Abstract

With the growing needs of Medical diagnosis, recently several software tools and various algorithms have been proposed by the researchers for developing effective medical Expert systems. Diagnosing of heart disease like Cardiomyopathy is one of the important issue. Cardiomyopathy refers to diseases of the heart muscle. These diseases enlarge the heart muscle or make it thicker and more rigid than normal. As cardiomyopathy worsens, the heart becomes weaker. It's less able to pump blood through the body and maintain a normal electrical rhythm. This can lead to heart failure or irregular heartbeats called arrhythmias which can be detected by analyzing ECG Signals. This paper describes aiming to develop an automated system for diagnosing of Cardiomyopathy using support vector machine and feed forward backpropagation technique. ECG data collected from Online PTB diagnostic ECG database, preprocessing is applied for noise Cancellation and baseline correction then four time based features have been extracted and finally classification is been performed using Support vector machines and Artificial neural Networks. Results Shows that Feed forward backpropagation giving 98% accuracy for Healthy and 85% for Cardiomyopathy and Support Vector Machines.
Detection of Cardiomyopathy using Support Vector Machine and Artificial Neural Network

gives 94.11% accuracy for Healthy and 60% accuracy for cardiomyopathy.

References

2. Cardiomyopathy, Healthline Networks
   http://www.healthline.com/health/heartdisease/cardiomyopathy#1
4. EKG http://www.vitatech.net/glossary/ekg/
5. Mirela Ovreiu ,Daniel J.Simon” Cardiomyopathy Detection from Electrocardiogram
   Features” Electrical & Computer Engineering Faculty,Publications Electrical & Computer
   Engineering Department ,Cleveland State University 2012.
   neural network for detection of cardiomyopathy” Control and System Graduate Research
   Colloquium (ICSGRC), 2012 IEEE
   "Detection of Cardiomyopathy Using Multilayered Perceptron
   Network”n8thInternationalColloquim on Signal Processing and its Applications.2012 IEEE.
8. A. T. Sayad, P. P. Halkarnikar” Diagnosis Of Heart Disease Using Neural Network
9. V.K.Srivastava, Dr. Devendra Prasad” Dwt - Based Feature Extraction from ecg Signal”
10. Lai Khin Wee, Yeo KeeJiar, EkoSupriyanto "Electrocardiogram Data Capturing System
    and Computerized Digitization using Image Processing Techniques" International Journal Of
11. K.S.Kavitha , K.V.Ramakrishnan , Manoj Kumar Singh” Modeling and design of
    evolutionary neural network for heart disease detection” IJCSI International Journal of Computer
12. Mrs.B.Anuradha,V.C.VeerarReddy "Cardiac Arrhythmia Classification Using Fuzzy
    Classifiers"Journal of Theoretical and Applied Information Technology 2005 - 2008 JATIT
13. Anand Kumar Joshi1, Arun Tomar2, Mangesh Tomar3” A Review Paper on Analysis of
    Electrocardiograph (ECG) Signal for the Detection of Arrhythmia Abnormalities” International
    Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering Vol. 3,
    Issue 10, October 2014.
14. www.physionet.org/PTB.
15. N. Siddiah, T.Srikanth and Y. Satish Kumar “Nonlinear filtering in ECG Signal
    Enhancement” International Journal of Computer Science & Communication Networks ,ISSN
    2249-5789,Volume:02;Issue:01; 2012.
17. Shaikh Abdul Hannan,V. D. Bhagile, R. R. Manza, R. J. Ramteke "Diagnosis and
    Medical Prescription of Heart Disease Using Support Vector Machine and Feed forward
    Backpropagation Techniques” (IJCSE) International Journal on Computer Science and
    Engineering Vol. 02, No. 06, 2010, 2150-2159.

21. Artificial Neural Networks for Beginners by Carlos Gershenson


Index Terms

Computer Science

Artificial Intelligence

Keywords

Cardiomyopathy, ECG, Support Vector Machines (SVM), Artificial Neural Networks (ANN), Feed forward back propagation Neural Network.