POLYTECH GRENOBLE

UGA Université Grenoble Alpes

WILDCOUNT

MONITOR WILDLIFE IN REAL TIME

DESCRIPTION

Our solution to the delay problem consists in implementing a photograph trap which recognises the living beings on the pictures it takes thanks to deep learning. It transmits almost instantly the types and numbers of the recognised beings through a LoRaWAN network to a distant database. This information is memorised and shown in a dashboard. The biologist or forester can then monitor in real-time which animal has been detected, how many there were and when it happened.

This project can be divided into a hardware part and a software part. The hardware aspect, handled by the IESE students, involves prototyping the photo trap with GapPoc-A and GapPoc-B chips from Grenoble company GreenWaves Technologies.
Collecting and labelling images to build a dataset, training a MobileNet neural network with this dataset and loading it in the GAP8 chip is the main software-based mission, carried out by the INFO students.

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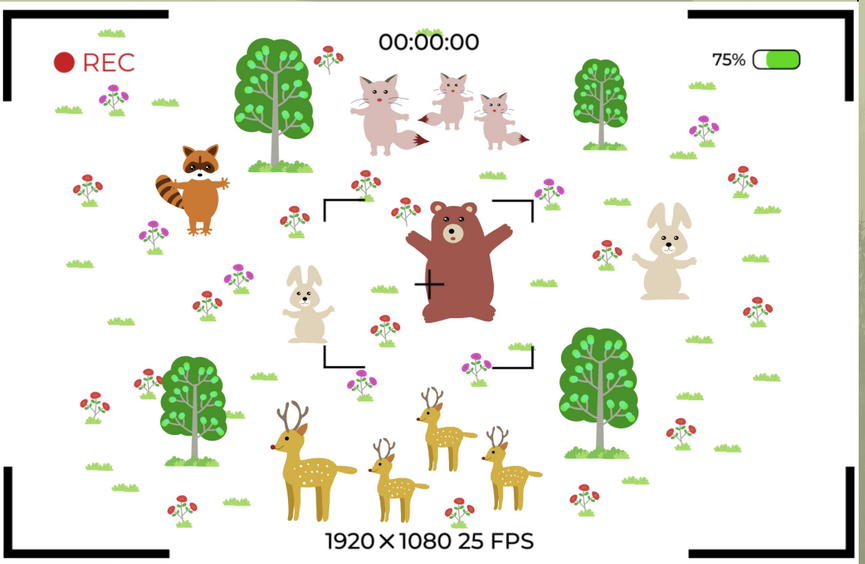
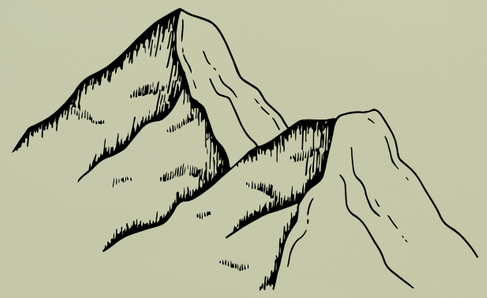
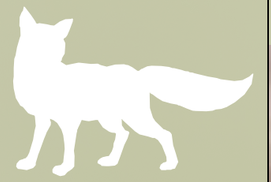
CONTEXT

Understanding the interactions between wildlife and humans is a big issue for biologists and foresters. Until now, they have been using counters on hiking trails and photo traps to count humans and animals. The drawback of this technique is the delay between the acquisition and the analysis of the data. This project will allow the monitoring of life in real-time.



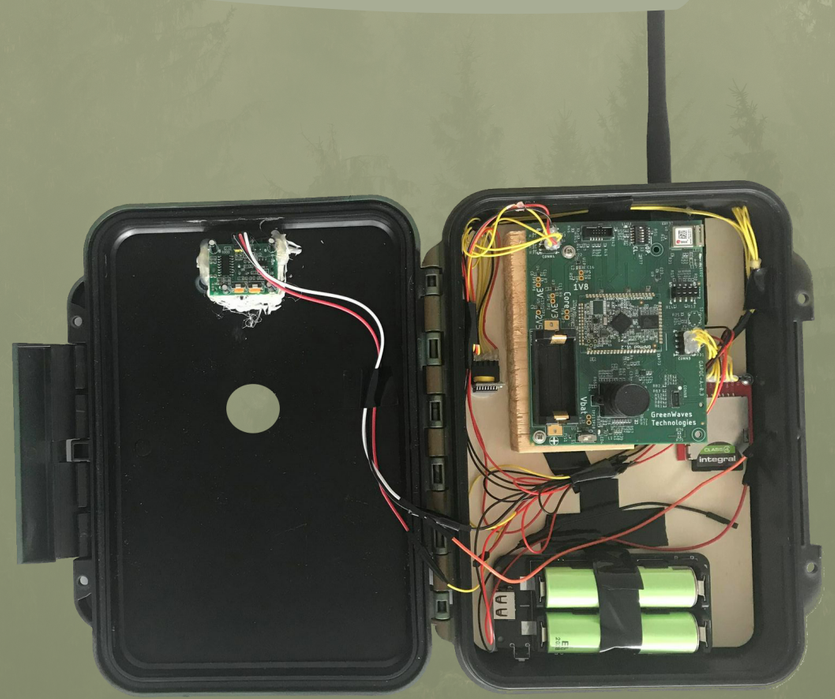




DETAIL

On the IESE side, we contributed with our knowledge of the long range LoRaWAN communication, real-time systems and our skills in electronics. We learned how deep learning works, which the board uses to recognise animals on the pictures it takes.

On the INFO side, we know how neural networks work thanks to the lessons we took at Polytech. We will need to familiarise ourselves with the technologies to train and test a neural network. We have already experienced working with the LoRa network thanks to our past projects. We hope that we will be able to detect movement, take pictures, analyse them, and send the results to a remote computer.



CONCLUSION - THE FUTURE OF RESEARCH

We hope that with the popularisation of our system, researchers will be kept informed of the presence of animal populations in an area in real-time, without the risk of data loss in case of theft of the system, and without the need for a long sorting of images thanks to embedded AI. This will allow progress to be made in environmental research by simplifying the life of researchers and enabling large-scale deployment.