Enhancement of Low-Quality Diatom Images using Integrated Automatic Background Removal (IABR) Method from Digital Microscopic Image

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ABSTRACT

Most diatom images scanned from digital microscopes suffer from low contrast, noise, and contain unwanted floating particles and debris in a single image. Moreover, the active movement of diatom along with poor lens focusing produces a blurred image. Thus, in this paper, we introduce a new integrated automatic background removal technique (IABR) to enhance low-quality microscopic diatom images. This paper describes a two-step process of microscopic diatom image for image smoothing. First, haze removal technique is applied to the low light image to enhance and removes the image from haze and noise. Second, the background removal technique extracts the diatom cell from the background image and improves the image contrast. The output results show that the proposed IABR method has successfully enhanced and smooths low-quality diatom images by removing the image background and improving image contrast.

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