] On the other hand, the system works to identify ways to save costs, boost productivity, and offer patients top-notch care. Therefore, businesses require the assistance of robotic healthcare automation because it enables them to automate all difficult and time-consuming procedures.

The healthcare industry has evolved into one of the most demanding and difficult industries now and in the future. Every attempt is made to find solutions to as many issues we can. Numerous tasks in the healthcare industry can be automated. RPA technology

can be very helpful in the healthcare industry because it can be used

Keywords: RPA, robotic process automation, technology, robotics, and healthcare.

## INTRODUCTION:

Robotic process Robotic process automates complex procedures, improving patient outcomes. It also results in work in healthcare being less expensive. The use of software robots to automate business processes is known as robotic process automation (RPA). RPA is a software-based automation technique that automates business operations by comprehending the practices already in place. The majority of repetitive jobs and activities are carried out by software instead of people. This system minimizes the need for human intervention in the process. In the current business climate, where every organization competes with one another, RPA technology offers more profitability and increased productivity when some stiff procedures are automated. This kind of automation enables human workers to concentrate on harder problems, think creatively, and invest their valuable time in learning and growing. All processing tasks are divided into three key phases: planning, implementation, and monitoring. RPA is regarded as a scalable, important, and secure approach to increase the convenience of using automated projects in big businesses. According to researchers, RPA represented a significant advancement in technology over the past ten years, and in the coming years, it will become even more useful and potent. The technology of the future, known as RPA, aims to create solutions that decrease costs and time while enhancing the quality, speed, and efficiency of operational processes. Healthcare firms can save billions of dollars in the next years because to RPA's contribution to process automation and improved operational efficiency. RPA in the healthcare industry should be fully utilized in order to simultaneously provide a larger population with acceptable medical care. Of course, there are more factors besides this quantitative one, therefore we also need to consider RPA's qualitative effects on healthcare. Robotic process automation is an uncontrollable technology that is being used in repetitive task-based industries. For businesses using RPA in their projects, it helps manage costs and improves productivity. By lowering errors, it aids in

increasing process accuracy. It operates continuously, without interruption, all year long and thus minimizes dangers.

## **LITERATURE REVIEW:**

Rishabh Jain and Roheet Bhatnagar's "Robotic process automation in healthcare-a review" (2007) They had discussed the applications of robotic process automation in the medical field. How can these systems operate automatically to maintain a balance between the growing patient population and streamlined insurance procedures? Different tasks for authors are carried out automatically by software. [6] In his article "The Role of Standards in Healthcare Automation" published on August 22, 2009, Ram D. Sriram identified the two components of healthcare informatics and medical devices. Healthcare informatics includes any software- or system-related operations, and it also deals with work done on hardware in medical devices. The authors of this study discuss common healthcare functions such as bioimaging, simulation, medical device integration, and electronic health records. [7] The development of an automated healthcare record management system was the subject of a research article written by Suleiman A. Yahaya and Lydia J. Jivantika in June 2019. In order to improve the management of health records, this report presented the evolution of an electronic health record monitoring system with smartcard. In this instance, various tools are used to construct the software, including the XAMPA platform, QR codes, HTML, and PHP. For the patient, doctor, laboratory assistant, record assistant, pharmacist, and accountant to access their respective parts, smart cards were created. [8]

The 6 Big Benefits of Applying Automation to Healthcare were outlined by James Dias in July 2014. He discussed the advantages of robots in healthcare and how they are replacing people. While software-based work is capable of replacing doctors and nurses, robotic automation cannot. He continued by saying there are six benefits, all of which are "laborsaving." Automation using robotics can take the place of manual labor carried out by a machine. Improved consistency and quality Human error is not a factor with automation tools. Due to the system's storage of all data, there is minimal paper waste. increased out-

come predictability Higher Throughput, the system's ability to manage several populations at once, and Data-Driven Insights are the means by which precise data is gathered and stored [8].

"Preparing for the future of healthcare in light of automation" by Yan chow" (24 February 2020) described the effects of the automation process on healthcare and how robotic process automation and artificial intelligence can work together. There are various effects, including learning and understanding, emotions, natural interaction, judgement, complex problem solving, and creativity [9]. The author of the aforementioned initial paper discussed many healthcare-related issues and how robots could handle them. They discuss how hardware and software are used in healthcare in their second article. The author had shown how various databases are utilized for automatically storing data in the third paper, and in the final review, they discussed the advantages of healthcare automation. Several people's assumptions are that is no any software totally based on automation. In the aforementioned first three papers, several automated tasks using various tools are described.

## **METHODOLOGY:**

The world is changing quickly, and in the twenty-first century, automation will be an issue affecting all industries, not just those employing workers in the industrial sector. Our goal as educators will be to harness the power of robotics, AI, and automation to get rid of tedious chores and concentrate on things that only humans are capable of doing. As a result, these changes ought to be welcomed rather than feared. Therefore, we use interviews with people who are connected to the healthcare industry and patients to try to identify the best solution. Along with many research papers, grab various reference books.

