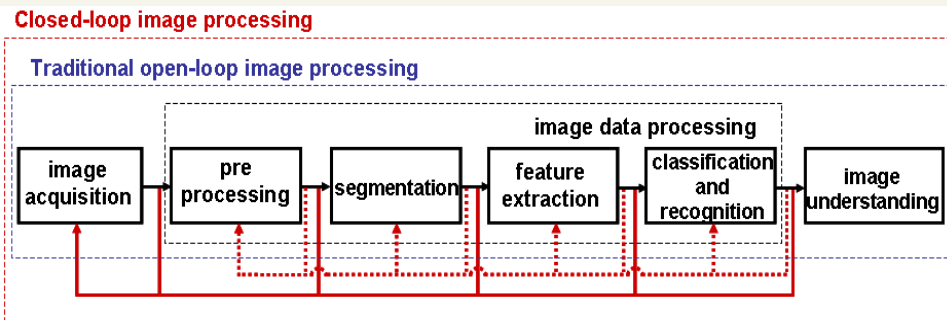


Feedback structures in image processing



Concept

- _ Closed-loop control systems have a natural robustness against disturbances and system uncertainty
- _ Change of processing parameters in a closed-loop manner so that the current processing result is driven to the desired one independently of external influences
- _ Closed-loop control of image quality at different levels of image processing to provide reliable input to subsequent processing

Advantages

- _ Closed-loop image processing: reliable and of high robustness against external influences
- _ Low-level processing according to the requirements of high-level processing
- _ Control of image quality prevents from loss of image information
- _ Defined pair of controlled and actuator variable for the specific application provides the framework for the inclusion of error based control techniques in a variety of the image processing systems

Closed-loop control for improvement of digital image processing

Aim

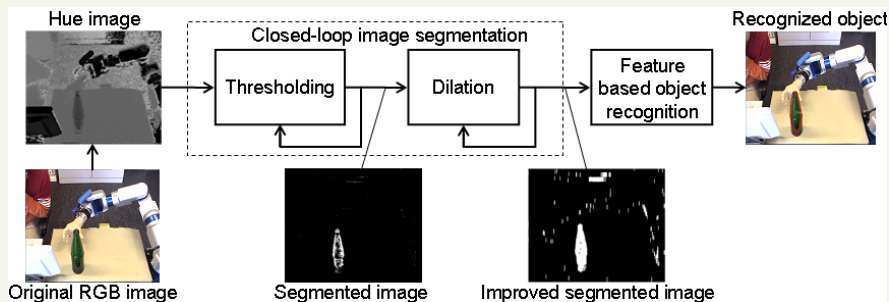
Incorporation of closed-loop control techniques in a standard open-loop image processing system to improve its robustness and reliability

Research

- _ Robust feature based object recognition in service and gait rehabilitation robotics
- _ Closed-loop control of defining the image region of interest (ROI)
- _ Closed-loop control of binary segmented image quality to provide reliable image input to feature extraction
- _ Investigation of measures of segmented image quality that can be used for feedback control
- _ Investigation of novel features for reliable classification and recognition of objects in service and gait rehabilitation robotics

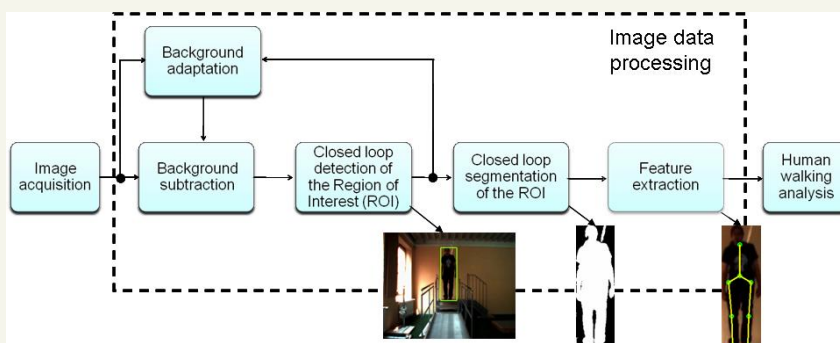
Robust object recognition in the robotic system FRIEND

_ Closed-loop segmentation to provide reliable recognition of objects to be manipulated in different illumination conditions



Robust feature extraction for markerless vision based human gait analysis

_ Closed-loop human body segmentation to provide reliable gait features extraction



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