3rd National Conference on Enhancement in Biomedical Engineering and Healthcare
Organised by Department of Biomedical Engineering,
Adhiyamaan College of Engineering, Hosur, Tamil Nadu, India

A Novel Approach On Medication Dispency

Vijitha.V[1], Raadhugaa. S. V [2], Naveen. S P[3]
[1.]Ph.D Scholar, Sona College of Technology, Salem, Tamil Nadu, India
[2,3.]Student, Knowledge Institute of Technology, Salem, Tamil Nadu, India

ABSTRACT

Robotics for medical applications started fifteen years ago while for biological applications it is rather new (about five years old). Robotic surgery can accomplish what doctors cannot because of precision and repeatability of robotic systems. Besides, robots are able to operate in a contained space inside the human body. All these make robots especially suitable for non-invasive or minimally invasive surgery and for better outcomes of surgery. Today, robots have been demonstrated or routinely used for heart, brain, and spinal cord, throat, and knee surgeries Robots in medicine deserve enhanced attention, being a field where their instrumental ids enable exacting options. In the world of pharmaceuticals, there is a vital role for robotics to play in the complicated processes of research and development, production, and packaging. With a rapidly aging population that urgently requires sophisticated medical devices and newer drugs, robotics systems are increasingly adopted for improved productivity and efficiency to meet this growing demand. The Dispency of medications with help of robots by using cloud computing and card reader is our newer proposal to the field of Medicine.

Keywords : Pharmaceutical field, Robotics, Automated dispensing mechanisms, Card reader, Cloud computing.

I. INTRODUCTION

Medical robotics is causing a paradigm shift in therapy. The most widespread surgical robot, Intuitive Surgical's da Vinci system, has been discussed in over 4,000 peer-reviewed pub-lications, was cleared by the United States' Food and Drug Administration (FDA) for multiple categories of operations, and was used in 80% of radical prostatectomies performed in the U.S. for 2008, just nine years after the system went on the market [1–3]. The rapid growth in medical robotics is driven by a combination of technological improvements (motors, materials, and control theory), advances in medical imaging (higher resolutions, magnetic resonance imaging, and 3D ultrasound), and an increase in surgeon/patient acceptance of both laparoscopic procedures and robotic assistance. New uses for medical robots are created regularly, as in the initial stages of any technology-driven revolution.

In 1979, the Robot Institute of America, an industrial trade group, defined a robot as "a reprogrammable, multi-functional manipulator designed to move materials, parts, tools, or other specialized devices through various pro-grammed motions for the performance of a variety of tasks." Such a definition leaves out tools with a single task (e.g., stapler), anything that cannot move (e.g., image analysis algorithms), and nonprogrammable mechanisms (e.g., purely manual laparoscopic tools). As a result, robots are generally indicated for tasks requiring programmable motions, particularly where those motions should be quick, strong, precise, accurate, untiring, and/or via complex articulations. The downsides generally include high expense, space needs, and extensive user training requirements. The greatest impact of medical robots has been in surgeries, both radiosurgery and tissue manipulation in the operating room, which are improved by precise and accurate motions of the necessary tools. Through robot assistance, surgical outcomes can be improved, patient trauma can be reduced, and hospital stays can be shortened, though the effects of robot assistance on long-term results are still under investigation.Medical robots have been reviewed in various papers since the 1990s. Many such reviews are domain-specific, for example, focusing on surgical robots, urological robots, spine robots, and so forth . For an overview of the basic science behind medical robots (e.g., kinematics, degrees of Automated Drug Dispensing Systems Today automation in drug dispensing includes solutions that range from computer-assisted physician order entry, to robotic handling, packaging and sorting of drugs in the Pharmacy. This paper provides an overview of the impact of robots in multiple medical domains especially. in the field of pharmacy. Robotic dispensing can fill 40-75% of your daily prescription volume. It does this work with extreme accuracy and safety .The robot actually drives the workflow and eliminates chaos in both high and low volume practice settings

