

People detection in low-light scenarios

The people detection problem is an actual subject given the current development of the research domain. Assistive robots need it in order to have meaningful human-robot interactions, while autonomous driving need it for safety reasons.

People detection is a problem tackled for many years now [1], with more focus on real-time results lately [2], [3]. As the results of the systems in optimal conditions have improved considerably, the errors they still present come from cases in non-standard conditions (e.g. strong back-light, low-light illumination, rotated people, obstructions).

The main objective of this research is to implement a system for people detection on images acquired in a low-light indoor environment.

Specific research directions will involve:

- Finding relevant datasets for low-light detection
- Exploring existing techniques and new techniques for low-light people detection
- Proposing a system for low-light people detection
- Validating the proposed system on both existing datasets and laboratory acquired images

[1] M. Oren et al., "A trainable system for people detection." *Proceedings of Image Understanding Workshop*. vol. 24. 1997.

[2] J. Redmon et al., "You only look once: Unified, real-time object detection", *Proceedings of the IEEE conference on Computer Vision and Pattern Recognition*, 2016.

[3] J. Redmon et al., "YOLOv3: An Incremental Improvement", *arXiv*, 2018.