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## Abstract

This paper describes system for monitoring and fall controlling of infants using tri-axial accelerometer together with ARM7 microcontroller used as a processing system to prevent fall of infants. The system is composed of data acquisition, fall controlling and monitoring and processing unit for analysis. Tri-axial accelerometer is used for human position tracking and fall detection. The system is capable of monitoring infants in real time and the obtained calibrated results are taken into consideration. The system including operation of accelerometer and the processing unit is explained in detail.

## References

### ences

- Park s, Jayaraman S, &quot;Enhancing the Quality of Life Through Wearable Technology&quot;; IEEE Eng. Med. Biol. Mag. , vol. 22, no 3, pp. 41-48, 2003
- Luštrek M. ; Kaluža B. ; &quot;Fall Detection and Activity Recognition with Machine Learning&quot;; Informatica 33 (2009) 205–212
- U. Lindemann; A. Hock; M. Stuber; W. Keck; C. Becker; &quot;Evaluation of a fall detector based on accelerometers: a pilot study&quot;; Medical & Biological Engineering &

Computing, 2005, Vol. 43, pp. 548-551

- David A. Whitney and Joseph J Pisano TASC, Inc. , Reading, Massachusetts, &quot;Auto Alert: Automated Acoustic Detection of Incidents&quot;; IDEA project.
- C. V. Bouten, K. T. Koekkoek, M. Verduin, R. Kodde, and J. D. Janssen, &quot;A triaxial accelerometer and portable data processing unit for the assessment of daily physical activity,&quot; IEEE Trans. Biomed. Eng. , vol. 44, no. 3, pp. 136-147, Mar. 1997.
- M. J. Mathie, A. C. F. Coster, N. H. Lovell, and B. G. Celler, &quot;A pilot study of long term monitoring of human movements in the home using accelerometry,&quot; J. Telemed. Telecare, vol. 10, pp. 144-151, 2004.
- K. Aminian, P. Robert, E. E. Buchser, B. Rutschmann, D. Hayoz, and M. Depairon, &quot;Physical activity monitoring based on Accelerometry: Validation and comparison with video observation,&quot; Med. Biol. Eng. Comput. , vol. 37, pp. 304-308, 1999.
- E. Tapia, S. Intille and K. Larson, &quot;Activity recognition in the home using simple and ubiquitous sensors,&quot; Lecture Notes in Computer Science, Int. Conf. on Pervasive Computing, vol. 3001, pp. 158–175, 2005
- J. Han and B. Bhanu, &quot;Human activity recognition in thermal infrared imagery,&quot; IEEE Computer Society Conf. on Computer Vision and Pattern Recognition, vol. 3, pp. 17–25, 2005.
- I. Mihara, Y. Yamauchi, and M. Doi, &quot;A real-time vision-based interface using motion processor and applications to robotics,&quot; in Systems and Computers in Japan, vol. 34, pp. 10-19, 2003.
- S. Waldherr, R. Romero, and S. Thrun, &quot;A gesture based interface for human-robot interaction,&quot; in Autonomous Robots, vol. 9, no. 2, pp. 151-173, Springer, 2000.
- J. Aleotti, A. Skoglund and T. Duckett, &quot;Position teaching of a robot arm by demonstration with a wearable input device,&quot; in International Conference on Intelligent Manipulation and Grasping (IMG04), Genoa, Italy, July 1-2, 2004.
- S. Calinon, and A. Billard, &quot;Active teaching in robot programming by demonstration,&quot; in 16th IEEE International Symposium on Robot and Human interactive Communication, RO-MAN 2007, pp. 702-707, Jeju Island, Korea, 2008.
- S. Perrin, A. Cassinelli, and M. Ishikawa, &quot;Gesture recognition using laser-based tracking system,&quot; in Sixth IEEE International Conference on Automatic Face and Gesture Recognition, pp. 541-546, 2004.
- X. Teng, B. Wu, W. Yu, and C. Liu, &quot;A hand gesture recognition system based on local linear embedding&quot;; Journal of Visual Languages & Computing, Vol. 16, pp. 442-454, 2005
- J. Chae, H. Kulah, and K. Najafi, &quot;A Hybrid Silicon-On-Glass (SOG) Lateral Micro-Accelerometer With CMOS Readout Circuitry,&quot; Technical Digest, IEEE 2002 Int. Conference on Micro Electro Mechanical Systems (MEMS 2002), Las Vegas, January 2002
- J. Chae, H. Kulah, and K. Najafi, &quot;An In-Plane High-Sensitivity, Low-Noise Micro-g Silicon Accelerometer with CMOS Readout Circuitry,&quot; IEEE/ASME Journal of Microelectromechanical Systems (JMEMS), vol. 13, no. 4, pp. 628-635, August, 2004
- J. Chae, H. Kulah, and K. Najafi, &quot;A CMOS-compatible high aspect ratio silicon-on-glass in-plane micro-accelerometer,&quot; J. Micromechanics and Microengineering, 15, No. 2, pp. 336-345
- Bao, L. and Intille, S. 2004. Activity Recognition from User-Annotated Acceleration

Data. Lecture Notes Computer Science 3001, 1-17.

- Datasheets of HT-12D, HT-12E, PIC 16F877A, ADXL 335, 16\*2LCD

Computer Science

## Index Terms

Electronics

## Keywords

Monitor and fall control data acquisition DC (Duty Cycle) RS (Region Select) B (Buzzer bit).