2. Neurological

Brain surgery involves accessing a buried target surrounded by delicate tissue, a task that benefits from the ability for robots to make precise and accurate motions based on medical images. Thus, the first published account investigating the use of a robot in human surgery was in 1985 for brain biopsy using a computed tomography (CT) image and a stereotactic frame . In that work, an industrial robot defined the trajectory for a biopsy by keeping the probe oriented toward the biopsy target even as the surgeon manipulated the approach. This orientation was determined by registering a preoperative CT with the robot via fiducials on a stereotactic frame attached to the patient's skull. That project was discontinued after the robot company was bought out, due to safety concerns of the new owning company, which specified that the robot arm (54 kg and capable of making 0.5 m/s movements) was only designed to operate when separated by a barrier from people. Then in 1991, the Minerva robot (University of Lausanne, Switzerland) was designed to direct tools into the brain under real-time CT guidance. Real-time image guidance allows tracking of targets even as the brain tissue swells, sags, or shifts due to the operation. Minerva was discontinued in 1993 due to the limitation of single-dimensional incursions and its need for real-time CT .

The currently available neurosurgery robots exhibit a purpose similar to historical systems, namely, image-guided positioning/orientation of cannulae or other tools (Figure 1). The NeuroMate (by Renishaw, previously by Integrated Surgical Systems, previously by Innovative Medical Machines International) has a Conformite´ Europeenne´ (CE) mark and is currently used in the process for FDA clearance (the previous generation was granted FDA clearance in 1997)

In addition to biopsy, the system is marketed for deep brain stimulation, stereotactic electroencephalography, transcranial magnetic stimulation, radiosurgery, and neu-roendoscopy. Li et al. report in-use accuracy as submillimeter for a frame-based configuration, the same level of application accuracy as bone-screw markers with infrared tracking, and an accuracy of 1.95 mm for the frameless configuration .

Another robotic system, Pathfinder (Prosurgics, formerly Armstrong Healthcare Ltd.), has been cleared by the FDA.

For neurosurgery (2004) . Using the system, the surgeon specifies a target and trajectory on a pre-operative medical image, and the robot guides the instrument into position with submillimeter accuracy. Reported uses of the system include guiding needles for biopsy and guiding drills to make burr holes .

Renaissance (Mazor Robotics, the first generation system was named SpineAssist) has FDA clearance (2011) and CE mark for spinal surgery, and a CE mark for brain operations (2011) . The device consists of a robot the size of a soda can that mounts directly onto the spine and provides tool guidance based on planning software for various procedures including deformity corrections, biopsies, minimally inva-sive surgeries, and electrode placement procedures. Renais-sance includes an add-on for existing fluoroscopy C-arms that provides 3D images for intraoperative verification of implant placement. Studies show increased implant accuracy and provide evidence that the Renaissance/SpineAssist may allow significantly more implants to be placed percuta-neously .

3. Orthopedics

The expected benefit of robot assistance in orthopedics is accurate and precise bone resection. Through good bone resection, robotic systems (Figure 2) can improve alignment of implant with bone and increase the contact area between implant and bone, both of which may improve functional outcomes and implant longevity . Orthopedic robots have so far targeted the hip and knee for replacements or resurfacing (the exception being the Renaissance system in Section 2 and its use on the spine). Initial systems required the bones to be fixed in place, and all systems use bone screws or pins to localize the surgical site.

The initial robot assistance for orthopedics came via Robodoc (Curexo Technology Corp, originally by Integrated Surgical Systems), first used in 1992 for total hip replacement. Robodoc has received a CE mark (1996), and FDA clearance for total hip replacement (1998) and total knee replacement (2009) [34]. The robot is used in conjunction with OrthoDoc, a surgical planner, with which the surgeon plans bone milling is based on preoperative CT. During the procedure, the patient's leg is clamped to the robot's pedestal, and a second clamp locates the femoral head to automatically halt the robot if the leg moves. The Robodoc then performs the milling automatically based on the surgical plan. Many initial attempts in surgical robotics involved such autonomous motions, which generated con-cerns about patient and doctor safety. To address those concerns, Robodoc has force sensing on all axes, as well as a six-axis force sensor at the wrist [35]. The force sensing is used for safety monitoring, to allow the surgeon to manually direct the robot arm and to vary the velocity of tool motion as a function of the forces experienced during the milling operation.

Though no longer for sale, CASPAR (Computer Assisted Surgical Planning and Robotics) was another robotic system for knee and hip surgery, introduced in 1997 by OrtoMaquet surgical site. The arm is designed to be low friction and low inertia, so that the surgeon can easily move the tool, backdriving the arm's joint motors in the process [19]. The arm's purpose is to act as a haptic device during the milling procedure, resisting motions outside of the planned cutting envelope by pushing back on the surgeon's hand. Unlike other orthopedic systems, the RIO does not require the bone to be fixed in place, instead relying on a camera system to track bone pins and tools intraoperatively and instantaneously registering the planned cutting envelope to the patient in the operating room. With this configuration, the system has promise for use as a surgical training tool.

