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Enforcing Monotonic Temporal Evolution in Dry Eye Images

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↑ ABSTRACT

We address the problem of identifying dry areas in the tear film as part of a diagnostic tool for dry-eye syndrome. The requirement is to identify and measure the growth of the dry regions to provide a time-evolving map of degrees of dryness. We segment dry regions using a multi-label graph-cut algorithm on the 3D spatio-temporal volume of frames from a video sequence. To capture the fact that dryness increases over the time of the sequence, we use a time-asymmetric cost function that enforces a constraint that the dryness of each pixel monotonically increases. We demonstrate how this increases our estimation's reliability and robustness. We tested the method on a set of videos and suggest further research using a similar approach.

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