
- Master/Diploma thesis -

Image Registration and Digital Watermarking

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Motivation & Goal

Digital watermarking today features excellent robustness against image processing like lossy compression, scaling, rotation or printing and scanning when watermarking detector and marked image are synchronized. The challenge of watermarking therefore has shifted from increasing its robustness to improving its capabilities of re-synchronization: A watermarking detector should be able to undo all changes done to an image preventing the watermarking from being detected. This leads to the renaissance of a family of watermarking algorithms neglected in recent years: Non-blind watermarking detectors requiring the original media to re-synchronize detector and marked copy. In this work the state of the art in image registration, algorithms to align or re-align images shall be utilized to create modern non-blind watermarking detectors able to counter common image operations like cropping, rotation or re-sizing.

Tasks are:

- Analysis of image registration methods
- Design of a non-blind watermarking scheme based on an existing watermarking algorithms and a selected image registration approach
- Integration of the image registration algorithm into the watermark detection process
- Evaluation of detection performance

Requirements

- Basic knowledge of image file formats
- Good programming skills in C, C++, JAVA or Matlab/Scilab

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