Further reducing robotic influence on the cutting tool, the iBlock (Praxim Inc., an Orthopaedic Synergy Inc. company, previous generation the Praxiteles, FDA clearance 2010) is an automated cutting guide for total knee replace-ment [38]. The iBlock is mounted directly to the bone, preventing any relative motion between the robot and the bone and aligns a cutting guide that the surgeon uses to manually perform planar cuts based on a preoperative plan. Koulalis et al. report reduced surgical time and increased cut accuracy compared with freehand navigation of cutting blocks [39].

The Navio PFS (Blue Belt Technologies, CE mark 2012) does not require a CT scan for unicondylar knee replace-ment, instead it uses intraoperative planning [40, 41]. The drill tool is tracked during the procedure, and the drill bit is retracted when it would leave the planned cutting volume. Limited information is available on the system due to its recent development.

The Stanmore Sculptor (Stanmore Implants, previous generation the Acrobot Sculptor by Acrobot Company Ltd.) is a synergistic system similar to the RIO, with active con-straints to keep the surgeon in the planned workspace [42]. The company's "Savile Row" system tailors a personalized unicondylar knee implant to the patient, incorporates the 3D model of that implant into the surgical planning interface, and uses active constraints with the Stanmore Sculptor to ensure proper preparation of the bone surface. The system does not currently have FDA clearance, but has been in use in Europe since 2004.

4. General Laparoscopy

Prior to the 1980s, surgical procedures were performed through sizable incisions through which the surgeon could directly access the surgical site. In the late 1980s, camera technology had improved sufficiently for laparoscopy (a.k.a. minimally invasive surgery), in which one or more small incisions are used to access the surgical site with tools and camera [43]. Laparoscopy significantly reduces patient trauma in comparison with traditional "open" procedures, thereby reducing morbidity and length of hospital stay, but at the cost of increased complexity of the surgical task. Compared with open surgery, in laparoscopy the surgeon's feedback from the surgical site is impaired (reduced visibility and cannot manually palpate the tissue) and tool control is reduced ("mirror-image" motions due to fulcrum effect and loss of degrees of freedom in tool orientation)

Robot assistance for soft-tissue surgery was first done in 1988 using an industrial robot to actively remove soft tissue during transurethral resection of the prostate [5]. As with neurosurgery, the researchers deemed use of an industrial robot in the operating room to be unsafe. The experience provided the impetus for a research system, Probot, with the same purpose [46].

4.1. Zeus. Commercial robotic systems for laparoscopy started with Computer Motion's Aesop (discontinued, FDA clearance 1993) for holding endoscopes [47]. Aesop was clamped to the surgical table or to a cart, and either moved the endoscope under voice control or allowed the endoscope to be manually positioned. In 1995, Computer Motion combined two tool-holding robot arms with Aesop to create the Zeus system (discontinued, FDA clearance 2001) [48]. The Zeus's tool arms were teleoperated, following motions the surgeon made with instrument controls (a.k.a. “master” arms or joysticks) at the surgeon console. Technically, the Zeus is not a robot because it does not follow programmable motions, but rather is a remote computer-assisted telemanip-ulator with interactive robotic arms. To improve precision in tool motion, the Zeus filters out hand tremor, and can scale large hand motions by the surgeon down to short and precise motions by the tool. As described by Marescaux et al., the Zeus was used in the Lindbergh Operation, the first surgery was (cholecystectomy) performed with the surgeon and patient being separated by a distance of several thousand kilometers [49]. 4.2. da Vinci. Meanwhile, Intuitive Surgical Inc. was devel-oping the da Vinci (initial FDA clearance 1995, Figure 3(a)). Like the Zeus, the da Vinci is a teleoperated system, wherein the surgeon manipulates instrument controls at a console and the robot arms follow those motions with motion scaling and tremor reduction. Also like the Zeus, the da Vinci was initially offered with three arms to hold two tools and an endoscope, which are mounted to a single bedside cart.

