

Feature Targeted Image Enhancement for Acute Myeloid Leukemia

Abstract

Image enhancement is one of the pre-processing steps in various computer vision applications. The current image enhancement algorithm typically applies uniform enhancements across the entire image where this approach often falls short of accurately highlighting or enhancing the specific features due to the influence of the background color. Therefore, this paper proposes a feature-targeted image enhancement technique. Feature-targeted image enhancement (FTIE) algorithm is the improvement over the conventional technique. This method will only enhance the targeted feature instead of the entire image. Therefore, the targeted feature will be enhanced accurately without the influence of the background image. The FTIE method was done by extracting the target feature from the original images and then applying the enhancement method to that region only. Based on the 80 acute myeloid leukemia images, the proposed method showed a promising result, where the comparative analysis shows that the image produced from the proposed method surpasses other conventional methods in terms of structural similarity index (0.995), universal image quality index (0.996), peak signal-to-noise ratio (30.803), mean absolute error (0.002), correlation coefficient (0.997) and contrast enhancement-based image quality (1.743) values.

Keywords

Acute myeloid leukemia; Feature targeted; Image enhancement