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An Automated Strabismus Classification Using Machine Learning Algorithm for Binocular Vision Management System

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Abstract

Binocular vision is a type of vision that allows an individual to perceive depth and distance using both eyes to create a single image of their environment. However, there is an illness called strabismus, where it is difficult for some people to focus on seeing things clearly at a time. There are many diagnoses that need to be done for doctors to diagnose whether patients suffer from strabismus or not. Besides, a new practitioner could lead to misdiagnosis due to lack of professional experience and knowledge. To overcome these limitations, a machine learning algorithm, which is a case-based reasoning, is developed to automate the strabismus classification. The results showed that the case-based reasoning algorithm provides 91.8% accuracy, 89.29% precision, 92.59% recall and 90.91% F1-Score. This shows that using the case-based reasoning algorithm can give better performance in classifying the class. © 2023 IEEE.

Author Keywords

Accommodative amplitude; case-based reasoning; classification; machine learning; strabismus diagnosis

Index Keywords

Binocular vision, Computer aided diagnosis, Learning algorithms, Machine learning, Stereo image processing; Accommodative amplitude, Casebased reasonings (CBR), Machine learning algorithms, Machine-learning, Management systems, Professional experiences, Reasoning algorithms, Single images, Strabismus diagnose, Types of visions; Case based reasoning

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