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Perspectives of Thai Seniors on the Innovative Health Care Robot

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Abstract

This study aims to investigate the technological acceptance of innovative health care robots in Thailand. After 2023, robotics and artificial intelligence will be the primary focus. The rise of robots has reached a tipping point in the global robotics industry. Autonomous unmanned vehicles and consumer service robots are two aspects of robots that are not utilized in the industrial sector. The "Sawasdee Nurse Robot" is the successor to the "Pencil Robot." It is a technological advancement in robotic nursing devices intended to aid patients and reduce the workload of nurses. The size of the robot will be determined by the characteristics of the various tasks. The researcher examined the events that led to the creation of the Sawadee Nurse robot. The samples were divided into two groups: 200 senior citizens from the Mueang District of Udon Thani Province, Thailand, and 400 Muang District residents. 74.5 percent of the sample believed that the ability to move around is at a high level, with opinions decreasing as follows: some sections can rotate or move (20.2%) and tabletop robots can't rotate or move at all (0.0 percent) (5.5 percent). Overall, it was of outstanding quality. Opinions regarding the creation of the "Hello, nurse robot" The Robot Body's construction and general characteristics (Features) were of superior quality.

Keywords: Health Care, Robot, Artificial Intelligence, Nursing, Technology

Introduction

According to the 1979 definition provided by the Robotics Institute of America (RIA), the robotic arm is designed to set the order of operations. It has a wide range of applications. Used to move goods, tools, or specialized equipment by programming a series of movements. to be utilized in numerous activities (Nagpal and Lewis, 1984, p. 26–8). The name "robot" is derived from the 1979 Czech word "robota" and signifies that the robotic arm is supposed to be able to determine the sequence of operations. It has a wide range of applications. Used to move materials, tools, or specialized equipment by programming the sequence of motions for a range of tasks (Nagpal and Lewis, 1984, p. 26–8). The word "robot" derives from the Czech word "robota," which translates straight to "slavery." Born in 1920 from the theatrical play "Rassum's Universal Robots," created by Karel Chapek (Karel), The subject matter of the play relates to the human imagination. Attempting everything to aid the work The creation of robots was virtual from the beginning. Slaves serve humans, and robots and humans continue to coexist until the robots take over. Born with the same opinion Human enslavement produces resistance in robots. Refusing to again serve as a pawn This play is so well-known that the term "robot" is recognized worldwide (Wilde, 2021).

Later, a robot with the name Shakey was built (van Genderen, 2018). Alsie the Tortoise at the Stanford Research Institute (SRI) has exceptional mobility. is to have an understanding of himself, whereas Shakey will need a sensor signal to go back and forth. In addition to robots that could travel on wheels, the General Electric Walking Truck, which could walk on legs, was created in 1960 (van Genderen, 2018). It is enormous, weighing 3,000 pounds. Using computers to regulate its leg movements, it can move forward on all fours at a pace of 4 mph.

After robots became widely known, they began to play a significant part in numerous facets of human existence. Instead of humans, industrial enterprises have begun to employ robots. original human labor Unimates, the first industrial robots, were designed by George Devol and Joe Engleberger in the 1950s and 1960s (Kapp, 2012). His contributions to robotics have earned him the moniker "Father of Industrial Robotics."

This will become an intrinsic part of our daily life in the near future. Since 2015, the rising and diversified use of robots has caused a tipping point in the global robotics industry. using fresh markets There are numerous aspects of robots that are not used in the industrial sector, like autonomous unmanned vehicles and consumer service robots. Business robots include medical robots, military robots, unmanned aerial vehicles (UAVs), and others. The year 2020 will be devoted to the development of robotics and artificial intelligence (AI) (Nguyen, 2020). As in human life, it is anticipated that a significant portion of this rapid increase will be driven by the service robot fleet.

Medical robot innovation concepts and theories

The use of robots for specific services or tasks has been used in medicine for a long time. It has applications in areas such as the use of robots in surgery (Mahdi, Saleh, Hashim, & Loganathan, 2021). Using robots to help with child development Using robots to track patients in the ward through the use of nursing robots using robots for medical transport using robots in physical therapy and using robots in the laboratory the use of public relations robots in hospitals using robots to take care of the elderly and the use of robots in other areas of medicine (O'Sullivan et al., 2019).

