Klasifikasi Data Soft Tissue Tumor menggunakan Deep Neural Network dengan Seleksi Fitur Signal-to-Noise Ratio = Classification of Soft Tissue Tumor using Deep Neural Network with Signal-to-Noise Ratio Feature Selection

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Abstrak

Soft Tissue Tumor atau tumor jaringan lunak adalah suatu benjolan atau pembengkakan abnormal yang disebabkan pertumbuhan sel baru. Tumor jaringan lunak dapat terjadi di seluruh bagian tubuh mulai dari ujung kepala sampai ujung kaki. Penyakit tersebut dapat terjadi disemua kelompok umur. Menurut beberapa dokter setiap benjolan/tumor yang ada haruslah diperiksa sejak dini sehingga pasien dapat mendapatkan pengobatan yang tepat dan tidak terjadinya perkembangan kanker. Pada penelitian ini, metode machine learning yang digunakan untuk mengklasifikasi soft tissue tumor. Dengan data Soft Tissue Tumor yang memiliki beragam fitur, maka akan direduksi dengan seleksi fitur signal to noise ratio. Pada penelitian ini, penyakit Soft Tissue Tumor dideteksi dengan mengklasifikasikan pasien tersebut mengidap Soft Tissue Tumor atau tidak menggunakan Deep Neural Network dengan implementasi metode seleksi fitur signal to noise ratio dan akan dibandingkan nilai akurasi klasifikasi yang dihasilkan dari Deep Neural Network tanpa seleksi fitur dan Deep Neural Network dengan seleksi fitur signal to noise ratio. Data yang diperoleh berjumlah 76 data dengan total 17 fitur. Diperoleh hasil bahwa akurasi menggunakan seleksi fitur lebih tinggi dibandingkan tanpa seleksi fitur. Metode klasifikasi mendapat akurasi tertinggi pada jumlah fitur 14. .....Soft tissue tumor is an abnormal lump or swelling caused by the growth of new cells. They can occur in all parts of the body from head to toe. Some types of this disease are more common in children, while some others are more common in adults. Though initially benign, this tumor can become aggressive if not treated. The more the tumor has invaded nearby tissues, the harder it is to completely remove. Sometimes, patients underestimate lumps because there are no distinctive clinical signs between malignant and benign tumors. Therefore, doctors suggest patients to immediately examine any existing lump so that it can be treated early and not develop into cancer. The usage of machine learning method to classify the diagnosis is very beneficial. High-dimensional soft tissue tumor data will be reduced using signal to noise ratio feature selection method. In this study, soft tissue tumor disease is detected by classifying soft tissue tumor patients and non-patients data using Deep Neural Network with the implementation of signal-to-noise feature selection. The accuracy will then be compared to Deep Neural Network classification without the implementation of feature selection. The data obtained amounted to 76 data with a total of 17 features. It is found that the accuracy of Deep Neural Network with feature selection is higher compared to the one without feature selection. The highest accuracy result is obtained with the use of 14 features.