



AUXILLIUM

Remote door opening with EEG sensor device

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Introduction

In our project, we developed the device for remote door opening using EEG sensor and program code to help solving movement limitation problems for disabled people.

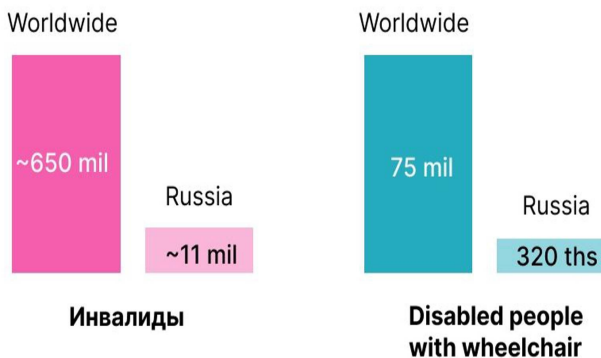
Problem

Mobility difficulties for disabled people due to lack of personal accommodation at home

Reasons for this problem:

1. No assistance at home
2. Insufficient help of governments
3. Deficit of affordable and relevant options

Relevance



Target audience

People who need wheelchair and have upper limbs disabilities

Aim of the project

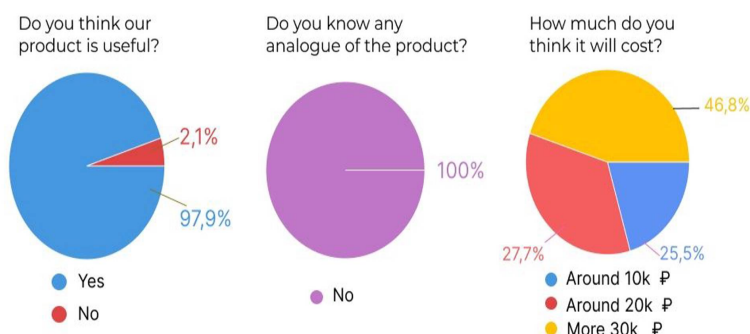
Developing an EEG device for remote door opening to improve in-house mobility for people with upper limb disabilities.

Tasks

1. Identifying exclusivity of the device through survey
2. Researching brain impulse and EEG sensor
3. Writing a program code for device
4. Testing
5. Prototyping

Survey

We conducted a survey among 47 doctors from Territorial Compulsory Medical Insurance Fund of the Republic of Sakha (Yakutia)



Research subject and object

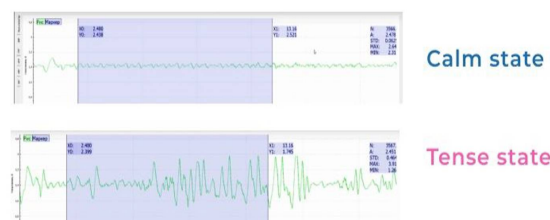
Research object: Brain impulse

Research subject: EEG sensor

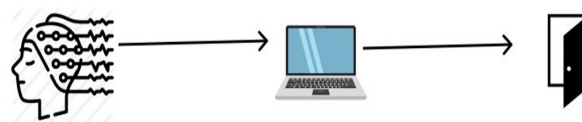
Research methods:

- Content analysis
- Conducting survey
- Coding
- Testing
- Prototyping

Operating principle



As a result, our device uses an EEG sensor that controls a servomotor installed to the door. When the brain impulse is received through the board, device opens the door.



EEG sensor using brain impulse Program sends signal to servomotor Device opens the door

Plans

We would like to continue researching this topic and develop our project. We plan to make the device wireless, set the operating range to 1 meter, and explore and implement the use of the device in public places.

Conclusion

In conclusion, we studied in detail mechanism of the EEG sensor, wrote a program code and developed a device based on it. The device will improve mobility of disabled people at home and increase door safety due to access limited by a person wearing a device.

In future, we are planning to continue develop our device and implement it in public accommodation.

Sources

- Chislennost invalidov po polu v razreze subectiv rf. (2022). Sfri.Ru. <https://sfri.ru/analitika/chislennost/chislennost/chislennost-po-polu>
- Disabled People in the World: Facts and Figures. (2021). Inclusivecitymaker.Com. <https://www.inclusivecitymaker.com/disabled-people-in-the-world-in-2021-facts-and-figures/>
- Russian Federation Pension Fund. (2021). Chislennost invalidov. Sfri.Ru. <https://sfri.ru/analitika/chislennost/chislennost>