Da Vinci robot-assisted surgery was approved by the US Food and Drug Administration in 2000 (Nik-Ahd et al., 2019). As of 2012, about 200,000 surgeries had been performed using robotic surgery. Although laparoscopic surgery can provide better results compared to conventional surgery, but in laparoscopic surgery, there are still many inferior factors compared to robotic surgery, such as the loss of vision in three dimensions. Prolonged use of surgical instruments may affect the surgeon's hand (Koukourikis, &Rha, 2021). The loss of the angle of movement of the hand compared to robotic surgery was indicated to solve problems arising from laparoscopic surgery, such as a more efficient camera. higher maneuverability of the tool There is a system for filtering hand vibrations. Stabilizing the device's traction can increase the level of motion by up to five times. This makes it possible to view 3D images and increases the accuracy of cutting (Mitchell, 2019). By comparing robotic surgery with laparoscopic surgery, it was found that robotic surgery takes longer to perform the surgery. higher medical expenses but it has the benefit of less blood loss, reducing the chance of having to switch to open surgery. Reducing the length of hospital stay shorten the time to return to food, less complications. There is also a type of robot used in the operating room relying on the voice command of the robot the location of the device (Perez, Carpintero, Garcia, Sabater, Azorin, Candela, 2012, pp. 901–911).

For robots used to track patients on the ward,there is a robot that doctors can remotely control through a network system by a personal computer the robot will have a camera on its monitor. This type of robot was first used at Johns Hopkins Hospital, Baltimore, Maryland, by Dr. Louis Kavoussi in 2004 (Dobson, 2004, p. 474). Therefore, doctors would control the robot from home. There must also be a public health worker at the hospital to assist in ensuring that the examination runs smoothly.

Scientists have developed patient's facerobots to serve as nurse assistants in many different ways, each of specific arms has specific function. For example, robots that lift patients onto or from beds into wheelchairs, Robot to wipe the patient, and the robot reminds me to change diapers. Also some robots do measure patient temperature using a thermal camera as a result of the use of robots in nursing and the development of human-like robots with arms, hands, and legs that can perform various activities like a human.

Moreover, a delivery robot in the hospital can be used to send patient history files. Delivery of medication from the pharmacy to the ward send medical supplies; as well assending laboratory samples and sending food,

clothing, or bed linen. In addition, there is also a device to help the elderly or the disabled walk (the exoskeleton) that can help support the patient's body or increase muscle strength.

Robots enhance the development of children with children with autism who are more responsive to toys or objects than humans. According to the study of Miskam et al. (Miskam, Shamsuddin, Yussof, Omar, & Muda, 2014), it was found that the use of human-like robots is not yet a substitute for real therapists. But it can be used to attract children's attention and can be programmed to respond in various ways, such as turning the head, changing eye color, moving limbs, talking, playing music, etc. The development of the robot program requires therapists and engineers to be tailored to suit each child in the activity of therapy and it is currently limited because most robots can only communicate in one direction.

Elderly care robots, for example, A robot named a robot that was invented and built by Thai people, able to monitor the elderly There is a system to contact doctors or relatives via telephone or other channels. Medication reminder system Meter connection wireless pressure Patient history collection system It has a mechanical arm that can rotate 7 points, can serve food, and has a recreational system (Mamdiwar, Shakruwala, Chadha, Srinivasan, & Chang, 2021). There is a system to contact doctors or relatives via telephone or other channels.

A laboratory robot helps the original work process last longer. sample preparation Test the results of the examination laboratory. Standard preparation Done by staff or medical technologists which may have problems in testing or research with a number Samples that need to be examined in large quantities at present, large hospitals have utilized robots in their laboratories. It is often connected to the hospital information system. for convenience and speed in submitting results to doctors and nurses who provide care.

