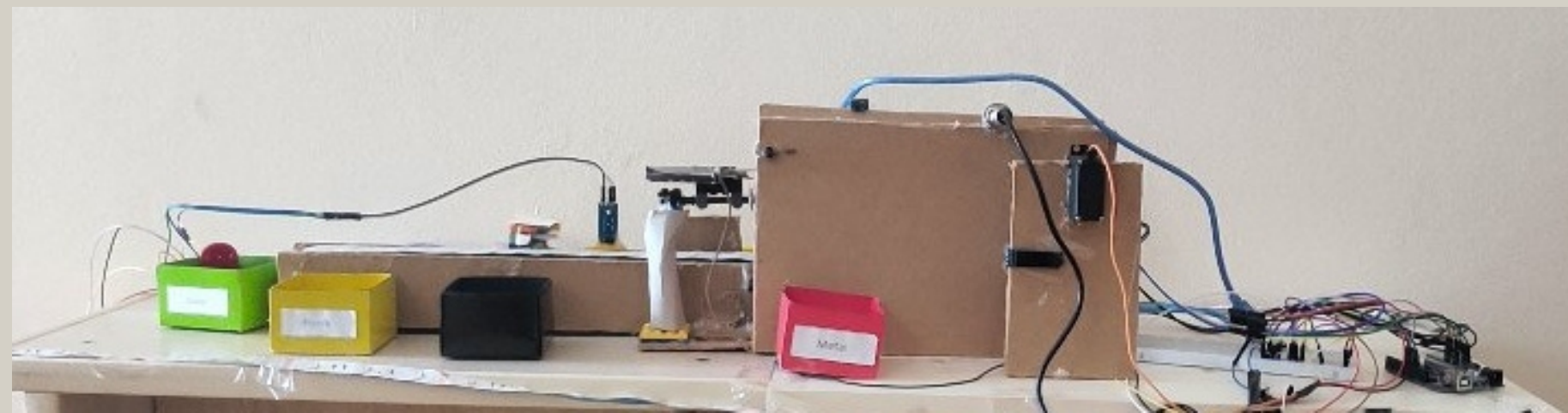


Rubbish Way

Automatic rubbish sorting system



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Introduction

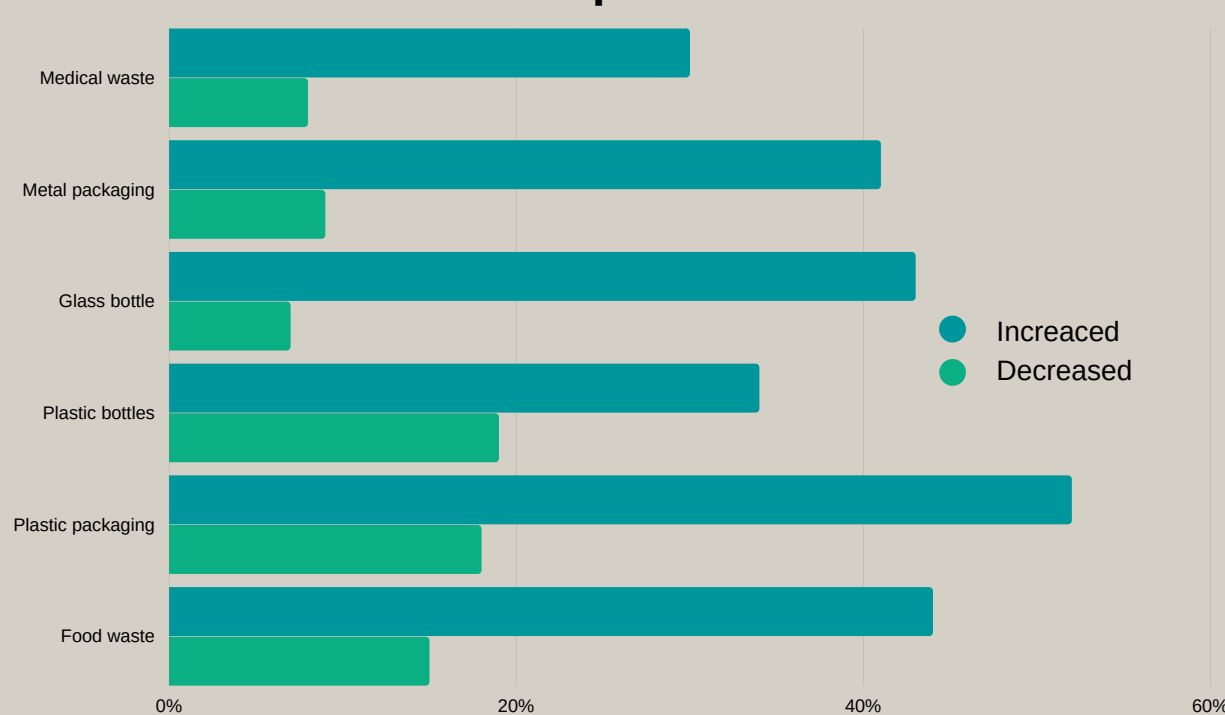
One of the biggest problems today is global pollution. As a result of the COVID-19 pandemic, the situation with garbage has become even worse, as the use of disposable protective equipment, plastic packaging, utensils and various medical waste has increased significantly. Their disposal requires careful sorting, which is not organized for the general population. That's why people throw waste in the trash. As a result, garbage gets into landfills, into the water, making a large area alienated. That's why we decided to make Rubbish Way - automatic garbage sorting.



