Abstract

Intelligent computing methods and knowledge based systems are well known techniques used for the detection of various medical disorders. This paper is based on the review of various intelligent computing methods that are used to detect sleep disorders. The main concern is based on the detection of sleep disorders such as sleep apnea, insomnia, parasomnia and snoring. The most common diagnostic methods used by many researchers are based on knowledge-based system (KBS), rule based reasoning (RBR), case based reasoning (CBR), fuzzy logic (FL), artificial neural network (ANN), support vector machine (SVM), multi-layer perceptron (MLP) neural network, genetic algorithm (GA), k-nearest neighbor (k-NN), hybrid neural network, bayesian network (BN), data mining (DM) and many other integrated approaches. In traditional approach questionnaire was used for the detection of various disorders that is now overcome with all above mentioned techniques to enhance the accuracy, sensitivity and specificity.

References

- Almazaydeh Laiiali et al. (March 29, 2012); Obstructive Sleep Apnea Detection Using SVM-Based Classification of ECG Signal Features; in: Proceedings of 34th Annual International IEEE, EMBS Conference.
- Babadi Behtash et al. (February 2012); DiBa- a data-driven bayesian algorithm for sleep spindle detection; IEEE: Transactions On Biomedical Engineering, vol. 59, Issue 2, pp. 483-493.
- Becq G. et al. (2005); Comparison Between Five Classifiers for Automatic Scoring of Human Sleep Recording; Studies in Computational Intelligence (SCI), vol. 4, pp. 113-127.
- Bellos Christos et al. (August 30 - September 3, 2011); Heterogeneous Data Fusion and Intelligent Techniques Embedded in a Mobile Application for Real-Time Chronic Disease Management; in: Proceedings of 33rd Annual International Conference of the IEEE, EMBS.
- Caffarel J et al. (2006); Comparison of manual sleep staging with automated neural network-based analysis in clinical practice; Springer: Medical and Biological, vol. 44, pp. 105-110.
- Causa L. et al. (Sept. 2010); Automated Sleep-Spindle Detection in Healthy Children Polysomnograms; IEEE Transactions on Biomedical Engineering, vol. 57, Issue 9, pp. 2135-2146.
Intelligent Computing Techniques for the Detection of Sleep Disorders: A Review


- Donald L. Bliwise et al. (1999) &apos;Correlates of the &quot;don&apos;t know&quot; response to questions about snoring&apos; am j respir crit care med., vol. 160, pp. 1812–1815.


- Emoto T. et al. (August 23-26,2007) &apos;Feature Extraction for Snore Sound via Neural Network Processing&apos; in: Proceedings of the 29th Annual International Conference of the IEEE EMBS.


- Gabran S. R. I. et al. (September 2-6,2009) &apos;Portable Real-time Support-Vector-Machine-Based Automated Diagnosis and Detection Device of Narcolepsy Episodes&apos; in: Proceedings of 31st Annual International Conference of the IEEE EMBS.

- Golz et al. (2001) &apos;Application of Vector-Based Neural Networks for the Recognition of Beginning Microsleep Episodes with an Eyetracking System&apos; in: Proceedings on the Computational Intelligence: Methods and Applications (CIMA), pp. 130-134.
Intelligent Computing Techniques for the Detection of Sleep Disorders: A Review

- Guimaraes G. et al. (2001); A method for automated temporal knowledge acquisition applied to sleep-related breathing disorders; artificial Intelligence in Medicine, vol. 23, pp. 211-237.
- Han G. Jo et al. (July 2010); Genetic fuzzy classifier for sleep stage identification; Computers in Biology and Medicine, vol. 40, Issue 7, pp. 629-634.
- Herscovici Sarah et al. (2007); Detecting REM sleep from the finger: an automatic REM sleep algorithm based on peripheral arterial tone (PAT) and actigraphy; Physiological Measurement., vol. 28, Issue 2.
- Ho Viet Lam and Nguyen Thi My Ding; data mining; available at http://www.ustudy.in/node/6653 (accessed on 7 March 2013).
- Huang Liyu, Cheng Qixin Sun I Jingzhi (September 17-21, 2003); Novel Method of Fast Automated Discrimination of Sleep Stages; in: Proceedings of the 25th Annual International Conference of the IEEE EMBS, Cancun, Mexico.
- Ieong Chio-In et al. (2011); A Snoring Classifier based on Heart Rate Variability Analysis; Computing in Cardiology, vol. 38, pp. 345?348.
- Jank R. et al. (September 17-21, 2003); Automatic Snoring Signal Analysis in Sleep Studies; in: Proceedings of the 25th Annual International Conference of the IEEE, EMBS Cancun, Mexico.
- Jerome H. Friedman (1998); Data Mining and Statistics: What's the Connection?
- Khasawneh Natheer et al. (2012); Combining decision trees classifiers: a case study of automatic sleep stage scoring; International Journal of Knowledge Engineering and Data Mining (IJKEDM), vol. 2, Issue 1, pp. 60-75.
- Kim B. Y., Park K. S. (2000); Automatic sleep stage scoring system using...
- Kump K et al. (1994) Assessment of the validity and utility of a sleep-symptom questionnaire, Assessment of the validity and utility of a sleep-symptom questionnaire; Am J Respir Crit Care Med, vol. 150, Issue 3, 735-741.
- Maali Yashar et al. (Dec 4, 2012) Self-Advising SVM for Sleep Apnea Classification, in: Proceedings of the Workshop on New Trends of Computational Intelligence in
Intelligent Computing Techniques for the Detection of Sleep Disorders: A Review

Health Applications' In conjunction with the 25th Australasian Joint Conference on Artificial Intelligence, Sydney, Australia, pp. 24-33.

- Montani S. et al. (2003) Integrating model-based decision support in a multi-modal reasoning system for managing type 1 diabetic patients; Artificial Intelligence in Medicine, Vol. 29, pp. 131-151.
- Park Hae Jeong et al. (July 23-28, 2000) Hybrid Neural-network and Rule-based Expert System for Automatic Sleep Stage Scoring; in: Proceedings of the 22nd Annual EMBS international Conference, Chicago IL.
Intelligent Computing Techniques for the Detection of Sleep Disorders: A Review

Intelligent Computing Techniques for the Detection of Sleep Disorders: A Review

- Srinivasa Gopal &apos;Case Based reasoning&apos; available at http://ezinearticles.com/?Case-Based-Reasoning&amp;id=3405015 (accessed on 7 March 2013).
- Sun Lei Ming et al. (September 2011), &apos;A prediction model based on an artificial intelligence system for moderate to severe obstructive sleep apnea&apos; Sleep and Breathing, vol. 15, Issue 3, pp. 317-323.
- Vijaylaxmi et al. (2-7 Jan,2012) &apos;Sleep Stages Classification Using WaveletTransform & Neural Network&apos; in: Proceedings of the IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI 2012) Hong Kong and Shenzhen, China.
- Yadollahi Azadeh, Moussavi Zahra (September 2-6,2009) &apos;Acoustic Obstructive sleep apnea detection&apos; in: Proceedings of 31st Annual International Conference of the IEEE EMBS, Minneapolis, Minnesota, USA.
- Yldiz Abdulnasir et al. (2011) &apos;An expert system for automated recognition of patients with obstructive sleep apnea using electrocardiogram recordings&apos; Elsevier:

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Computer Science
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