LUNG CANCER EARLY DETECTION AND DIAGNOSIS SYSTEM DEVELOPMENT BASED ADAPTIVE NEURO FUZZY INFERENCE SYSTEM

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ABSTRACT
Cancer is a disease that related with uncontrolled cell growth. To date, lung cancer is one of the most deadly disease. The development of lung cancer early detection and diagnose system based on ANFIS with subtractive clustering was developed in this study. Datas were used in this study are medical history and image processing data. The data used to build best ANFIS model, that will be applied in the software. Results from the software was validated with doctor’s decision. Parameters that used to determine system performance are RMSE, VAF, and the success rate. For medical history data, the best ANFIS model was obtained in $r_a = 0.4$; RMSE for training = 0.1193, RMSE for testing = 0.2030, VAF for training = 93.34%, VAF for testing = 82.28%, the success rate of software for training data = 96 % and for testing data = 96%. For image processing data, the best ANFIS model was obtained in $r_a = 0.4$; RMSE for training = 0.0185, RMSE for testing = 0.1063, VAF for training = 99.85%, VAF for testing = 94.84%, the success rate of software for training data = 95.56 % and for testing data = 88.46%.

Keywords: ANFIS, image processing, lung cancer, medical history, subtractive clustering