Detection of Humans in Visual and Thermal Images with Classic Computer Vision

Context: Given visual and thermal images of a scene in the context of waste management, humans are to be detected who may be at risk due to being in a danger zone. Classical methods from Computer Vision (CV) are to be used for this thesis to provide a baseline for robust and fast detection.

The thesis is carried out in cooperation with the Jacobs spin-off WasteAnt

https://wasteant.com/

Detection of Humans in Visual and Thermal Images with Classic Computer Vision

Tasks:

- use CV methods for image segmentation (e.g., thresholding in thermal images)
- and for classification (e.g., use of bounding boxes and aspect ratios),
- apply them to visual and thermal images
- and potentially fuse the results from both, or
- show that use of visual or thermal data performs better than the other

Implementation:

- search, select, and understand suited methods
- use OpenCV for coding and apply it on the data
- test and document the effects of the methods and their parameters

Detection of Humans in Visual and Thermal Images with Classic Computer Vision

Topics for the Literature Survey (State of the Art) Part

1. Methods for object recognition with Computer Vision

2. Detection of humans with CV (and the differences to general object rec.)

3. Normal camera images versus thermal images

Detection of Humans in Visual and Thermal Images with Classic Computer Vision

Datasets:

are provided by WasteAnt