Design of "Sawasdee Nurse Robot"

The most significant aspect of a robot is its structure (robot body or manipulator). Because, when selecting a robot to assist in the production process, we must examine the nature of the task, the location, and the surrounding environment, since the robot is an indispensable component of the work process. Additionally, the size of the robot's construction will be determined by the various task features. that several Compared to humans, you can envision which If a tiny person can lift less than a huge person, then we must first investigate and comprehend the robot's construction, i.e., what it is composed of ?. We cannot program the robot if we do not have this information. The crucial aspect is that we will converse with those who are similarly ignorant.It is a technological advancement in robotic devices designed to aid in nursing to aid the patients and assist in relieving the pressure on the nurses. The history of allied arts and sciences "Sawasdee Nurse Robot" has been developed further from "Pencil Robot." As depicted in Figure 1, the structure is joined to the robot's body.

Figure 1. Hello-Nurse robot

From Figure 1. it can be seen that the Hello Nurse Robot has the following features (Features):Vision, person detection in night mode, and cameras with image processing are examples of sensors.A robot's speaker is a device that turns electrical signals into sound utilizing the amplified power from the amplifier.The "call service" button is a button on the robot that allows the elderly or patients to summon various services, such as emergency or urgent cases, from the robot.A video camera is a gadget that facilitates Teleconsultation between patients and physicians through video calls.A microphone is an amplification device used to record or broadcast the sounds of humans or robots.Touch screen monitor (touchscreen monitor) is a monitor that receives data through touching the screen's surface, such as to choose topics which can be chosen by pointing to the appropriate location. It signifies that the information has been received by the system.Also, USB ports serve as connection points for external devices like Wi-Fi and Bluetooth. An "on" or "off" switch is a switch used to activate or deactivate the device's operation. Moreover, the robot may be controlled by sliding as much as severing control which is accomplished by moving the switch up or down. It may also be sliding the switch up connects (ON), while moving it down disconnects (OFF).

Related research

Kethanvee and Lin (2019) investigated micrometer- or nanometer-scale robotic technologies for medical and pharmaceutical applications. Currently, the creation of robots for use in medical or pharmaceuticals is crucial for detecting irregularities in the body or administering medications. The objective is to enhance the efficacy of disease diagnostics and therapy through the convenience of drug delivery or to lessen the negative effects of standard treatments. Most robotic technologies are designed to permit robots to penetrate the disease site or anomalies that necessitate a somewhat large, possibly small robot. at the nano or micrometer size and use technology to create sophisticated designs a number of distinct mechanical and chemical processes.

The researchers Ahire, Patil, Patil, & Kadam (2021) investigated medical and pharmaceutical robots. Robots are machines that are built to operate in a predetermined order. possess an import qualification or can sense information from the external environment and can conduct physical activities such as grabbing, lifting, pushing, and moving objects. Robots can be utilized in numerous industries, including industry, the military, entertainment, and the performing arts. Research and development, exploration, and agriculture, including medicinal and pharmaceutical uses in addition to their use in surgery, medical robots aid in the development of children by monitoring patients on the ward in terms of care and nursing utilized for transporting medical supplies and medications. used in physical therapy; used for diagnosis in laboratories; used for hospital public relations utilize robots to provide elderly care, etc. In the pharmaceutical sector, pharmaceutical robots are utilized. counting pills was utilized in hospitals to organize medications. utilized in pharmacies to categorize medications. used to produce medications for individual patients.

According to Pokharkar, Shetty, Thorat, & Yadav (2021), robotic technologies and automation systems have had a growing impact on the human way of life. At the dawn of the digital age, I will provide an example of a medical robot in this essay. As a result of the nature of the social system, Currently, the population of the world is growing. The population of Thailand is aging. The expansion of the population is slowing, but the old population is growing quicker. Hence, increasing the number of populations requiring greater care the societal tendency in the digital era is a focus on living quality. People do not want to become injured or old, so businesses or services relating to the elderly will be lucrative in the future. Medical robots will play a significant role as well. if treatment consists of rehabilitation or surgery.

Colombo (2020) found that in order for the robot to transport meals and medication to a patient inside a lead-lined room, its control section employs a Visual Basic 6 software to relay serial port (RS232) commands over a wireless network. The robot is equipped with 802.11g Wi-Fi. Once the robot receives the command, the PIC microcontroller-controlled robot will process the command and send it to the robot's driving unit.

