

3) the power source for the FC-1 has to be changed for autonomous power supply.

References

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Main principles of designing a robot to help elderly people

Project work is surely regarded as one of the best methods to develop students' communicative competence when studying English as a second language. This method encourages students to raise the awareness of the target language and culture, improves their communication skills, and enhances the knowledge of vocabulary items and grammar structures while solving professional tasks in English [1].

Being the second-year students of the Institute of Non-Destructive Testing of Tomsk Polytechnic University, we are greatly motivated to perform different tasks and assignments which focus on the development of creative analytical thinking and production of engineering ideas. The best stimulus to achieve these goals is to offer students to do a project work. This paper represents the outcomes of the project connected with designing a robot to help elderly people.

We suppose that modern people spend their lives working hard for six days a week, as a result they come home very late and tired. Their daily life rhythm prevents them from communicating with beloved people, especially grandparents. Unfortunately, they turn to be incapable to visit them every day, therefore, communication between people fails. This is surely a significant problem which has to be solved with the help of engineering technologies. So our project aimed at improving and modernizing elderly people's lives by means of a robot which can do any kind of help, including monitoring elderly people's health, and keeping them in a good mood.

For this project to be a success, we carefully considered all the components of the robot's structure, and its technical capabilities that make it mobile, multi-purpose and useful. Surely, our robot consists of components resembling a human body's parts, for example, arms, legs, a head and a trunk. Each of the mentioned components enables the robot to perform several basic and specific functions due to its special sensory system.

The robot is equipped with acoustic and visual sensors for information perception and response to the voice of the robot's owner. Elderly people often feel sad and alone. In other words, they need someone to talk to, complain or boast of

something. So, the robot is capable to maintain a conversation or call relatives in case of emergency. Elderly people's eyesight often lets them down, so it is essential that the robot is programmed to read any books that the owner enjoys most of all.

The robot's most important component is its processor which receives and analyses the information about the robot's actions.

Now we would like to focus attention on one of the most significant parts of our invention which is the robot's arm allowing the robot to do massage of any complexity, prepare wholesome food for its owner, moreover, monitor the elderly person's health. To perform these functions well, a special sensory system is built in its arm which enables the robot to check a person's level of hormones in blood. You know, functioning of all organisms is determined by a hormonal level. If the owner feels weak or sad, the level of endorphins gets lowered. The robot is programmed to analyze the person's condition and take appropriate measures. For example, it can amuse its owner, talk to the owner, or in case of emergency get in touch with the owner's relatives.

We have said before that our robot is mobile. So we built in super-power vacuum cleaners in its body so that it can vacuum a house. This is regarded as an additional technical characteristic of our invention. Vacuuming the dust, the robot gets powered; therefore, its work does not demand additional electrical power. To say more, our robot is capable of dancing. To remind an elderly person of his or her youth, sometimes it is necessary to dance, so our robot will help them do it.

References

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Robotic model car: theory and practice of construction and application

The Freescale Cup is a well-known competition of autonomous models of cars. Model cars are independently tested for speed racing track, which has a form of a winding black line deposited on sheets of white plastic 60 cm wide. The track consists of various elements: slides, snakes, irregularities, tunnels, crossings and all kinds of turns. The team's goal is to collect an autonomous robot and program it to pass the competition. The winner is a model car which overcomes the track as fast as possible without descending from the track.

Each group of participants is provided with a free standard race kit which includes a set of chassis with motors and servo drive, battery, Freescale microcontroller TRK-MPC5604B development board, camera and power stage to