Master Project

Detection of people in top-view camera scenes

Detecting people in images or videos is one of the main topics of research for computer vision. Several works have been presented in the past addressing the issue. However, most of these approaches are based in side view images, where the person's torso is somehow visible (see Figure 1(a,b)).
In contrast, on images obtained by a top view camera only the head and shoulders are visible in most cases, instead of the whole body (see Figure 1(d)). Also, the perspective of the people changes significantly with respect to the location of the person under the field of view of the camera. These differences made the approaches proposed for side view images unfeasible for top-view scenarios.

The goal of this project is the development of an automatic system to detect all people in an image captured by a top-view camera using computer vision and machine learning methods, tentatively deep learning (not strongly decided, other ideas are welcome).

(a) (b) (c) (d)

Figure 1: Different view scenarios for people detection: (a) side view camera [1], (b) 45°angle view [2], (c) top view with people sitting and (d) top view with people standing. (c) and (d) are examples of our dataset.

Preferred skills:

- Programming experience with Python and/or C++
- Knowledge of Machine Learning and Computer Vision.
- Basic knowledge in deep learning is desirable

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References

[1] J. Deng, W. Dong, R. Socher, L.-J. Li, K. Li and L. Fei-Fei, ImageNet: A Large-Scale Hierarchical Image Database. CVPR, 2009.
[2] X. Alameda-Pineda, J. Staiano, R. Subramanian, L. Batrinca, E. Ricci, B. Lepri, O. Lanz and N. Sebe: SALSA: A Novel Dataset for Multimodal Group Behavior Analysis. IEEE PAMI, 2015.