

Title of the Invention: Robotic Arm for Anal & Genital Washing / Cleaning and other Support Functions in Toilet.

DESCRIPTION

Technical Field: This disclosure relates generally to use Robotic Arm with Artificial Intelligence (AI) Technology in Lavatory.

Background on Human Support Part: It is true that the entire world has somehow ignored the pathetic situation of Senior People, Physically, Mentally and Medically Challenged People to perform their morning activities in Toilet without the help of others. It is also true that the entire world has ignored to think about the situation and suffering of people who lost their limbs in sports & accidents and even their wish to have a privacy in toilet without the help of others. Senior Citizens are sadly moving from their own beautiful houses which had been their nests, to Care Homes when they are unable to do their morning jobs in toilet without others' support. The piteous fact is that the entire world has failed to realize the fatigue and stress of care givers and housekeeping staffs to maintain the Toilet hygiene with high standard and expectations.

Background Toilet Hygiene Part: Honestly, its fair to admit that everyone of us would have encountered at least one bad experience in toilet after seeing its condition in one of the Public Buildings, Shopping Malls, Sports & Entertainment Buildings, Airport Complexes or in Tourist Attractions. This listing includes Cruise Ships, Trains and Flights. We are educating people to wash hand with Soap and Sanitizing after using the Rest Rooms every time but ignoring the Toilet Seat Cover without Cleaning and Disinfecting it, to give a fresh start to the next users. There can be plenty of bugs queuing up in public restrooms, which includes both familiar and unfamiliar culprits like streptococcus, staphylococcus, E-coli and shigella bacteria, hepatitis A virus, the common cold virus, and various sexually transmitted organisms.

The world population is getting older and older. The younger generations are actively living in a gadget world without sports and exercise. Medical world is expanding the life span of people but failed to ease their pain. People are getting more obese and unable to touch even their toes now a days. Therefore, it is the right time to think to meet their needs for tomorrow in Toilets.

Detailed Description of Invention:

Robotic Arm for Anal & Genital Washing / Cleaning and other Support Functions in Toilet, is intent to provide various human support implementations as follows: to wear and remove disposable hand gloves by itself, to hold water spray gun and clean anal and genital areas in water closet and bidet, to hold toilet paper towel and wet wipes to clean anal and genital areas, to hold and to soap and bath the human body with water shower sprayer, to press the push button of toilet flushing cistern, to clean water closet for additional cleanliness, to hold disinfectant wipes to clean water closet seat after use, to open/close toilet seat cover, to perform wet floor cleaning using floor cleaner / scrubber / mop, to lock and unlock the toilet door, to alert medical team/care giver during emergency, to hold electric hair trimmer / shaving machine and to shave armpit and pubic area, to feedback stock level of consumable items such as toilet paper towel, dry and wet wipes, disinfectant etc.

The Invention uses one or multiple Robotic Arms with human like-hand with Artificial Intelligence Technology (AI) and Sensors to perform all senses like seeing, speaking, hearing, moving, feeling, connecting and thinking.

Detailed Description of Drawings:

The disclosure is herein described, only through examples, with reference to the accompanying drawings. With specific reference now to the drawings in detail, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the preferred embodiments of the present disclosure only and are presented in order to provide what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the disclosure. In this regard, no attempt is made to show structural details of the disclosure in more detail than is necessary for a fundamental understanding of the disclosure, the description taken with the drawings making apparent to those skilled in the art how the several forms of the disclosure may be embodied in practice. In the drawings:

Figure 1: Illustrates front view of Robotic Arm with hand and Control System.

Figure 2: Illustrates side view of Robotic Arm and Control System.

Figure 3: Illustrates front view of general arrangement of Robotic Arm and Control System in Toilet.

Figure 4: Illustrates side view of general arrangement of Robotic Arm and Control System in Toilet.

Figure 5: Illustrates front view of general arrangement of Robotic Arm and Control System in Toilet with physically challenged adult in Wheelchair.

Figure 6: Illustrates side view of general arrangement of Robotic Arm and Control System in Toilet with physically challenged adult in Wheelchair.

Figure 7: Illustrates side view of general arrangement of Robotic Arm and Control System in Toilet with an adult in Luxurious Toilet.

Figure 8 to 13: Illustrates various hand gestures of Robotic Arm in Toilet during various support functions in Toilet.