## **FUTURE OF RPA IN HEALTHCARE:**

In order to" make the Hospitals fit for the future, and to obtain the most value for patients out of every minute of Investment," the world is constantly looking for ways to assist the

delivery of the healthcare plan. This includes streamlining our systems, procedures, and working methods to save valuable time from our packed schedules. These hours could be used to complete higher-value jobs that only people can complete, such as those that call for face-to-face communication, empathy, creativity, problem-solving, and decision-making. This will consequently enhance patient care, results, and experience. In times of crisis, innovation need not cease. We are in a new technological era—the era of digital transformation—where we can develop, communicate, and produce digital solutions more quickly than before. We found that starting automation adoption inside an industry, as opposed to initially striving for Trust-wide adoption, was advantageous and effective. This allowed us to gather a bank of essential departmental automation ideas fast to impart to other businesses. These concepts will be presented in an easily understandable manner in the research on Automation Accelerator Community Hub, an online platform created to help, educate, engage, and inspire others as they advance their automation capabilities. We may all benefit from each other's experiences, both successes and failures, because it is an open stream. Our learning process has the ability to become more effective and automation's value as a tool for growth will increase as more firms adopt automation or build their capabilities. [10]

#### **KET CONCEPT INCLUDE IN BEST AUTOMATION:**

No matter which type of automation solution you choose there are many common benefits.

- Enhanced operational effectiveness: - Automation frees up time for your company to concentrate on its main goals by reducing time, effort, and expense while lowering manual errors.
- Saving time: - Repeated chores can be finished more quickly.
- Improved consistency and quality: - Process automation ensures high-quality outcomes since every activity is carried out consistently and without human error.
- Raised employee contentment: - Manual labor is tedious and boring. Automation boosts employee satisfaction by enabling them to work on more interesting tasks.

- Improved client satisfaction: - Customer satisfaction is increased as a result of happier staff, quicker processing, and time savings that allow teams to focus on providing better customer care.

#### **RPA: Tool Selection Factors for Healthcare**

- ◆ Usability
- ◆ Security
- ◆ Deployment
- ◆ Vendor History
- ◆ Reliability of Data Capture
- ◆ Governance
- ◆ Ownership Cost
- ◆ Technical Support
- ◆ Scalability

#### **RPA: Healthcare Use Cases**

##### *Registration of new patients:*

- Verifying and updating patient information
- Gathering demographic information, geographic information, insurance information to create a new account.
- Recording and retrieving account-related charts and medical histories

##### *Arrangement of Appointments:*

- Making and cancelling appointments
- Appointment scheduling depending on workload, specialty, etc.

##### *Coordinating care:*

- Following up with the patient on medicines, appointments, etc.
- Assisting in the execution of the patient's discharge instructions, such as prescriptions and recommendations.

*Posting of Payment:*

- Using the ERA and EOB the payer sent
- Accessing and verifying the receipt of money
- Application data entry and reconciliation for posting
- Producing follow-up and AR updates

*Accounts Receivable/Payable Available (Patient AR):*

- Getting follow-ups from the billing, project management, and other teams
- Follow-up through IVRS or letter for claims that are approaching TFL
- Setting up follow-ups and outreach

*Validation of Claims:*

- Membership verification
- Eligibility assessments
- Checks for entitlements
- Checks COB

- Pricing assignment and DRG

*adjudication of claims :*

- Arbitration procedures o Qualification
- o DRG
- o Payment Limit
- Authorization of claims - policy segment

- Audit: Logging and Deny

*Logging Claims*

- Manually entering claims
- Electronic assertions - Direct entry of data

*Denial of Claims and Appeals:*

- Denial control
- Appeals based on the type of refusal

*Management of Data:*

- Automating the creation of reports like the Daily Outstanding Report and the Daily Productivity Report, etc.
- Generating audit reports automatically

*Dashboards Reports:*

- Order fulfilment
- Returns administration
- Sourcing and acquisition
- Inventory control

*Chain of Supply:*

- Obtaining information or forms from a website, IVR, or API
- Validating and examining the data's quality
- Uploading files to government portals (Public Health, MACRA, etc.)
- Collecting and extracting data from various applications.

*RD:*

- Documentation for site initiation
- Investigator compensation



- Enrollment monitoring
- Monitoring and reporting of visits
- Medical and scientific writing

## **CONCLUSION:**

RPA has many programmers in a variety of industries, including healthcare and medicine, and it produces incredibly convenient outcomes, but because it's a new technology, it has a number of drawbacks and problems. With a learning curve for people who rely on it, it has the power to eliminate complex jobs across a large number of roles, systems, functions, administrations, enterprises, departments, and technical implementation. A configuration that works for one user—whether it be an enterprise-wide setup with every module integrated, or a deployment of a small unit with a more constrained scope—might not work for another user because different sectors are embracing RPA. Since most people are still unconvinced to use automated bots in surgeries, there is also a trust issue at play in the procedure. As there are now no suitable guidelines for fully implementing RPA in healthcare and medicine, there are also rules and regulations and policy issues. It is obvious that the advancement of RPA and the acceptance of it can provide more IT employment for young people to oversee and administer software applications.

RPA makes workflows more streamlined, quicker, and less labor-intensive by removing a number of internal mistakes. Robots make it easier to quickly respond to patient demands, which advances both the patient's and the doctor's progress. Enables individuals to view their health information profiles from a single location enables fast information access for healthcare professionals across platforms enhances patient satisfaction by assisting with scheduling appointments and sending timely reminders. Aids in delivering up to 47 percent of overall savings by lowering process pricing, and assists in reducing claim process value by 75 percent through the automation of 80 percent of the process. Aids in finding a replacement for paper records, which greatly benefits the environment.

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