Opinion

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Comprehensive Evaluation Method for the Severity of Children's Foot & Ankle Deformity

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Description

The best time to treat foot and ankle deformity is in childhood because it is a chronic disease with a high incidence. However, the low screening rates are because the current diagnostic procedures rely on doctor consultation and empirical judgment and lack objective and quantitative evaluation techniques. Using data mining and machine learning techniques, the goal of this paper is to develop an evaluation model for children's foot and ankle deformities as a means of resolving this issue. It, first and foremost, proposes the reviewing rules for youngsters' foot and lower leg deformation seriousness in view of dissecting the current quantitative files and master insight. The sample data, which includes 30 foot structure indexes, are then gathered using the 3D foot scanner. Finally, feature selection is handled by an advanced sparse multi-objective evolutionary algorithm .By comparing eight feature selection methods and seven search strategies, the proposed sparse MO-FS's effectiveness and search efficiency are demonstrated. The foot and ankle are important human tissues with intricate biomechanical properties.

Periodical Foot Wellbeing Assessment

The foot is made up of 26 bones, or about one fifth of all human bones. These bones are linked together by joints, muscles, and ligaments. The transmission of movement, load-bearing, and body balance are all aided by this connection structure. However, there is a high risk of foot and ankle deformity under long-term weight-bearing and ground reaction forces. However, because the feet and foot nerves are at the end of our bodies, it can be difficult to spot some potential abnormalities and subtle discomforts, which means that the best treatment period is frequently missed. Computer-Aided Diagnosis (CAD) is a method for diagnosing that is both convenient and effective. It can automatically collect diagnostic information from records to train a classification model and create an automatic diagnosis system. This method has been widely used in cancer screening and research on a variety of diseases. CAD technology has been used in podiatric medicine to grade and diagnose diabetic feet, but it doesn't seem to be used much for foot and ankle deformities. As a result, using CAD to create an evaluation model for children's foot and ankle deformities and contribute to the realization of early detection and grading evaluation is a very worthwhile project. The periodical foot wellbeing assessment is the best method for forestalling foot and lower leg deformation and diminish the gamble of serious distortion. The current foot examinations include the international general rating scale, clinician experience observation, and questionnaires, all of which have been widely used in clinical assessments. However, their susceptibility is easily influenced by the clinical experience of the physicians or the patients' subjective feelings. Therefore, the clinical requirements include the use of measuring tools and evaluation techniques to objectively quantify and evaluate the severity of foot and ankle deformity. Despite the fact that a number of measuring instruments and indexes for evaluating the severity of a foot and ankle deformity were presented, they frequently concentrate on analyzing a single foot and ankle deformity signal, but quantitative analysis's comprehensiveness and accuracy cannot be effectively guaranteed.

Selection Strategy for the Early Detection of Alzheimer's disease

Additionally, while the majority of systems are still utilized in statistical research, they have not typically been utilized in the quantitative analysis of patients' foot and ankle deformities. As a result, this paper develops a computer-aided approach to the severity grading diagnosis and a comprehensive evaluation method for the severity of children's foot and ankle deformities based on the existing measurement tools and evaluation indexes. Feature selection is a good way to reduce redundant features and achieve this goal in order to further reduce the complexity of the classification model and simultaneously improve classification accuracy. The meta-heuristic PSO and ACO feature selection method, for instance, are utilized by Narin for the precise detection of COVID-19. A multi-objective Harris hawk algorithm for selecting medical data feature selection is proposed by Piri. To classify bioimages from a variety of datasets, Maurya makes a feature selection technique based on an evolutionary algorithm. An advanced shuffled frog leaping algorithm for discrete and continuous problem feature selection is presented by Liu. An embedded-based feature selection strategy for the early detection of Alzheimer's disease was

proposed by Mahendran. All of the aforementioned approaches perform well when it comes to selecting features; however, they place too much emphasis on the outcomes of various feature combinations (objective space) and do not take into account the contributions of various features (decision space), which may result in poor search efficiency. Early research and research from the literature indicate that normal people have a high risk of developing foot and ankle deformities. Incorrect foot care and ignoring potential foot problems cause children to miss the best treatment period, which may increase the family's medical costs and impact their quality of life in the future. However, there are still no established grading diagnostic standards for foot and ankle deformity, nor is there a quick or precise diagnosis.