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Conceptual FrameworK

From literature reviews, study concepts, theories and related research, the researcher has used the conceptual framework of the study is as follows:

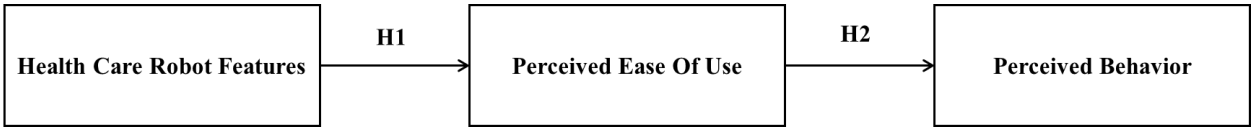

Figure 2. Conceptual Framework

A study of nurse robots for patient screening and first evaluation is a mixed research study that combines qualitative research and quantitative research as a study strategy to answer the following questions and achieve the following research objectives: qualitative research The researcher has investigated the fundamentals of the Sawadee Nurse Robot's creation. Structure, appearance, and characteristics of robots, as well as fundamental knowledge regarding robots. The study's findings will be summarized for a structural examination of the robot's design. The (Functions) of the robot. quantitative research.This study focuses on the use of numerical data as evidence to prove the validity of the subject's findings and conclusions. Researcher uses the questionnaire as a method for data collection, the findings can be applied broadly (such as Sabry, F. (2022). The researcher has examined the conduct leading to the creation of the Sawadee Nurse robot and thoughts on the development of the Sawadee-Nurse Robot in terms of the robot's structure, physique, and characteristics. This analysis is a hybrid of quantitative research (quantitative research) and qualitative research (qualitative research).

The researcher has identified the target demographic for this study as senior citizens and residents of Muang District, Udon Thani Province. This study's sample size was 4 0 0 cases (Sabry, 2022). The samples were separated into the following two groups: 1) 2 0 0 elderly individuals in the Mueang District of Udon Thani Province Nonetheless, the calculation of the proportion of the overall sample in the area of Mueang District, Udon Thani Province, yielded a value that was significantly different from zero. The researcher selects the sample using proportional sampling and simple random sampling. Within each group or subdistrict, all members of the population have equal opportunities. To effectively represent the research population in the Muang District of Udon Thani's Muang District, the study is limited in that the sampling frame for the population cannot be determined definitively; therefore, a random sample of 200 individuals is used. Through the distribution of questionnaires to Muang District residents, a convenient sample was obtained. Udon Thani is one of Thailand's provinces. Those willing and able to contribute to the Hello Nurse robot's development are eager to do so.

It is discovered that the sample group The majority are female (67 percent). The majority of respondents were between the ages of 21 and 30 (32,3%), followed by those aged 41 to 50 (23%). Between 31 and 40 years of age (22.5%) Age between 51-60 years old (11%) Aged between 61and over (8% of them) and under 20 (3.3% of them), the majority of them (52.8%) hold a bachelor's degree, followed by primary education (19.3 percent) and secondary education (3.3%). (1.3 percent). diploma (7.5%) and just marginally higher Undergraduate and other (4. 0 and 0.3%, respectively), the majority are trades/own companies (24%), followed by Students/students working in civil service/government employees/state enterprises (19%) and private employees (19%). (15 percent) Farmers (four percent) and other individuals (1.8%), respectively. The majority earn between 10,001 and 15,000 baht (33.5%), followed by 5,001 to 10,000 baht (25%) 15,001-20,000 (14.3%) Under 5,000 baht (13.3%) greater than or equal to 25,001 baht (8.8 percent) and others (0.88 percent), respectively. 95.3% of the samples lacked prior expertise with robots. Types of robots that are desired/preferred. Most prevalent medical robots are the most prevalent (74.8%), followed by domestic robots (12.3%) and industrial robots (8.3%) among those between the ages of 41 and 50. between 51 and 60 years old (11 percent) Aged between 61 and above (8%) and under 20 (3,3%), the majority had a bachelor's degree (52,8 percent), followed by primary education (19.3 percent) and secondary education (3,3 percent) (1.3 percent). diploma (7.5 percent) and only slightly

