

ABSTRACT

Unwittingly today many people who have suffered bone loss even if the person is still young. Many people consider the problem of bone loss is not very important until the people experience themselves, that's why need need for awareness of each person related to bone disease and the importance of bone density.

To know there is bone loss in a person needs to do a test to determine the level of bone density, the test that is often used are DXA (Dual energy X - ray Absorptiometry) and SXA (Single X - ray Absorptiometry). In this final task will use bone x-ray results from people who have healthy bone, who have osteopenia, and osteoporosis problem. Bone sample that already in the group then will be in the 2 kind of data groups: reference data group and test data group. In this final task, the result from this system can classify normal bone, osteopenia, and osteoporosis from 3 kind of bones: femur, spine/backbone, and arm without separate one by one that kind of bones. So in this final task the result from x-ray that contain colors white and black will be filtered for remove the black and just leaving the white, then find the characteristics from every bones using Gray Level Cooccurrence Matrix (GLCM) and will be classified and compare between reference data and sample data using K-NN (K-Nearest Neighbor).

So the result from this final task is the simulation system that can classify 3 kind of bones without separate one by one that kind of bones and has system accuracy 76,9231% and the result obtained with condition grayscale threshold value 75, bwareaopen threshold 100, brightness 0, 'disk' radius value 3, 4, or 5, not using histogram equalization, distance between the pixel of interest and its neighbor is 2, GLCM statistics that used in this system (Contrast dan Energy), (Contrast, Correlation, Energy), (Contrast, Homogeneity, Energy), or (Contrast, Correlation, Homogeneity, Energy), dan k value in k-nn method 1, 5, or 7.

Key Words: Bone Loss, Bone Density, DXA, X-Ray, GLCM, K-NN.