Figure 14: Illustrates usage of Robotic Arm and hand in public Toilet

As shown in Figures - 1 & 2, Robotic Arm and Hand for Anal & Genital Washing / Cleaning and other Support Functions in Toilet comprises a Controller 100, Left Robotic Arm 110, Left Robotic Hand 120, Right Robotic Arm 210 and Right Robotic Hand 220 in Front View and Side Views. The controller will be designed with touch screen display, speech recognition technology, voice activation technology, internet and Wifi communication technology to perform core functions through Robotic Arm(s). It will be mounted on the wall behind water closet and Robotic Arm(s) will be assembled with controller or at a suitable location to perform its intended functions to a person sitting in Water Closet by using various Sensors.

As shown in Figures - 3 & 4, Robotic Arm and Hand for Anal & Genital Washing / Cleaning and other Support Functions in Toilet compress Controller 100, Left Robotic Arm 110, Left Robotic Hand 120, Right Robotic Arm 210, Right Robotic Hand 220, Water Closet 310, Water Spray Gun 320, Toilet Paper Towel Holder 330, Wet Wipe Holder 340, Disinfectant Wipe/Spray Holder 350, Disposable Gloves Holder 360 and Toilet Floor Cleaning Robot 370. The controller will be mounted on wall behind water closet and Robotic Arm(s) will be installed together with the controller or at a suitable location to perform intended functions by using various Sensors.

As shown in Figures - 5, 6 & 7, a physically challenged man 410 and an adult 410 are sitting in Water Closet and Robotic Arm and Hand are in standby position prior to perform Anal Washing / Cleaning through Water Spray Gun or Dry Wiping / Wet Wiping functions through Right Arm.

As shown in Figures - 8 to 13, Various hand Gestures of Robotic Arm to wear and remove disposable hand gloves by itself, to hold water spray gun and clean anal and genital areas in water closet and bidet, to hold toilet paper towel and wet wipes to clean anal and genital areas, to hold, soap and bath the human body with water shower sprayer, to clean water closet for additional cleanliness, to hold disinfectant wipes to clean water closet seat, to open/close toilet seat cover.

As shown in Figures – 14, Robotic Arm and Hand can be used in Public Toilets for end user to achieve their hand free function and hygienic level. It can also be used in Shower Cabin to help end users for hand free function. It can also be used to disinfect, open/close toilet seat and cover after every usage so that high level of hygiene can be maintained in public toilet.

Claims:

In this Invention on **Robotic Arm for Anal & Genital Washing / Cleaning and other Support Functions in Toilet**, I claim that:

- ~~1. One or multiple Robotic Arms with human-like Hand and Controller including Artificial Intelligence technology are involved to clean Anal & Genital Washing / Cleaning and other Support Functions in Toilet.~~
1. A robotic arm with Artificial Intelligence based controller for anal/genital washing/cleaning in toilet, comprising: at least one robotic arm (110&210) comprising a human-like hand portion (120 and 220) wherein the robotic arm (110&210) and human-like hand portion (120 and 220) are made of water-pooof and anti-viral/fungal/bacterial material to protect the robotic arm (110 &210) comprising a human-like hand portion (120 and 220) from any external contaminations; and an artificial intelligence-based controller (100) comprising a plurality of sensors for sensing the activities (including physical and sensory activities) of a user (physically/mentally/medically challenged persons, children and adults) wherein the artificial intelligence-based controller (100) controls the working of the robotic arm (110 &120) based on the sensor input and automate activities including wear and remove disposable hand gloves; hold water spray gun and clean anal and genital areas in water closet and bidet; hold toilet paper towel and wet wipes to clean anal and genital areas; hold soap and water shower sprayer to wash; press the push button of the toilet flushing cistern; clean water closet for additional cleanliness; hold disinfectant wipes to clean water closet seat; open/close toilet seat cover; interact with a robotic floor scrubber for dry and wet floor cleaning; interact with toilet door lock; alert medical team/care giver during emergency; indicate stock level of consumable items.
- ~~2. A controller for controlling the operation of said Robotic Arm for Anal & Genital Washing / Cleaning and other Support Functions in Toilet wherein said controller is a computing device.~~
2. The device as claimed in claim 1 wherein controller (100) comprises an interface programme for activating and deactivating the functions of the robotic arm (110&210).
- ~~3. Various sensors for moving, feeling, hearing, and speaking, seeing, connecting, and thinking are used in Claim 1~~
3. The device as claimed in claim 1 wherein the robotic arm (110&210) comprises an in-built water spray gun for spraying water and cleaning the anal/genitals of the user.
- ~~4. A wall mount assembly is involved in Claim 1~~
4. The device as claimed in claim 1 wherein the robotic arm (110&210) with controller (100) is configured to handle Enema Administration for users with constipation issues (domestic and clinical).
- ~~5. Waterproof technology is used to protect the Robotic Arm(s) and is/their parts in Claim 1.~~

5. The device as claimed in claim 1 wherein the robotic arm (110&210) with controller (100) comprises a fully automated stool and urine analyser unit to conduct laboratory tests for the samples collected at the robotic arm (110&120) and help to avoid cross contamination.

