Detection of Humans in Visual and Thermal Images with Deep Learning (A: Yolo v3)

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. Yolo-v3 is to be used for this thesis to evaluate a very popular Deep Learning method for this task.

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

https://wasteant.com/

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Tasks:

- generate a substantial amount of training data
  by labeling humans in the provided datasets
- use Yolo v3 to detect humans in testing data (both visual and thermal data)
- evaluate the performance

Implementation:

- understand Deep Learning for object detection, especially Yolo v3
- install and run Yolo v3
- test and document the use of Yolo v3 for this task;
  especially with respect to its performance on thermal images

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

1. Deep Learning (DL) in Computer Vision

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

3. Normal camera images versus thermal images

4. Search if DL has been used on thermal images so far (where and what for?)

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Datasets:

are provided by WasteAnt