Dependable Person Detection

Our dependable person detection algorithms enable humans and robots to work safely in cobot scenarios, without the need to physically separate them. Fraunhofer IKS offers methods to reliably identify objects and people, even if they are partially covered or have unusual body postures. Unlike current person detection methods, we combine different methods to improve the safety of human workers and increase production performance.

Challenge: Ensure the safety of human workers

Robots have been an indispensable part of our industry for decades. They help in industrial assembly, as driverless transport systems in logistics and generally in manufacturing. But high safety requirements often keep robots and humans physically separate, so currently robot systems are usually fenced in production. Protective fences and doors as well as light barriers ensure the safety of human workers, but also limit the efficiency of systems. But this is to change in the future, such that it would be possible to have collaborative robots with a reliable person detection system based on AI that can work with humans directly in the same workspace, for example in manufacturing industry. While AI algorithms already achieve great accuracy in the detection of persons, in certain situations their performance degrades or fails completely, e.g., due to occlusion of a person or unusual body postures. Furthermore, while the design and usage of robots underline strict safety standards, there are no clear regulations for the application of AI algorithms in such an industrial setting yet.

Solution: Improve the reliability of AI algorithms

To ensure a safe integration of AI for person detection in all kinds of situations, our researchers are working on a variety of solutions. For example, we have developed a runtime monitor based on body parts to enhance the person detector. By considering both the holistic person as well as individual body parts, this monitor allows for the detection of humans even in cases of strong occlusions. Additionally, we are working on other monitors, which are based on human-interpretable prototypes for better reliability of such AI algorithms. Moreover, we would like to create a systematic safety analysis for such person detectors in production with reasonable guarantees.

Your benefits:

- **Enhanced accuracy**: Minimize detection errors using additional data like body part information, ensuring precise human recognition.
- **Optimized efficiency and flexibility**: Achieve maximum operational efficiency and adaptability, eliminating unnecessary delays caused by false alarms.
- **Increased safety in production**: Enhance safety for human workers in production environments, facilitating a smoother and safer collaborative workspace.

Why work with Fraunhofer IKS:

- **Adaptive solution in dynamic situations** and changing environmental contexts with prototype learning.
- **Assured person detection** for cobot applications via body part detection.
- **Extend industry safety standards** for safe person detection e.g., with functional safety requirements.

Contact us for more information

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