~~6. Anti-Viral, Anti-Bacterial and Anti-fungal materials are used in Claim 1~~

6. The device as claimed in claim 1 wherein the robotic arm (110&210) can be configured with a shaver or trimmer wherein the operations of the shaver or trimmer is controlled via the controller (100).

~~7. The following functions are performed by Claim 1: to wear and remove disposable hand gloves itself, to hold water spray gun and clean anal and genital areas in water closet and bidet, to hold toilet paper towel and wet wipes to clean anal and genital areas, to hold soap and water shower sprayer to wash human body, to press the push button of toilet flushing cistern, to clean water closet for additional cleanliness, to hold disinfectant wipes to clean water closet seat, to open/close toilet seat cover, to interact with Robotic Floor Scrubber for dry and wet floor cleaning, to interact with toilet door lock, to alert medical team/care giver during emergency, to indicate stock level of consumable items such as paper towel, dry and wet wipes, disinfectant etc.~~

~~8. Claim 1 is used to help Physically, Mentally and Medically Challenged persons, Adult and Children through automated robotic tool in Toilet~~

~~9. Claim 1 further comprises an interface adapted for at least one of the functions of programming, activating, or deactivating said invention.~~

~~10. Claim 1 also comprises of a sensor in data communication with said controller adapted to monitor the cleanliness of a toilet bowl and floor of the said toilet.~~

~~11. Claim 1 comprises of a sensor in data communication with said controller adapted to sense the gap between the user's back and Toilet flushing tank / wall to operate water spray nozzle and to advice the user to maintain sufficient clearance in Water Closet to meet minimum clearance requirement.~~

~~12. Claim 1 further includes a sensor in data communication with said controller adapted to sense the gap between front portion of human genital and Bidet / wall to operate water spray nozzle towards genital area to clean / wash and to advice the user to maintain sufficient gap in Bidet to meet minimum clearance requirement.~~

~~13. Claim 1 also have a sensor in data communication with the controller adapted to determine that a user has used said toilet.~~

~~14. claim 1 further contains a seat cleaner adapted to clean the seat of the toilet with disinfectant wipes / spray.~~

~~15. Claim 1 encompass a sensor in data communication with said controller, adapted to sense the availability of water for flushing and cleaning through water spray nozzle.~~

~~16. Claim 1 also constitutes the function of applying Ointment / Medicine to Anal and Genital Area for users upon requirement.~~

~~17. The Shape and Type of AI Robotic Arm and Hand including the number of fingers and Claim 1 will vary to meet the actual need of the user and to perform specific utility function in cleaning of the toilet.~~

~~18. Claim 1 further includes specific program and design to perform hair shaving at the face and pubic areas of user by using electric shaving machine and trimmer.~~

19. Claim 1 encompass a sensor in data communication with said controller, adapted to sense the presence of all kind of reptiles and insects in toilet and programmed to use repellent Spray and Ultrasonic Device to kill or remove them away from Toilet.
20. AI Robotic Arm of Claim 1 can be designed with Inbuilt water spray gun for washing purpose.
21. Claim1 further contains program and design to pre-rinse the toilet bowl to avoid sticky and stains of waste in the dry bowl, discharged by the user during usage.
22. Claim 1 further contains program and design to handle Enema Administration for users with constipation issues (domestic and clinical).
23. Claim 1 encompass a sensor in data communication with said controller, adapted to sense the number of wash basins, condition of mirrors, wash basins and their table in Toilet and perform cleaning and wiping action.
24. Portable, Linear and Circular motion through railing is available in Claim 1 to meet user needs, to move and use where in need.
25. Claim 1 further contains an option to work without data storage, wireless communication, and internet to meet the cyber security wherever needed.
26. Claim 1 further contains program and design to finish a cycle of cleaning process during unexpected power shutdown.
27. Claim 1 further contains program and design to clean and wash the Pet and Farm animals.
28. Claim 1 further contains program and design to generate electric current from its own solar panel skin to meet its own power requirement for its functioning, to ensure the utility in remote areas where there is no power.
29. Claim 1 further contains program and design to detect the air quality in toilet and spray room freshener.
30. Claim 1 further contains Fully Automated Stool and Urine Analyzers in Robotic Arm to conduct live test from the samples at the water closet and report through wireless communication. This claim will also help to avoid cross contamination between places of sample taking toilet and testing lab.