A Review of Deep Learning-Based System for Automatic Detection of Obstructive Sleep Apnea in Adults

RDAV Thennakoon#, LP Kalansooriya, GAI Uwanthika

Department of Computer Science, Faculty of Computing General Sir John Kotelawala Defence University, Sri Lanka

Abstract. Obstructive sleep apnea is a most common sleep disorder characterized by irregular breathing cycles or periods of difficulty breathing while asleep. Obstructive Sleep Apnea (OSA) is the most prevalent kind of condition. It is primarily divided into central, mixed, and obstructive sleep apnea. Although it affects people of all ages, older people are the most frequently affected. OSA significantly alters the typical sleep pattern, which causes many heart-related issues. Polysomnography (PSG) is the conventional technique of identifying sleep disorders; however, over the past several decades, many alternatives have been proposed to replace conventional methods due to their complexity and time commitment. This study aims to determine the best approach for the Deep Learning-Based System for the Automatic Detection of Obstructive Sleep Apnea and to evaluate existing approaches that still need to be implemented in software. For this study, it was determined that EEG-based hybrid techniques(classifiers) are suitable by conducting a survey and a review of the state-of-the-art methods for OSA identification.

Keywords: *Obstructive Sleep apnea, EEG, ECG, Deep Learning*