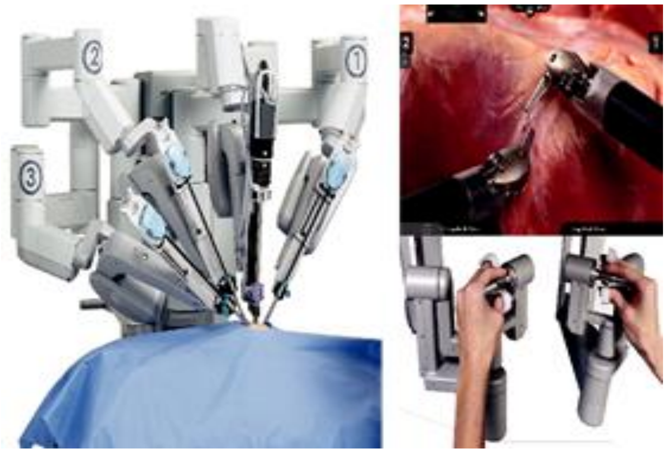
The da Vinci system provides several technical enhance-ments over the Zeus. The grasper tools have two degrees of freedom inside the patient, the EndoWrist (Figure 3(b)), an enhanced articulation that increases the ease of suturing and other complex manipulations. The console puts increased emphasis on surgeon ergonomics and incorporates a sepa-rate video screen for each eye to display 3D video from the 3D endoscope. The motions of the surgeon’s hands are mapped to motions of the operational ends of the tools, providing a more intuitive control than the “mirror-image” laparoscopic mapping. In 2003, Intuitive Surgical began selling a fourth arm for the da Vinci, and Intuitive Surgical and Computer Motion were merged (discontinuing the Zeus).

The da Vinci system is the only surgical robot with over a thousand systems installed worldwide and has been sold in four models so far: Standard (1999), S (2006), Si (2009), and Si-e (2010). The S model increased the image resolution, redesigned the patient-side manipulators to enable multiquadrant access, and shortened setup time. The Si model further improved the visual resolution, refined the instrument controllers, and increased the ergonomics and ease for the surgeon to provide input to the system. The Si-e model is a 3-arm system that is fully upgradeable to the Si model. Continuing the da Vinci focus on improved visu-alization, the Firefly Fluorescence Imaging add-on product combines fluorescent dye and a special endoscope to identify vasculature beneath the tissue surface.

The da Vinci was initially cleared for general laparoscopy, became commonly used for radical prostatectomy, and is now cleared by the FDA for various procedures [52, 53]. Even so, as with most or even all robotic systems, long-term benefits continue to be uncertain [15, 54]. The enhanced endoscopic visualization and increased tool articulation are commonly considered improvements, but detractors point out the system’s expense (between $1 M and $2.3 M), the reduced patient access due to the amount of space the arms take over/around the patient, and the significant amount of training necessary for the best outcomes [55, 56]. To address this last point, the Si model also allows dual console use for training and collaboration, in which both consoles get the same images and can cooperatively control the instruments

[57]. Additionally, the da Vinci Skills Simulator is an add-on case that can be used with an Si or Si-e console to practice operations in a virtual environment [58].

In an attempt to further reduce patient trauma, surgeons are exploring Single-Port Access (SPA), LaparoEndoscopic Single-Site surgery (LESS), and Natural Orifice Transluminal Endoscopic Surgery (NOTES) [59, 60]. To meet this need, Intuitive Surgical has recently developed the Single-Site platform for the da Vinci Si model. The Single-Site platform passes two semirigid tools and the endoscope through a single multichannel port, reducing the number of incisions but preventing EndoWrist articulation [61]. same images and can cooperatively control the instruments[58]. Additionally, the da Vinci Skills Simulator is an add-on case that can be used with an Si or Si-e console to practice operations in a virtual environment [58].



In an attempt to further reduce patient trauma, surgeons are exploring Single-Port Access (SPA), LaparoEndoscopic Single-Site surgery (LESS), and Natural Orifice Transluminal Endoscopic Surgery (NOTES) [59, 60]. To meet this need, Intuitive Surgical has recently developed the Single-Site platform for the da Vinci Si model. The Single-Site platform passes two semirigid tools and the endoscope through a single multichannel port, reducing the number of incisions but preventing EndoWrist articulation [61]. 4.4. Telelap ALF-X. SOFAR S.p.A has developed Telelap ALF-X (CE mark 2011, Figure 3(d)), a four-armed surgical robotic system, to compete with the da Vinci . The system uses eyetracking to control the endoscopic view and to enable activation of the various instruments. Compared to the da Vinci, the system moves the base of the manipulators away from the bed (about 80 cm) and has a realistic tactile-sensing capability due to a patented approach to measure tip/tissue forces from outside the patient, with a sensitivity of 35 grams. The system has been used in animal trials demonstrating a significant reduction in the time for cholecystectomy compared with a “conventional telesurgical system

