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Sensor Data Acquisition

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ABSTRAT: It is known that parameter selection for data sampling frequency and segmentation techniques (including different methods and window sizes) has an impact on the classification accuracy. For Ambient Assisted Living (AAL), no clear information to select these parameters exists, hence a wide variety and inconsistency across today's literature is observed. This paper presents the empirical investigation of different data sampling rates, segmentation techniques and segmentation window sizes and their effect on the accuracy of Activity of Daily Living (ADL) event classification and computational load for two different accelerometer sensor datasets. The study is conducted using an Analysis Of Variance (ANOVA) based on 32 different window sizes, three different segmentation algorithm (with and without overlap, totaling in six different parameters) and six sampling frequencies for nine common classification algorithms. The classification accuracy is based on a feature vector consisting of Root Mean Square (RMS), Mean, Signal Magnitude Area (SMA), Signal Vector Magnitude (here SMV), Energy, Entropy, FFT Peak, Standard Deviation (STD). The results are presented alongside recommendations for the parameter selection on the basis of the best performing parameter combinations that are identified by means of the corresponding Pareto curve

KEYWORDS: Ambient Assisted Living (AAL),data acquisition, data sampling, event classification, optimization

I. INTRODUCTION

My invention relates to systems which gather the data from sensors at different geographic locations to field units which then communicate the sensor data by radio to a host computer. The radio communication is two way so that the computer can ask for data at different times without requiring physical access to the field units which may be in hazardous environmental conditions.

Sensors are commercially available which can produce environmental information in the form of an electrical or optical signal about the local area in which the sensor is situated. These sensors can detect just about any hazard that can be imagined. Such sensors come in many different forms, requiring different levels of electrical power and producing outputs in many different forms. In the past, such sensors have been connected directly to alarms or other readout devices to warn surrounding personnel. In some instances, the sensors have been wired to a remote location for display and analysis. Depending on the sensor output level and the distance to the remote location, amplifiers or other means are required. Unfortunately, in many cases, the wires or fiber optic cables (collectively referred to as "land lines" herein) are expensive or impractical to install, and are subject to damage and disruption at the very time during an incident when the environmental information is needed.

There are many times and locations, especially when the handling of hazardous materials are involved, where the monitoring of environmental conditions over a wide area is desirable. Sometimes the areas are so wide or noncontagious as to prohibit the economic use of land lines to connect sensors to a central location. Examples include: refineries which may cover wide areas; battlefields where the land lines are prone to damage or sabotage; dock areas which have long linear lengths separated by water; portable hazards, such as a string of moving railroad cars with hazardous cargo or a fleet of hazardous cargo carrying trucks; and large ships where long and complex electrical or fiber optic line runs can be difficult, expensive, inconvenient to install on existing ships, and subject to damage just as the environmental information is needed.

II. OBJECTIVE

I am in the process of starting a Master's research project on the sensor data aquistion faced by international entrepreneurs in developing

countries. It's a case study of durability and usability of sensors.Please assist me with how to come up with research objectives

It will be difficult to comment on the specific objectives till the details about research area are known. The best approach would be to do a thorough literature review and identify topics that interest you within the broad area of your research. Please try to read all developments in your preferred area of research and identify the gaps in the literature, i.e., what topics have still not been studied. Try to identify specific questions that would advance the knowledge in your field, eg., you can establish objectives based on your geographical location or a specific category of small enterprises, depending on whether these topics have been studied before. Please ensure that your final objectives are achievable with the research infrastructure available to you.

1. Sensors can improve the world through diagnostics in medical applications
2. A smartsensor is a device that takes input from the physical environment and uses built-in compute resources to perform predefined functions
3. To provide Data security
4. To make acuuracy and task must be easy

III. SCOPE OF PROJECT

Smarter, more accurate, quicker, wireless, safer, self-learning, smaller, standardized, etc. Many sensor developments are underway that involve all of these points. As an (R&D) Engineer in the coming years, you can expect it to be more challenging to keep up to date on all developments and possibilities.

