Identification of Sleep Apnea using Electrocardiogram Signal and Gaussian Mixture Models

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Abstract: Apneas, cessations of breathing during sleep, which lead to shortened life expectancy (adults) and indicate (Sudden Infant Death Syndrome) SIDS-risks (premature born babies) must be reliably diagnosed. Therefore, a monitoring system and attempts are made for automatic sleep apnea scoring to reduce clinical efforts. This paper describes the identification of sleep apnea by using only electrocardiogram (ECG) signal and Gaussian mixture models (GMM). The features in time domain, frequency domain and the nonlinear parameters are calculated. Results show that a minute-by-minute classification accuracy of over 89% is achievable.

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