Artificial Intelligence-Driven Sleep Apnea Detection using Deep Neural Networks

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Abstract*: Sleep apnea is a sort of breathing condition when breathing pauses while you're sleeping and lasts for at least 10 seconds. Type 4 sleep research, which emphasizes mobility and signal reduction, is used in the suggested model. Compared to type 4 sleep research, the primary drawbacks of type 1 full night polysomnography are its time commitment and the amount of space needed for sleep recording, such as a sleep lab. A viable substitute for successful polysomnography, the deep convolutional neural network model based on the SPO2 sensor is portable and reasonably priced for the identification of sleep apnea. In all, 180,000 samples from 50 patients' SPO2 sensors were utilized in this investigation. Using a deep convolutional neural network and a cross entropy cost function, the overall accuracy of sleep apnea diagnosis is 91.3085% with a loss rate of 2.3.*

Keywords: Deep learning, deep convolutional neural network, continuous single bio-parameter recording