

Abstract Submitted
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A forward-modeling approach for improved estimation of scalar concentration in image-based measurement CHRIS TOMKINS, Los Alamos National Lab — A novel approach to estimation of concentration (and concentration gradients) from scalar images is presented. The approach involves the development of a forward model of the imaging process and a model of the concentration field; in general, the latter is optimized to create a simulated image that most closely matches the measured image. In the present work, the concentration field is represented by a simple pixellated model subject to Total Variation (TV) regularization, which is implemented as an additional term in the optimization cost function. The approach is used to analyze a series of artificial images and is shown to yield improved estimates of the concentration field and its derivatives by mitigating the effects of blur and noise.

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