

{tag}

{/tag}

Information and Communication Technologies

IJCA Proceedings on National Conference on

© 2015 by IJCA Journal

NCICT 2015 - Number 2

Year of Publication: 2015

Authors:

Srilekha D.

Velmmurugan S.

{bibtex}ncict1553.bib{/bibtex}

Abstract

This paper provides an efficient way to design a physical activity classification and monitoring system using a wireless sensor network which consisting of cost sensitive tri-axial accelerometers. Physical activity increases the fitness level and exercise capacity of the human body and helps to reduce risk factors such as obesity, diabetes and extends the life expectancy. The main objective of this project is to develop a real-time and accurate physical activity monitoring system based on physical signal detection technique. To detect and classify multiple activities, the proposed system uses multi-sensor network which is able to overcome the limitations of a single accelerometer. It consists of an electronic device which is worn on the hip

and finger of the person under test. The system can be used to monitor physiological parameters, such as temperature and physical activity of a human subject using temperature and accelerometer sensors. Artificial Neural Network is used to classifying the different physical activities such as jogging, cycling, normal and fast walking. Neural Network Toolbox in MATLAB is used to classify such kind of activities.

Refer

ences

- Aleksandar Milenkovic and Emil Jovanov (2006) 'Wireless Sensor Networks for personal health monitoring: Issues and an Implementation', IEEE Transaction on Information Technology in Biomedicine and Psychophysiology, Vol. 26, No. 4, pp. 406-416.
- Aruni U. Alahakone and, S. M. N. Arosha Senanayake (2010) 'A real-time system with assistive feedback for postural control in rehabilitation', IEEE Transactions on Mechatronics, Vol. 15, No. 2, pp. 226-233.
- Ashwini Singh, Ajeet Kumar, Pankaj Kumar, M. A Mujeeb (2012) 'Body Sensor Network: monitoring and analysing real time body parameters in medical perspective', IEEE Transaction on Emerging Science and Engineering (IJESE), Vol. 1, No. 7, pp. 29-32.
- Carmen C. Y. Poon and Yuan-Ting Zhang (2006) 'A novel biometrics method to secure WBAN for telemedicine and M-Health', Proceedings of the IEEE Communications Magazine, pp. 73-81.
- Dejan Raskovic, Emil Jovanov and Abhishek Krishnamurthy (2008) 'Patient monitoring using wireless intelligent sensors', Proceedings of IEEE Eng. in Med. and Biology Mag. , Vol. 18, No. 1, pp. 50-55.
- GamzeUslu, H. IbrahimDursunoglu and SebnemBaydere (2012) 'Human activity monitoring with wearable sensors and hybrid classifiers', IEEE Transaction on Computer Information Systems and Industrial Management Applications Vol. 5, pp. 345-353.
- Gyeong Woo Gang and Tae SeonKim (2012) 'Design of bio-signal based physical activity monitoring', Proceedings of the IEEE International Conference on Bio-Medical, pp. 141-147.
- Jin-Shyan Lee (2006) 'Performance evaluation of IEEE 802. 15. 4 for low-rate wireless personal area networks', IEEE Transactions on Consumer Electronics, Vol. 52, No. 3, pp. 742-749.
- Karandeep Malhi (2012) 'A Zigbee-based wearable physiological parameters monitoring system', IEEE Sensors Journal, Vol. 12, No. 3, pp. 423-430.
- Karantonis M and MerrynMathie (2006) 'Implementation of a real-time human movement classifier using a tri-axial accelerometer for ambulatory monitoring', IEEE Transactions on Information Technology in Biomedicine, Vol. 10, No. 1, pp. 156-167.
- Kim Doang Nguyen, I-Ming Chen, Zhiqiang Luo, and Henry Been-Lirn Duh (2011) 'A wearable sensing system for tracking and monitoring of functional arm movement', IEEE/ASME Transactions on Mechatronics, Vol. 16, No. 2, pp. 213-220.

Index Terms

Computer Science

Artificial Intelligence

Keywords

Accelerometer Physical Activity Artificial Neural Network.