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DEVELOPMENT OF A LOW COST AND CALIBRATED DIGITAL MICROSCOPE WITH REPLACEABLE LED'S LIGHT SOURCE BASED ON IMAGEJ FOR MICROSCOPIC SURVEILLANCE

AMAR VIJAI NASRULLOH[1], IKA KUSTIYAH OKTAVIYANTI[2], ARFAN EKO FAHRUDIN[1], EKO SUHARTONO[2], MARJUNI[1] AND GALIH NUR IMAN[1]

[1] Faculty, Mathematics and Natural Sciences, [2] Medical Faculty,
University of Lambung Mangkurat, Banjarbaru, Indonesia

Abstract

Optical microscope has seen steady improvement and increasing use in biomedical research and clinical medicine as well as in many other fields for a hundred years. By the combination of optical microscope, webcam, and LED as a light source, development of a digitized microscope with a low cost was build. A digitized of the optical microscope consists of several processes. First thing is light source modification by the use of LED with replaceable LED's Connector. Moreover, webcam attachment at the top of microscope's ocular lens and connecting to the computer. Furthermore, calibration processes with micro eyepiece. In the end, data image specimen conversion in micrometer dimension from pixel dimension by the use of the module software in ImageJ. Transformation process from pixel dimension to micrometer dimension in specimen image directly measurement by the digital microscope that was developed brings an advantage to surveillance and to measure distance in microscopic scale with a low cost.

Keywords : a digitized microscope, webcam, LED, micrometer dimension, microscopic scale.