higher Undergraduate and Other (4.0 percent and 0.3 percent, respectively), the majority are tradespeople or business owners (24%), followed by students and others (19 percent) working in civil service, government employees, or state enterprises (19 percent), and private employees (19 percent) (15 percent). Farmers (four percent) and other individuals (1.8%), respectively. The majority earn between 10,001 and 15,000 baht (33.5%), followed by 5,001 to 10,000 baht (25%) 15,001-20,000 (14.3%) Under 5,000 baht (13.3%) greater than or equal to 25,001 baht (8.8 percent) and others (0.88 percent), respectively. 95.3% of the samples lacked prior expertise with robots. Types of robots that are interested in or opt to use medical robots are the most prevalent (74.8%), followed by residential robots (12.3%), industrial robots (8.2%), and robots used in entertainment (8%). (4. 8 percent). (61 percent) reputation/brand (brand, logo) comes in second place (percent 14. 8) robot design pattern (percentage 10/8) Patterns, colors, beauty (percentage 7.8) price (percentage 5.8%), correspondingly, the shape of the most interested robots discovered that the shape resembles a human (67%) or resembles a doll (58%). (19 percent). vehicle-like form (7.8 percent) animal-like features (63 percent).

Table 1. Pearson correlation coefficient

		Mean Of Health Care Robot Features	**Mean Of Perceived Ease of Use**	**Mean Of Perceived Behavior**
Mean Of Health Care Robot Features	Pearson Correlation	1	.439**	.341**
	Sig. (2-tailed)	.000	.000	.000
Mean Of Perceived Ease of Use	Pearson Correlation	.439**	1	.568**
	Sig. (2-tailed)	.000	.000	.000
Mean Of Perceived Behavior	Pearson Correlation	.341**	.568**	1
	Sig. (2-tailed)	.000	.000	.000

According to table 1. The relationship between the variables is statistically significant Health care robots have a variety of features that can include things like monitoring vital signs, administering medication, and assisting with physical therapy. The perceived ease of use of a health care robot is the extent to which users find it easy to operate and understand. The perceived behavior of a health care robot is the extent to which users find it to be responsive and helpful.

There is a significant relationship between the features of a health care robot, perceived ease of use, and perceived behavior. For example, if a health care robot has a user-friendly interface and is able to perform tasks efficiently, users are more likely to find it easy to use and perceive it as being helpful. Additionally, if a health care robot is able to accurately monitor vital signs and administer medication, users may perceive it as being more responsive and reliable.

All hypotheses 1 and 2 are accepted and it shows that the Thai senior behavior toward the innovative nursing robot was significantly positive, it suggests that the Thai senior population has a positive attitude towards using health care robots. This could be due to the features of the nursing robot, such as its ability to assist with tasks, monitor vital signs, and administer medication, as well as its perceived ease of use and perceived behavior.

This research also implies that there is a significant relationship between these factors and the Thai senior's attitude towards the nursing robot. The study can be considered as a proof that the nursing robot is a useful and reliable tool for Thai senior's health care and it can be used as a reference for further research or implementation in the health care industry for older population.

It was determined that sample Opinion that the structure of the Robot Body (20.1%) when considering each aspect found that the movement of the robot The appearance of the robot command size of the robot characteristics of imitating human behavior and the colors used to decorate the robot at a high level (33.3%, 20% 20% 16%.6 16%.6% and 14.2%, respectively).

Robot control Overall, it was determined to be of a high standard. (20 Percentage) When evaluating things, it was determined that the sample group held the view that voice command is at the highest level, where the sample groups hold the following viewpoints in descending order: ns in descending order as follows: voice command type (44 percent), touch screen type or touch screen display type (33 percent), type used through applications volume (11 percent), push-button type (8 percent: voice command type (44 percent), touch screen type or touch screen display type (33 percent), type used through applications volume (11 percent), push-button type (8 percent).

Length of the robot the sample was of the viewpoint that the height was 100 cm to a high degree (16.6%) when seen as a transaction. (Percentage24.5) the most, where the sample groups' opinions were as follows in descending order: Height 12 0cm.(21. 8 percent) height 150 centimeters (20 percent . 8) Height 6 cm (13.5%), height 8 cm (13.3%), and height 180 cm (6.3%) accordingly.

