Project Recycla

In Europe, between 6 and 8 million tons of textile waste are produced each year, including clothing and other items such as carpets, mattresses or sofa padding. This implies that the management of textile waste has become a problem for the Western world, which is an importer of finished textile products without being a producer of them. This means that the circuits for reusing textile waste have been dismantled, so that currently, a large part of these materials end up in rubbish dumps. European legislation foresees that in 2025 all this material must be collected selectively and treated for reuse. This project aims to anticipate this scenario and propose technological and innovative solutions for the recovery of this new resource (waste).

One of the problems presented by the treatment of textile waste is the reduction in quality derived from fast fashion as well as a high heterogeneity of the fabrics used. On the one hand, low quality limits their reuse, since the clothes become unusable in a relatively short period of time. On the other hand, the mixture of different fibers (in the spinning and weaving process), the special treatments of the fabric and the mixture of different materials (in the manufacturing process) as well as the incorporation of non-textile elements (improper) make it considerably difficult your recycling process.

The approach of this project focuses on solving the challenge of automating the handling phases of textile waste, detection of visible and non-visible waste, elimination of waste, classification and separation of textile waste according to color, structure and composition.

The general objective of this project is developing technologies for the automation of the detection and classification of textile waste based on criteria of color, textile structure and composition. For this purpose, hiper-spectral technology provides powerful tools for material classification. Combining hiper-spectral imagery with high-res RGB information will improve the segmentation of the regions, providing a more accurate localization for the further steps of the recycling process.

At Eurecat, we offer the opportunity to do the master thesis focused on developing Deep Learning algorithms that combines both imagery sources to achieve a functional method to classify and segment different types of clothes in a recycling pipeline. To accomplish this objective, the student will work with high-tech hardware and software, being part of the Recylca research team from the Eurecat's Robotics Unit.