5. Percutaneous

Noncatheter percutaneous procedures employ needles, can-nulae, and probes for biopsy, drainage, drug delivery, and tumor destruction. During the procedure, accurate targeting can be reduced by soft tissue displacements that occur due to patient breathing, changes in posture, or tissue forces exerted during the insertion. Two options to guide a needle to its target are tissue modeling for needle steering and three-dimensional intraoperative imaging . Unfortunately, tissue modeling is excessively complex . So following the latter approach, InnoMotion (Synthes Inc., previously by Innomedic GmbH, CE mark 2005) is a robot arm designed to operate within a CT or magnetic resonance imaging (MRI) machine. For MRI-compatibility, the arm (Figure 4(a)) is pneumatically actuated and joint sensing is via MRI-compatible encoders.

6. Steerable Catheters

Vascular catheterization is used to diagnose and treat various cardiac and vasculature diseases, including direct pres-sure measurements, biopsy, ablation for atrial fibrillation, and angioplasty for obstructed blood vessels [68–70]. The catheter is inserted into a blood vessel and the portion external to the patient is manipulated to move the catheter tip to the surgical site, while fluoroscopy provides image guidance. Due to the supporting tissue, catheters only require three degrees of freedom, typically: tip flexion, tip rotation, and insertion depth. Possible benefits of robot-steered catheters are shorter procedures, reduced forces exerted on the vasculature by the catheter tip, increased accuracy in catheter positioning, and teleoperation (reducing exposure of the physician to radiation).

The Sensei X (Hansen Medical, FDA clearance and CE mark 2007, previous generation the Sensei, Figure 4(c)) uses two steerable sheaths, one inside the other, to create a tight bend radius . The sheaths are steered via a remotely operated system of pulleys. IntelliSense force sensing allows constant estimation of the contact forces by gently pulsing the catheter a short distance in and out of the steerable inner sheath and measuring forces at the proximal end of the catheter. These forces are communicated visually as well as through a vibratory feedback to the surgeon's hand on the "3D joystick". Corindus's CorPath 200 is a direct competitor with the Sensei X, but is not yet commercially available. a magnetic field is used to guide the catheter tip. The magnetic field is generated by two permanent magnets contained in housings on either side of a fluoroscopy table (Figure 4(b)). The surgeon manipulates a joystick to specify the desired orientation of the catheter tip, causing the orientations of the magnets to vary under computer-control, and thereby controlling the magnetic field. A second joystick controls advancement/retraction of the catheter. Chun et al. report significant improvements in surgical outcomes due to advances in the design of magnetically guided catheters

7. Radiosurgery

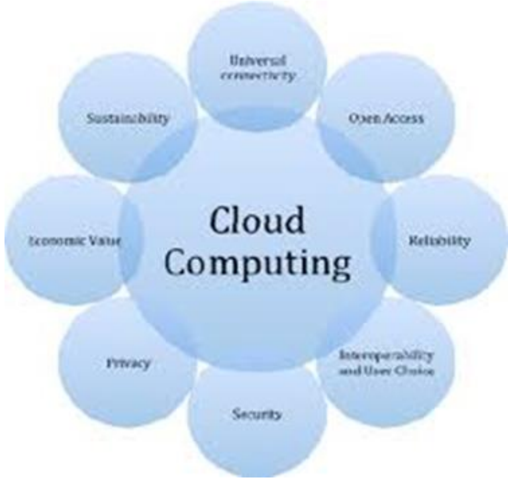
Radiosurgery is a treatment (not a surgery), in which focused beams of ionizing radiation are directed at the patient, primarily to treat tumors By directing the beam through the tumor at various orientations, high-dose radiation is delivered to the tumor while the surrounding tissue receives significantly less radiation. Prior to real-time tissue tracking, radiosurgery was practically limited to treating the brain using stereotactic frames mounted to the skull with bone screws. Now that real-time tissue tracking is feasible, systems are commercially available.