A robot's physical appearance in general, it was discovered that a high percentage (twenty percent) of the sample group believed that they resembled nurses/doctors when evaluating the goods. It is at the highest level (64,2 %), with the sample groups holding the following opinions in descending order: Doll like resemblance (23 percent) Comparable to those of a pet (6.8 percent) Children-like features (percentage 4.5) and other characteristics (1.5%), respectively.

The hue selected to paint the robot Overall, it was discovered to be elevated (14,2 percent). When seen as a list, it was determined that the sample group's opinion about white was greatest (51,5 percent), followed by blue (23,8 percent), black (8.8 percent), blue (7.1 percent), yellow (5.2 percent), purple (2.8 percent), and others (0.8%), in that order.

A remarkable level of replicating human behavior in its whole is observed (percent 16.6) Upon examination of the list, it was determined that the conversation was of the greatest caliber. The sample groups' opinions were ranked as follows, in descending order: Movement of the hands (13.8%), walking (13.5%), blinking (7%), laughter (3.8%), and dancing (1.8%), respectively, account for the majority of body language.

Robot movement Overall, it was determined to be of a high standard. (percent 33.3) Considered as a list, it was discovered that 74.5% of the sample group believed that the ability to move around is at a high level, with opinions dropping as follows: can rotate or move some sections (20.2%) and tabletop robots (5.3%), respectively.

Conclusion

Based on the outcomes of analysis and discussion, mixed quantitative and qualitative research, The technique followed by the nursing robot for screening and assessing the initial condition of patients and people's behavior toward the development of Hello Nurse Robot are highlighted in this study. Overall, it was of outstanding quality. Opinions regarding the creation of "Hello Nurse Robot" The Robot Body's construction and general characteristics (Features) were of superior quality. Consequently, presenting the instructions for the development of a prototype hello nurse robot in the structure of the Robot Body and the features (Features) to obtain a robot with the desired shape. Size of the robot's body; the hues utilized for ornamentation; the imitative qualities of the robot's commands; the robot's movement. To utilize the results of data analysis to the development of driving-efficient nursing robots. It can be concluded that the structure of the robot body (robot manipulator) is a very important component because, when choosing a robot to aid in the production process, the nature of the work, the location, and the surrounding environment must be considered because the robot is an integral part of the work process. The many qualities of the work will also determine the size of the robot's structure. Which numerous You can conceive of which, when compared to humans If a tiny person can lift less

than a large person, then it should be examined to determine the robot's structure and components, since if we do not know, we will be unable to program the robot to function. Yes, the crucial aspect is that we shall converse with those who know nothing. Throughout development of the Hello Nurse robot There are elements of the robot that are essential for the creation of quantitative and qualitative data analysis in order to screen and analyze the initial patient state. Sensors, speakers, service call buttons, microphones, video cameras, microphones, and touch screens have been deemed essential by the elderly and medical staff, among others. USB port and power on/off switch button, etc. A nurse robot for screening and assessing the initial condition of patients must be effective and exhibited as a prototype prior to development. Consequently, the results of behavioral studies should be utilized. Assessing public opinion through quantitative data collecting and qualitative the in-depth interview was conducted with the body and features of the robot will continue to efficiently suit the requirements of the target audience.

Discussion

The behavioral degree of opinions regarding the robot's bodily shape, including its movement, as determined by the study's first objective The robot's look, size, ability to imitate human behavior, and the colors chosen to decorate it were all of a high standard. With the robot's mobility, most should be able to move around readily for use. and in a restricted area, or may be designed to rotate or move somewhat. If necessary, vocal commands are used to command the robot. And create the robot to be capable of designing a touch screen or touching the display screen for usage with applications, push buttons, and gesture commands, including the robot's appearance. In general, it was determined that, at a high level, when analyzing the items, it was discovered that the sample group believed they resembled nurses or doctors. is at the highest level, whereas the opinions of the sample groups are listed in descending order. The robot's form should resemble a doll. a pet-like and child-like appearance, respectively.

