

ABSTRACT

DETECTION OF PATHOGEN BACTERIA (ESCHERICHIA COLI) IN GROUND WATER AND RIVER WATER WITH LOCAL BINARY PATTERN METHOD).

This thesis aimed at generating a software-based tool for researchers E.coli bacteria in river water and ground water in the water as well as image diagnose facilitate feasibility in classifying the type of water into three classes that is class affected many water bacteria, class affected medium water bacteria and class affected a little water bacteria. In general, the detection of E. coli consists of 3 main parts : Preprocessing, Feature Extraction and Classification.

Detection process consists of a number of pathogenic bacteria process, namely the extraction process using Local Binary Pattern characteristics (LBP) and before doing a comparison using Principal Component Analysis (PCA) to produce the maximum basic functions that can presented feature extraction of E.coli bacteria efficiently. As for the classification using the K-Nearest Neighbour (K-NN) by means of classification of objects based on the distance learning data closest to the object. Initial processing is done by removing unneeded information in image processing.

Output of the system in the form of grouping bacteria for each image produced on a microscope. The system has been designed to have an accuracy rate of 86.3% with an average computation time reaches 3488-6322 seconds.

Keyword :E coli, Coliform, Local Binary Pattern (LBP), K-Nearest Neighbour (K-NN)