[Fig 1]

[Fig 2]

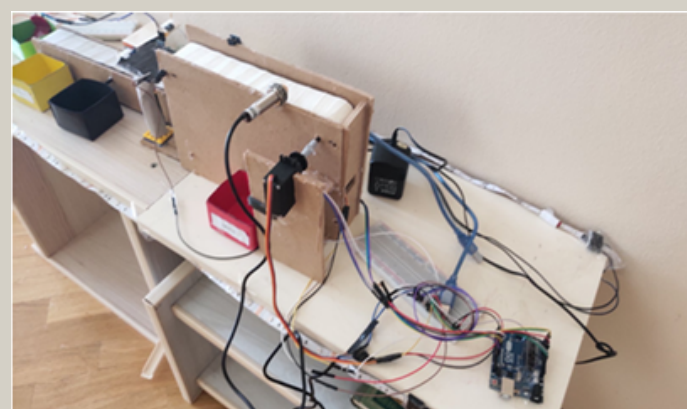
How has the use of materials changed during the COVID-19 pandemic?



*People survey results (COVID-19 and waste production in households: A trend analysis - ScienceDirect)

The task of project

Development of a prototype device for automatic recognition and sorting of household and medical waste.



[Fig 3] First conveyor

Hypothesis

If we find a way to sort garbage without human intervention, we will reduce the amount of mixed garbage thrown away and make the process safer and more efficient.

Technologies used

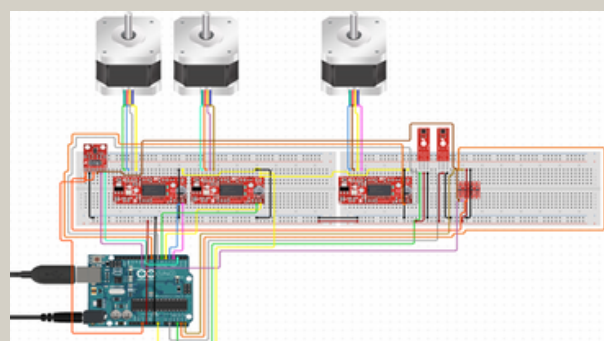
In the study, neural network, technologies based on the Doppler effect, inductance, capacitance, infrared and ultrasound scanners were used.



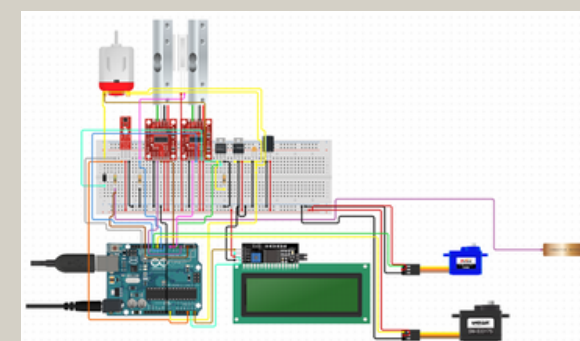
[Fig 4] The neural network reads objects

Solution of the problem

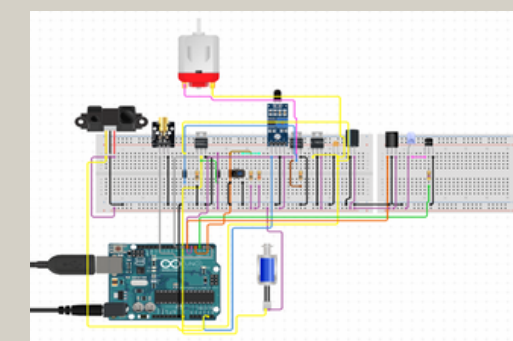
Here you can see all the components of our system and their principle of operation