According to Koleoso, Feng, Xue, Li, Munshi, & Chen (2020) paper on Micrometer or Nanometer Robot Technology, a robot's size should not exceed 120 centimeters for ease of mobility and operation. It was discovered that the current development of robots for use in medicine or pharmaceuticals is essential for diagnosing body anomalies for medical and pharmaceutical applications. or used to deliver medications The objective is to boost the efficacy of disease diagnostics or therapy by facilitating drug administration. or to decrease the negative effects of conventional treatments. The majority of robotic technologies are intended to enable robots to enter disease sites. or anomalies requiring a robot of moderate size, which may be small. At the nano or micrometer scale, and utilizing a variety of technologies, including both mechanical and chemical processes. Hence, it is evident that the size of the robot's construction would affect its efficiency and utilization, as well as 2) the level of behavioral feedback on features (Features), i.e. its ability to accurately monitor body temperature with an intelligent system. There is a service call button for urgent or emergency situations. In lieu of doctors and nurses, there is a system for care and follow-up. Voice-activated robot that is able to take medical histories and basic information from patients or the elderly.

A HD display screen and a notification system for taking medications, sleeping, waking up, etc. are included. There is a method for video-based long-distance consultations between patients and physicians. In accordance with Karabegović and Doleček (2017), who studied medical and pharmaceutical robots and found that robots can be used in many fields, such as industry, military, entertainment, and performance, there is a voice command system in many languages, such as Thai, English, Chinese, Laos, Cambodia, etc., which can be connected to electronic devices such as telephones, tablets, notebooks, computers, etc. Research and development, exploration, agriculture, as well as medical and pharmaceutical applications. In surgery, medical robots are utilized. contributes to the development of children It is utilized to track patients in the ward care and nursing departments as well as convey medical equipment and medications. Utilized in physical therapy, laboratory diagnosis, hospital public relations, care for the elderly using robots, etc. In addition, the robot's qualities should There are indicator lights for different conditions, and the robot can recognize the owner's path and face. It can also automatically identify different locations. utilizing a vision sensor Human detection in night mode and finally being able to relax by listening to music, Dharma, etc.

Based on the findings of the study, guidelines for the development of a prototype have been established. hello nurse robot in terms of the structure and characteristics of the robot's body (the development of a prototype), Hello, robot nurse! Regarding the structure of the robot body and the features (Features), we concluded that the creation of a nurse robot for screening and early assessment of patients should be pursued, including: 1) the structure of the robot; 2) the features of the robot; and 3) the features of the robot. Robotic body, i.e., robot movement the emphasis should be placed on the creation of mechanical constructions or designs that can move or walk with ease. not exceed 120 centimeters in height to facilitate use in situations with limited space. In accordance with the research of Perez, Carpintero, Garcia, Sabater, Azorin and Forte, Gourishetti, Javot, Engler, Gomez, and Kuchenbecker (2022), a form of robot utilized in the operating room is a robot that retrieves surgical equipment for the surgical team. relying on the robot's vocal command the device's location is determined via image processing and pattern recognition. employ the electromagnetic principle to grip the tool. In addition, the robot's structure should have as a storage battery, the base is a circular that can be turned in all directions. And capable of charging electricity while being lightweight There must be a propulsion system, structure, body, and distinct form. Human-like is congruent with the findings of Nomura et al. (Nomura, Sugimoto, and Syrdal (2012) discovered that elderly people accept human-like robots more readily than younger people. Improving the experience of utilizing robots, allowing humans to accept robots more readily, etc. Accurate body temperature measurement with intelligent systems, a service call button in the event of an urgent need or emergency, and a care and follow-up system in place of doctors and nurses who can instruct the robot to perform by speech. This is congruent with the findings of the Dobson study (2004, p. 474), which said that adopting robotic patient tracking on this ward would increase patient safety. In addition to remarks from in-depth interviews with healthcare professionals, there will be hospital staff members who aid in ensuring that the treatment proceeds successfully.

Future Studies

The researcher suggests there could be a comparison analysis using the robot body structure of different types of robots, such as industrial robots, domestic robots, etc., to compare and identify limitations or distinctions, and then applying this knowledge to make future research more beneficial. Researchers should obtain an education more about bringing robot capabilities or features to the field. entertain to relax, such as inviting music, inviting Dharma, etc., to add complete features and be able to take advantage of a larger variety of robots. In the structural design of the robot in terms of features or It is necessary to construct robotic sensor systems with eyesight that can detect persons in the dark and identify their locations. automatically in future studies, the performance of medical robots will be completely optimized.

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