

Proposal for a Bachelor Thesis

Topic: Evaluation and Comparison of De-flickering Algorithms in Image Processing

Description: Flickering artifacts can arise in image sequences when the captured images are affected by temporally varying illumination. In practical setups, this effect is often caused by light sources that are not constant over time. For instance, halogen lamps are typically powered by alternating current, resulting in periodic fluctuations of the emitted light intensity. When cameras capture images with short and unsynchronized exposure times, these temporal variations are sampled at different phases, leading to visible intensity differences between consecutive images (see Figure 1).

Even if individual images appear visually correct, these temporal inconsistencies can result in noticeable flickering, which degrades the perceived image quality and can negatively affect further image processing tasks. This issue is particularly relevant in applications where consistent image appearance is required.

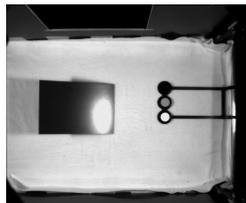


Image without
flickering artifacts

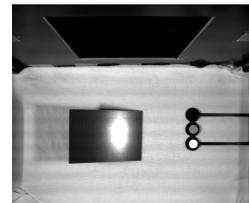


Image with
flickering artifacts

Figure 1

The goal of this work is to investigate and evaluate different approaches for flickering removal in images. A systematic review of existing state-of-the-art methods shall be conducted in order to analyze their underlying principles, advantages, and limitations. Further, suitable test data shall be acquired.

Tasks:

- Investigation of state-of-the-art flickering removal algorithms
- Generation of training/test data
- Conduction of experiments
- Evaluation and comparison of results

Prerequisites: Experience in Python programming, basic knowledge of image processing, experience in ML

Language: English or German

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Available: Immediately (March 2026)