The CyberKnife (Accuray Inc., FDA cleared 1999, Fig-ure 5(a)) is a frameless radiosurgery system consisting of a robotic arm holding a linear accelerator, a six degree of freedom robotic patient table called the RoboCouch, and an X-ray imaging system that can take real-time images in two orthogonal orientations simultaneously. The two simultaneous, intraoperative X-ray images are not sufficient to provide good definition of the tumor, but are used to register a high-definition preoperative CT image. The robotic arm can then provide the preplanned radiation dosage with a wide range of orientations. For targets that move during treatment (e.g., due to breathing), the optional synchrony system can optically track the tissue surface, correlate the motion of the tissue surface to the motion of radio-opaque fiducials inserted near the target, and thus continuously predict target motion . The intraoperative tracking obviates the need for a stereotactic frame, reducing patient trauma and making it practical to fractionate the dosage over longer time periods.

The Novalis with TrueBeam STx (BrainLab Inc. and Varian Medical Systems, previously Novalis and Trilogy, initial FDA clearance 2000, Figure 5(b)) is also a frameless system with a linear accelerator, but with micro-multileaf collimators for beam shaping. Similar to CyberKnife, intraoperative X-rays are compared with a CT, and skin-mounted fiducials are optically tracked in real-time. The delivery system also includes cone beam CT. The patient is moved into position on top of a six degree of freedom robotic couch. The major differences between Cyberknife and Novalis are that the Cyberknife radiation source has more degrees of freedom to be oriented around the patient while the Novalis can shape the radiation beam and claim reduced out-of-field dosage .

8. Emergency Response

Few medical robot systems are suitable for use outside of the operating room, despite significant research funding on medical devices for disaster response and battlefield medicine. Typical goals for such research include improved extraction of patients from dangerous environments, rapid diagnosis of injuries, and semiautonomous delivery of life-saving interventions. Current Emergency Response robots are little more than single-motor systems, but those systems can be controlled by health monitors to minimize the nec-essary attention by Emergency Responders. Such a feedback control makes it more likely that such systems will be autonomous, for example, automated external defibrillators.



TheAutoPulse Plus (ZOLL Medical Corp., previously by Revivant) is an automated, portable device that combines the functions of the AutoPulse (FDA clearance 2008, Figure 6(a)) cardiopulmonary resuscitation device and the E Series moni-tor/defibrillator (FDA clearance 2010) . Consisting of a half-backboard containing a battery-powered motor that actuates a chest bThe LS-1 “suitcase intensive care unit” (Integrated Medical Systems Inc., previous generation called MedEx 1000, previous generation called LSTAT, FDA clearance 2008, Figure 6(b)) takes an inclusive approach to portable life support [89]. The system contains a ventilator with oxygen and carbon dioxide monitoring, electrocardiogram, invasive and noninvasive blood pressure monitoring, fluid/drug infusion pumps, temperature sensing, and blood oxygen level measurement. The LS-1 is battery powered and can be powered by facility or vehicular electrical sources. The system is FDA-cleared for remote control of its diagnostic and therapeutic capabilitiesand, the AutoPulse rhythmicallytighten the band to perform chest compressions. The tightness of the band during compressions is a function of the patient’s resting chest size, to adjust for interpatient variability. Meanwhile, the E Series monitor/defibrillator measures the rate and depth of chest compressions in real time and filters cardiopulmonary resuscitation artifacts from the electrocar-diogram signal. If combined with an automatic battery-powered ventilator, for example, the SAVe (AutoMedx Inc., FDA clearance 2007), basic cardiopulmonary emergency response treatments could be automated while on battery power.

The LS-1 "suitcase intensive care unit" (Integrated Medical Systems Inc., previous generation called MedEx 1000, previous generation called LSTAT, FDA clearance 2008, Figure 6(b)) takes an inclusive approach to portable life support . The system contains a ventilator with oxygen and carbon dioxide monitoring, electrocardiogram, invasive and noninvasive blood pressure monitoring, fluid/drug infusion pumps, temperature sensing, and blood oxygen level measurement. The LS-1 is battery powered and can be powered by facility or vehicular electrical sources. The system is FDA-cleared for remote control of its diagnostic and therapeutic capabilities.

