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Improved Software for Quantifying the Behavior of Drosophila Larvae NATALIE BERNAT, MARC GERSHOW, New York University — A key advantage of small crawling organisms like *C. elegans* and the *Drosophila* larva is that their behaviors may be assayed automatically using computer vision software. Current state of the art software is capable of detecting the positions and postures of crawling larvae and automatically categorize their behaviors in parallel. However, these algorithms, which are based on frame-by-frame analysis of thresholded black and white images, fail to correctly describe the postures of larvae executing sharp bends and have difficulty separating multiple larvae that are physically touching. We present new tracking software that uses intensity information in grayscale images and applies temporal smoothness constraints to positions and postures. We implemented this software as an ImageJ plugin, extending its portability and applicability.

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