

European Polytechnical University



TELECONTROLLED SERVICE ROBOTS FOR INCREASING THE QUALITY OF LIFE OF ELDERLY AND DISABLED

Assoc. Prof. Dr. techn. Nayden Chivarov – Leader of the Project N^o DN 07/23, Funded by National Science Fund



Ministry of Education and Science

Project TEAM

- Project Leader: Assoc. Prof. Nayden Chivarov
- * Members:
- Prof Michail Konstantinov
- * Prof. Marin Marinov
- * Prof. Vladimir Lazarov
- * Prof. Nedko Shivarov
- * Mag. Eng. Denis Chikurtev PhD. Student
- * Mag. Kaloyan Yovchev PhD. Student
- * Mag. Eng. Emanuil Markov PhD. Student
- * Ivaylo Rangelov EPU student
- * Aleksandar Gigov EPU student

STATISTICS

* According to the statistics data of United Nations in the average population of EU of about 430 million citizen, aged over 65 were as follows:

- 1970 56 million
- 1980 60.82 million
- 1990-65,38 million
- 2000-75,87 million
- 2010 86,50 million

The UN prognoses are as follows:

- 2020- 101,33 million
- 2030 118,68 million

* Aging of the population and respectively increasing the number of people with mobility difficulties cannot be served anymore only by social assistants and caregivers and society will be forced to apply automation and robotization for the support of elderly and disabled citizens.

Project Idea



Robot Tasks

The Telecontrolled service robots will help elderly and disabled people in their daily activities as for example: -will motivate them to perform independently more activities and tasks and by this will contribute for their more active and healthy way of living -will remind them when to take medication -will serve foods and drinks -will switch on/off their electronic and electric equipment -will alarm on eventual worsening of their health parameters and will contact their GP, relatives and friends or will contact with the First-Aid.



"ROBCO 17"

- Mobile robot platform DC motors and encoders
- Platform Controller Parallax Eddie Control Board
- Batteries 2 x 6V Lithium
- Laptop
- Articulated robot arm Robco o1
- Robco o1 controller Arduino
- Sensor system Kinect, ultrasound and infrared sensors





Voice Control



Gesture Control via Kinect Sensor



Gesture Control via Leap Motion Sensor



Autonomous Navigation



Articulated Robot Mover 4



Results from the Usability study of Telecontrolled Service robot for increasing the quality of life of elderly ROBCO 17









Results 2

4. What do you think the mobile robot may be useful to you



5. Which design of the robot do you like?





6. What voice do you prefer the robot to communicate with you? 7. How do you rate the control of the arm of the service robot?



8. How do you rate robot management through the user interface?



5.Which design of the robot do you like









Results 3



9. Which type of robot control you prefer to use?

10. Which one did you prefer to do the robot's remote control?



"ROBCO 17"

"ROBCO 18"





THANK YOU FOR YOUR ATTENTION!

