

ABSTRACT

The Global Cancer Observatory 2020 states cervical cancer is the 2nd deadliest in the world and is estimated to have 604,000 sufferers with 342,000 deaths annually. Early detection of this disease is important to overcome it. Diagnosis of cervical cancer that is often done is using the IVA test method, pap smear, and colposcopy examination. As a network that plays a role in carrying and distributing information throughout the body, blood vessels are also capable of being a parameter for detecting a disease. In cancer, the process of angiogenesis occurs in blood vessels, so that blood vessels are thought to be an indicator of the potential for cancer.

Based on the description above, in this final project the author designs a blood vessel segmentation system on cervical images as an effort to detect cervical cancer early through changes in blood vessel images on cervical images. In this segmentation process, the writer uses two methods, namely Matched Filter and Morphology Operation and testing is carried out through a classification process with cervical image input as a result of segmentation using the Support Machine Learning (SVM) and K-Nearest Neighbors (KNN) methods for analysis. The dataset used is cervical data taken directly by the authorities at Hassan Sadikin Hospital in Bandung as many as 100 data which has been divided into two classes, namely, positive class and negative class.

Based on system testing, the results of the accuracy of data classification using the Support Machine Learning (SVM) method using the RBF kernel are 96% with a computation time of 0.146 sec, while for the K-Nearest Neighbors (KNN) method, the highest average accuracy is 94% using cosine distance and $K = 5$ with a computation time of 0.0584 sec.

Keywords: Blood Vessels, Cervical Cancer, Digital Image Processing, K-Nearest Neighbors, Matched Filter, Morphology Operation, Support Vector Machine.