IV. RELATED WORK

1)XML SENSOR SYSTEM, A Sensor communication System comprising an array of Setlak .....382/115 Sensors adapted to transmit Sensor data in extensible markup Hales.2) ENVIRONMENTAL SENSOR DATA ACQUISITION SYSTEM, A system for controlling one or more groups of re motely located sensors, such as those capable of sensing environmental hazards, and reporting the findings of each group of sensors through a microcontroller3) REMOTE DISTRIBUTED ANTENNA SYSTEM, FarhadBarzegar , Branchburg , NJ (US) ; Paul Shala Henry , Holmdel , NJ (US) ; George Blandino , Bridgewater , NJ (US) ; Irwin4) LOW BATTERY WARNING SLENCING IN LIFE SAFETY DEVICES, John J. Andres, Chapel Hill, NC (US); Matthew J. Buchholz, Canon City, CO (US); Stan Burnette, Colorado Springs, CO (US); Travis Silver, Colorado Springs, CO (US)5)Model-driven data acquisition in sensor network, Model-driven data acquisition in sensor network.6) Internet protocol network, Chris deCenzo marc baum , paul DAWES.7) Sensor device and methods, Timothy rothgeb Kristina ganslejonathan joyce8) Device for agitating media, As far as media which are to be examined in the laboratory, for example for biological fermentation processes, and need to be kept in motion, this is done using laboratory shakers, In this feature, because the discharging circuit and the charging circuit can share the resistor in this structure, the number of components in the circuit can be reduced.9) Wireless multiplex data transmission system, Barbara Jones, Paul Smith.10) Remote elevator monitoring system Joseph Kroner, Samuel Talbot It is well known to utilize remote elevator11) Electrical power control and sensor module for a wireless, Raymond J. monad, Curtis E Quardy17 July 200112) Electrical lock control and sensor module for wireless system Raymond menard, 22 feb2002,controller causes gear 93 to rotate counterclockwise approximately 360 degrees,13) Temporary wireless sensor network system,Steven Sciamanna,30april 201014) Satellite trunked radio service system,C.Edward sigler,Richard s. Sweet 15) Satellite system utilizing a plurality of air interface,Peter d. karabanis,30 April 201616) Method and device for connecting functional units in a signalling system, German M. French,eiven Lewis17) Wireless takeover of an alarm system,Active sensors include some types of motion sensors. Active sensors detect energy input from a source other18) Ad-hoc wireless sensor package,stems, methods, computer-readable storage mediums including computer-readable instructions and/or circuitry for control of transmission to a target device19)Smart barrier alarm system, 15 Aug 2018,Home and corporate security systems have been around for years. Typically, such systems use barrier alarms such20)Doorbellbattery systems,Wordidnicholes,In some embodiments, the doorbell system can further comprise a second electrical wire that can electrically couple the battery pack to a power outlet. The doorbell system 21)Charging Method,22 July 2015, All of the features disclosed in this specification (including any accompanying claims, abstract and drawings)The present invention has been made to solve the foregoing problems. It is an object of the present invention to provide an electric power steering controller in which a smoothing capacitor is discharged with low power consumption to thereby shorten the

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discharge time, thus shortening the starting time22) Sensor interface method and apparatus,Robert J. Plott, 23) Sensor for monitoring fan operation in a PC or PC based system,Victor K. Picone,30 april 2017,http://patft.uspto.gov/netacgi/nphParser?Sect1=PTO1&Sect2=HITOFF&p=1&u=/netahtml/PTO/srchnum.html&r=1&f=G&l=50&d=PALL&s1=5448143.PN**. 24)**Motor control device,Diesel Kiki Co., Ltd.,2016-01-30, 25)Electric power steering controller,2013-06-10,Edward pollan,Priority to JPP2000-344081, B62D5/0457 Power-assisted or power-driven steering electrical, e.g. using an electric servo-motor connected to, or forming part of, the steering gear characterised by control features of the drive means as such

V. METHODOLOGY

A. Participants

This study used a survey analysis through Google Forms to test the proposed hypotheses which verified certain parameters in pre-test and post-test with participants containing both teachers and students. The participants were randomly selected without any bias. The survey was conducted within the city limits of Kalyan.

B. Materials Used

1.DC Power Supply
2.Rechargeable Batteries
3. Battery Pack
4. Voltage Regulator (optional)
5. 1k ohm Resistor
6. 2 x Diode (rated for a higher current than the power supply)
7. Male DC Connector
8. Female DC Connector

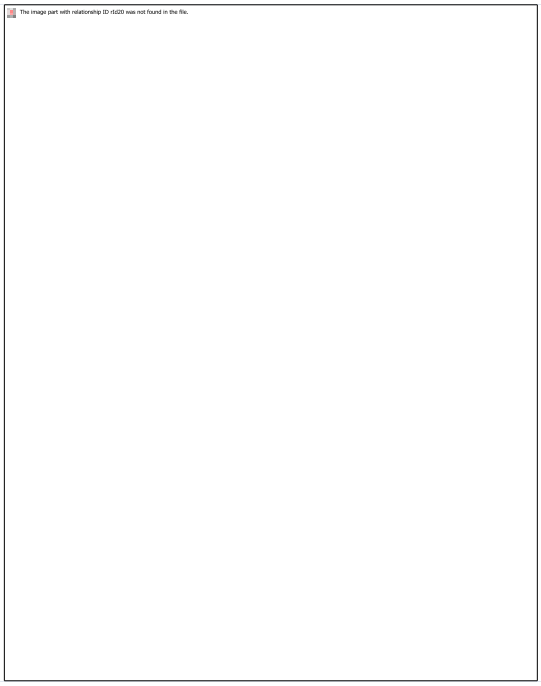
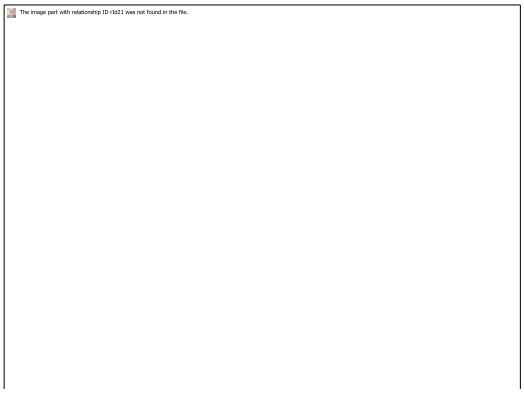


