DEVELOPMENT OF IMPROVED WEIGHED QUANTUM LION OPTIMIZATION FOR ALZHEIMER'S DISEASE WITH SMOOTH SUPPORT VECTOR MACHINE

Raveendra Reddy Enumula[1] and Rama Krishna Rao T K[1]

[1]Koneru Lakshmaiah Education Foundation

January 23, 2023

Abstract

Accurate diagnosis of Alzheimer's disease(AD) and Mild Cognitive Impairment(MCI) was identified on an early stage is essential in the healthcare industry to stop degeneration. The Smooth Support Vector Machine (SSVM) model, Principal Component Analysis (PCA), feature extraction, and Magnetic Resonance Imaging (MRI) image preprocessing are the components for the diagnosis of AD is proposed in this research at early stage. To assist in the classifier's training, we proposed a novel Improved Weighed Quantum Lion Optimization (IWQLO). The SSVM parameters are specifically proposed to be optimized using a new Switching delayed Lion Optimization (SLO) algorithm.The IWQLO-SSVM approach was effectively used to classify AD and MCI utilizing MRI scans of the [Alzheimer's disease Neuroimaging Initiative](https://adni.loni.usc.edu/)(ADNI) database and Outcome and Assessment Information Set (OASIS) database. For six example scenarios, the classification accuracy of our proposed method is acceptable. Testing show that the proposed approach improves the performance measures such as accuracy, precision, specificity, sensitivity and recallfor detecting the early stage AD diagnosis.

Hosted file

new Alzheimer disease..doc available at https://authorea.com/users/579090/articles/620713-development-of-improved-weighed-quantum-lion-optimization-for-alzheimer-s-disease-with-smooth-support-vector-machine

Hosted file

I1Proposed technique.docx available at https://authorea.com/users/579090/articles/620713-development-of-improved-weighed-quantum-lion-optimization-for-alzheimer-s-disease-with-smooth-support-vector-machine

Hosted file

I2image structure.docx available at https://authorea.com/users/579090/articles/620713-development-of-improved-weighed-quantum-lion-optimization-for-alzheimer-s-disease-with-smooth-support-vector-machine

Hosted file

I3VM.docx available at https://authorea.com/users/579090/articles/620713-development-of-improved-weighed-quantum-lion-optimization-for-alzheimer-s-disease-with-smooth-support-vector-machine

Hosted file

`I4Optimal.docx` available at https://authorea.com/users/579090/articles/620713-development-of-improved-weighed-quantum-lion-optimization-for-alzheimer-s-disease-with-smooth-support-vector-machine

Hosted file

`I5Histogram stretching illustration.docx` available at https://authorea.com/users/579090/articles/620713-development-of-improved-weighed-quantum-lion-optimization-for-alzheimer-s-disease-with-smooth-support-vector-machine

Hosted file

`tables.doc` available at https://authorea.com/users/579090/articles/620713-development-of-improved-weighed-quantum-lion-optimization-for-alzheimer-s-disease-with-smooth-support-vector-machine