

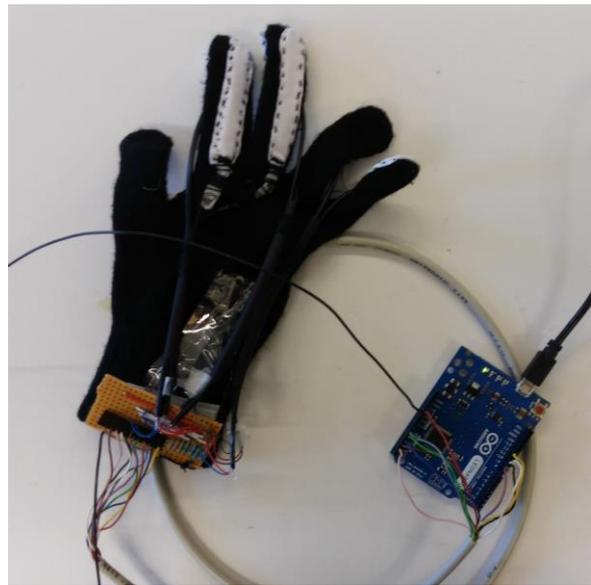
## Making rehabilitation after stroke easier

Tens of millions of people suffer from a stroke every year, leaving life-changing effects. Rehabilitation becomes an integral part of their lives from this point onwards to maintain current abilities as well as to build upon them. However, as with many other things in life, doing the same thing every single day becomes boring and frustrating.

With technological developments and breakthroughs, technology has finally started to make changes in the field of stroke rehabilitation. More and more supportive devices are becoming available every year. However, they are usually expensive and directed more at healthcare institutions as opposed to individuals. Hence, in this project a glove, which could motivate and encourage people to exercise daily, was created.

The glove which is fitted with multiple sensors can be used to help with hand rehabilitation. This approach was chosen as 85% of stroke survivors suffer from limited movements of their hand. It could be used to control many devices at home. For example, in order to change the TV channel, a user has to perform an exercise beforehand. Hence, incorporating it into daily life can make exercising more motivating and encouraging.

This project was concerned with adapting the glove to control a computer's mouse and keyboard. The following controls were implemented into the glove: mouse click, arrow keys and cursor movement. For example, to simulate an arrow key keystroke, the user has to apply pressure on his/her fingertips where force sensors are located.



*Top view of the glove*

Although the final prototype itself needs some modifications before it could be used for stroke rehabilitation, the user tests were promising. However, due to time restrictions, no stroke survivors participated in the tests. The participants reported that the glove was easy and enjoyable to use and could possibly be motivating for those who have suffered from a stroke and might need help with recovering abilities of their hand. Hence, in the future, it would be very beneficial if rehabilitees would be involved in the project from the beginning.

A number of improvements could be made to the final prototype. For example, the glove created is only for those who need help with their right hand. However, as the weaker hand of stroke survivors is dependent on the hemisphere of the brain where the stroke occurred, there are also many people who need rehabilitation with their left hand. Furthermore, the aesthetics of the glove could also be improved as the current design did not make much effort to hide the cables.

Technology can be very beneficial when it comes to stroke rehabilitation. In addition to helping the users to perform exercises in a correct way, it can also be motivating and encouraging. The number of solutions on the market is constantly growing and the research focus on the topic is becoming more important. It is likely that in the future rehabilitation would involve devices which would take into account the user's interests and abilities and hence would help with performing activities of daily life.