10. Assistive and Rehabilitation Systems

Assistive robotic systems are designed to allow people with disabilities more autonomy, and they cover a wide range of everyday tasks. In 1992, Handy 1 (Rehab Robotics, Ltd.) became the first commercial assistive robot]; it interacts with different trays for tasks such as eating, shaving, and painting, and it is controlled by a single switch input to select the desired action. One task-specific system is the Neater Eater (Neater Solutions Ltd.), a modular device that scoops food from a plate to a person's mouth, and can be controlled manually or via head or foot switches. More general systems rely on arms with many degrees of freedom, such as Exact Dynamics' iARM, a robotic arm with a two-fingered grasper, that attaches to electric wheelchairs and can be controlled via keypad, joystick, or single button.

Rehabilitation systems can be similar to assistive systems, but are designed to facilitate recovery by delivering therapy and measuring the patient's progress, often following a stroke.The Mobility System (Myomo, Inc.) is a wearable robotic device that moves the patient's arm in response to his/her muscle signals, thus creating feedback to facilitate muscle reeducation. The InMotion (Interactive Motion Technologies, based on the MIT-MANUS research platform) is a robotic arm that moves, guides, or perturbs the patient's arm within a planar workspace, while recording motions,

12. Proposed Methodologies

In the field of medicine pharmacy is playing a major role . Drugs dispency is the major process to safeguard the life of a person . Internet of things is become a life breath in every field of science .

Drug dispencies with the help of robot with the technology of cloud computing its possible. The information of drugs can be decoded in the card and it can be read through the Barcode Reader and it can be stored in the system then through the technology of cloud computing it can be interpreted in the server then the information are passed to the robots for the detection of position of the Rack and through the process of image processing the tablets are counted and verified by the pharmasist. Then its been passed to the user after verification.

12. Discussion

In surgical robotics, there has been a trend away from autonomous or even semiautonomous motions, and toward synergistic manipulation and virtual fixtures. Thus, the robot acts as a guidance tool, providing information (and possibly a physical nudge) to keep the surgeon on target. Such use requires accurate localization of the tissues in the surgical site, even as the tissues are manipulated during surgery. Improved imaging systems (e.g., Explorer, an intraoperative soft tissue tracker by Pathfinder Therapeutics or robot compatibility with MRI or CT will provide that localization. In particular, MRI-guided robots will benefit from intraoperative 3D images with excellent soft tissue contrast and accurate registration between the tool and the tissue, thus allowing precise virtual fixtures, "snap-to" and "stand-off" behaviors. Further, such imaging will allow modeling and rapid prototyping of patient-specific templates/jigs/implants.

The physical designs for medical robots will continue to improve, reducing expense and size, while minimizing or compensating for nonidealities such as flexion, for example, the CRIGOS robot . With better physical designs, semiautonomous behavior will likely become more useful. "Macros" may become commonplace, wherein the surgeon presses a button and the robot performs a preprogrammed motion, such as passing a suture needle between graspers, or the Sensei's autoretract feature.

The major dependency of the use of medi robots in the Pharmacy is the Efficiency, accuracy , reduction of man power , Tierdless work. This can be further implemented in all pharmacy in large area and large amount of medications.

II. REFERENCES

[1]. Intuitive Surgical Incorporation, "Webpage on da Vinci clinical evidence," March 2012, http://www.intuitivesurgical

[2]. D. Howe and Y. Matsuoka, "Robotics for surgery," Annual Review of Biomedical Engineering, vol. 1, pp. 211–240, 1999

[3]. A. Majewicz, T. Wedlick, K. B. Reed and A. M. Okamura , Evaluation of robotic needle steering in ex vivo tissue, in Proc. IEEE Int. Conf. Robot. Autom.(2010), pp. 2068–2073.

[4]. K. Reed, A. Majewicz, V. Kallem, R. Alterovitz, K. Goldberg, N. Cowan and A. Okamura, Robot-assisted needle steering, IEEE Robot. Autom. Mag. 18(4) (2011) 35–46.

[5]. P. Sears and P. Dupont , A steerable needle technology using curved concentric tubes, in Proc. IEEE RSJ Int. Conf. Intell. Robots Syst. (Beijing, China,2006), pp. 2850–2856.

Cite this article as :

Vijitha. V, Raadhugaa. S. V, Naveen. S P, "A Novel Approach On Medication Dispency", International Journal of Scientific Research in Science and Technology (IJSRST), Online ISSN : 2395-602X, Print ISSN : 2395-6011, Volume 5 Issue 5, pp. 198-207, March-April 2020.

Journal URL : http://ijsrst.com/EBHKT037