Fig.1

There are a lot of electronics that need to be reliably on all the time. Alarm clocks are a good example of this. If the power goes out in the middle of the night and your alarm doesn't go off, you could miss a very important appointment. The simplest solution to this problem is a battery backup system. That way, if the grid power drops below a certain threshold, the batteries will automatically take over and keep everything running until the grid power is restored



We Take A Small questionnaire survey and get 4 responses on it and There are 3 males and 1 female,etc so we can conclude that raw data,so we can try to performed to get best battery backup to sensor device.

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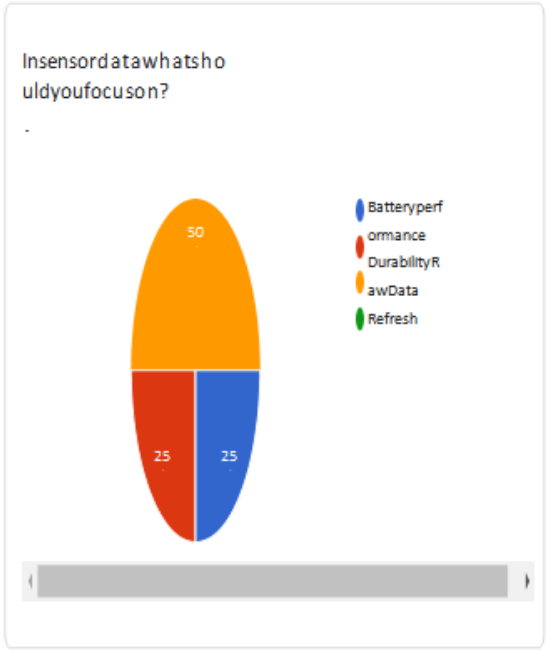
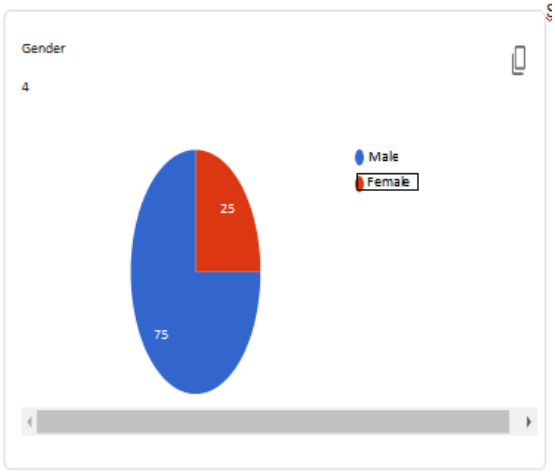


Sensor data is the output of a device that detects and responds to some type of input from the physical environment. The output may be used to provide information or input to another system or to guide a process. Sensors can be used to detect just about any physical element.



VI.CONCLUSION

Wireless sensor networks proliferate more and more in all social scopes and sectors. Such networks are implemented in smart homes, smart cities, security systems, medical resources, agriculture, automotive industry, etc. Communication devices and sensors of such networks are powered with batteries: the enlarging of battery life is a hot research topic. We focus on wireless sensor networks based on ZigBee technology. While sleep standard operation mode is defined for end devices, it is not the case for the rest of devices (routers and Coordinator), which usually always remain in active mode. We designed a formal optimization model for maximizing the enlarging of the battery life of routers and Coordinator, allowing us to delimit practical successful conditions. It was successfully tested with a standard ZigBee datasheet comprising technical data for sensors, routers, and coordinators. It was tested in a practical wireless sensor network assembly with XBee S2C devices. We derived, from the previous model, a novel but simple protocol of communication among routers and coordinators. It was tested in different use cases. We showed that when end devices generate traffic at regular intervals, the enlarging of the battery life of routers and Coordinator was possible only under certain use cases.

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GLOSSARY

1) 5G: Fifth generation mobile technology which provides broadband access
2) Haptics: sense of touch for interacting with digital devices
3) Microsoft HoloLens: A mixed/augmented reality head-mounted display manufactured and devised by Microsoft
4) T-test: Inferential statistic used to determine if there is a significant difference between the mean of two groups which may berelated to certain features

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