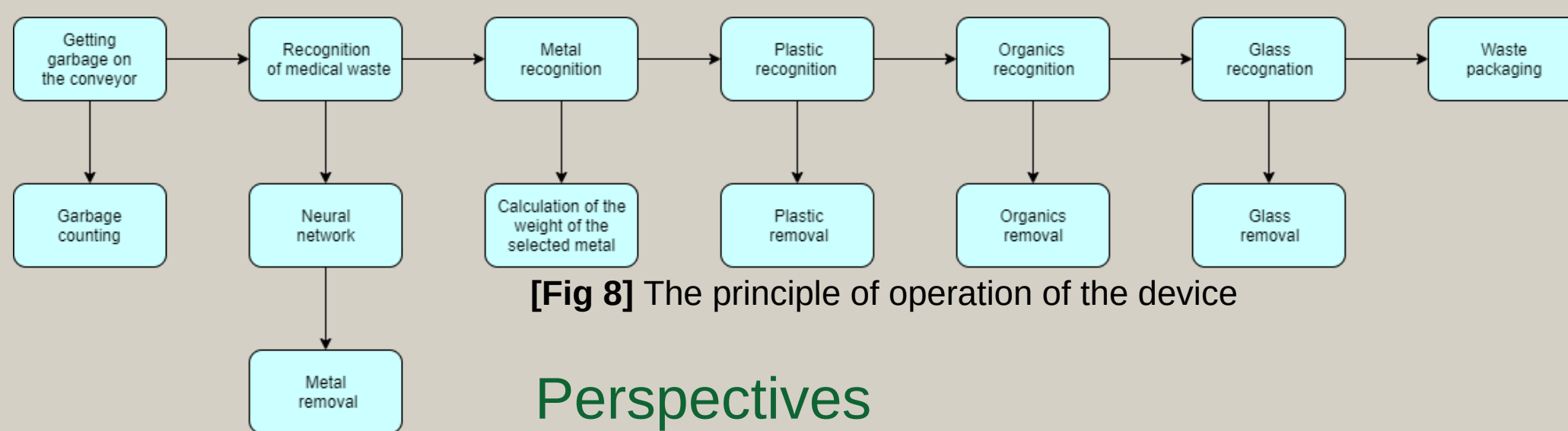
[Fig 5] Scheme of a moving manipulator



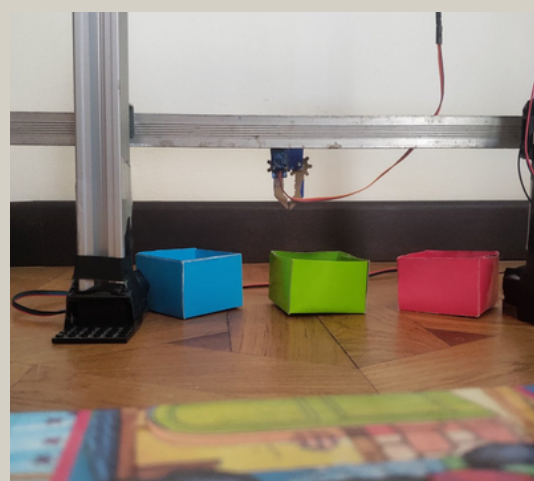
[Fig 6] Scheme of the first conveyor



[Fig 7] Scheme of the second conveyor



[Fig 8] The principle of operation of the device



[Fig 9] Robotic manipulator

Conclusions

The hypothesis is confirmed. We have managed to sort waste automatically, we have the opportunity to make this process safer for people and more efficient.

Perspectives

The device opens up opportunities for both private enterprises and the state.

For countries, this is a profitable way of waste collection, because the implementation of this project can not only improve the environmental situation, but also reduce the number of people working with hazardous waste. The country will be able to create favorable conditions for investing in the business of waste processing, benefit from the sale of sorted material to companies in the domestic market, as well as abroad, to cover their needs for raw materials, while cleaning the area.

Private enterprises, organizations, factories can also use the project for their needs in waste collection, sell them to other enterprises.

Also, the device is now operational to overcome the effects of contamination after COVID-19. However, in the future the system can be easily adjusted to the sorting needs of humanity.

https://i.guim.co.uk/img/media/2f1903cdd3af320ac27daa8557dbaa8f21c99119/0_197_7848_4709/master/7848.jpg?width=1200&height=900&quality=85&auto=format&fit=crop&s=b51568a51b45db8e3eff9a5aa61e3be9 [Fig 1]

<https://www.eurointegration.com.ua/images/doc/3/f/3fce5c7-625.jpg> [Fig 2]