Human Activity Patterns In Big Data For Healthcare Applications

[1] Dr. Ar.Arunachalam, [2] Govind Kumar, [3] Kishore Kunal
[2] [3] UG Student, Department Of Cse, Biher, Chennai
[1] Hod, Department Of Cse, Biher, Chennai

Abstract: These days, there is a regularly expanding relocation of individuals to urban territories. Medicinal services administrations are a standout amongst the most testingviewpoints that is enormously influenced by the huge flood of individuals to downtown areas. Therefore, urban areas around the globe are putting vigorously in advanced change with an end goal to give more advantageous biological community to individuals. In such change, a great many homes are being outfitted with shrewd gadgets (e.g. brilliant meters, sensors and so on.) which produce monstrous volumes of fine-grained and indexical information that can be broke down to help keen city administrations. In this paper, we propose a model that uses brilliant home enormous information as methods for learning andfinding human movement designs for medicinal services applications. We propose the utilization of regular example mining, group investigation and forecast to quantify and dissect vitality use changes started by tenants' conduct. Since individuals' propensities are for the most part distinguished by ordinary schedules, finding these schedules enables us to perceive bizarre exercises that may demonstrate individuals' troubles in taking administer to themselves, for example, not planning sustenance or not utilizing shower/shower. Our places of business the need to dissect transient vitality utilization designs at the machine level, which is straightforwardly identified with human exercises. The information from keen meters is recursively mined in the quantum/information cut of 24 hours, and the outcomes are kept up crosswise over progressive mining works out.

I. INTRODUCTION

Studies demonstrate that by year 2050, 66% of the total populace will be living in urban regions. The request for human services assets will be incredibly influenced by this huge flood of individuals to downtown areas. This uncommon statistic change places colossal weight on urban areas to reexamine the conventional methodologies of giving wellbeing administrations to inhabitants. In reacting to the new needs and difficulties, urban areas are at present grasping monstrous advanced change with an end goal to help reasonable urban groups, what's more, give more advantageous condition. In such change, a large number of homes are being furnished with brilliant gadgets (e.g. savvy meters, sensors and so on.) which create gigantic volumes of fine-grained and indexical information that can be investigated to help human services administrations. Progression of huge information mining advances, which give methods for preparing immense measure of information for noteworthy bits of knowledge, can help us in seeing how individuals approach their life. For instance, observing the progressions of apparatus use inside a savvy home can be utilized to in a roundabout way decide the individual's prosperity in light of recorded information. Since individuals' propensities are for the most part recognized by ordinary schedules, finding these schedules enables us to perceive irregular exercises that may show individuals' challenges in taking look after themselves, for example, not get ready sustenance or not utilizing shower/shower. The basic connection between's apparatus use inside the brilliant home and routine exercises can be utilized by medicinal services applications to recognize potential medical issues. This is not just going to lighten the load on medicinal services frameworks, yet in addition giving 24 hour checking administration that consequently recognize ordinary and irregular practices for freely living patients or those with self-restricting conditions (e.g. elderly and patients with intellectual impedances).

II. LITERATURE SURVEY

AbdulsalamYassine received his Ph.D. and M.Sc. in Electrical andComputer Engineering from University of Ottawa, Canada in 2010 and 2004, respectively, his B.Sc. in Electrical Engineering from Beirut Arab University, Lebanon in 1993. Between 2001 and 2013, Dr. Yassine was member of the technical staff in the Wireless Communication Division at Nortel Networks and later at Alcatel-Lucent, Ottawa, Canada. From 2013 to 2016 he was a Post-doctoral fellow at DISCOVER Laboratory at the School of Electrical Engineering and Computer Science, University of Ottawa. Currently, he is an assistant professor at the department of software engineering at

Lakehead University. His research interests are mostly focused on Systems and Networks, Multimedia, Artificial Intelligence (AI), Smart Environments, and Smart Grids.

Shailendra Singh received the B.Eng. degree in Electronics Engineering from Pt.Ravishankar Shukla University, RAIPUR, India. He is currently pursuing his M.A.Sc. degree in Electrical and Computer Engineering from University of Ottawa, Canada. He has over 18 years of industry experience, and currently a Research Assistant at Distributed and Collaborative Virtual Environment Research Laboratory, School of Electrical Engineering and Computer Science, University of Ottawa. His research interests include Software Defined Networks, Artificial Intelligence (AI), Smart Environments, and Cyber-Physical Systems.

AtifAlamriis an associate professor in the Information Systems Department,College of Computer and Information Sciences, KSU. He is the Research Chair of Pervasive and Mobile Computing. His research interest includes multimedia assisted health systems, ambient intelligence, and service-oriented architecture. He was a Guest Associate Editor of IEEE Transactions on Instrumentation and Measurement, a Co-Chair of the first IEEE International Workshop on Multimedia Services and Technologies for E-health, a Technical Program Co-Chair of the 10[th]IEEE International Symposium on Haptic Audio Visual Environments and Games, and has been or is a Program Committee member of many conferences in multimedia, virtual environments, and medical applications.

M. S. Hossain,Recently, there has been a developing enthusiasm for utilizing smart home advancements for identifying human action patterns for wellbeing observing applications. The fundamental objective is tolearn inhabitants' behavioral attributes as an approachto comprehend and anticipate their exercises that could indicatehealth issues. In this area, we audit existing work in theliterature, which utilize brilliant homes information to break down users'behavior.Detecting human exercises in keen homes by meansof investigating savvy meters information is contemplated in [10].Thepaper proposes two ways to deal with investigate and identify user'sroutines. One approach utilizes Semi-Markov-Model (SMM)for informationpreparing anddistinguishing singular propensities and theother approach acquaints motivation based technique with detectActivity in Daily Living (ADL) which concentrates on temporalanalysis of exercises that happen all the while. Similarly,the work in [11] proposes human action location forwellness checking of elderly individuals utilizing classificationof sensors identified with the fundamental exercises in the brilliant home.Smart meters information are additionally utilized as a part of [4] for action recognitionusing Non-meddlesome Appliance Load Monitoring (NALM) and Dempster Shafer (D-S) hypothesis of confirmation. The studycollects pre-handled information from homes to decide theelectrical apparatus use examples and after that utilizes mama chine learning-based calculation to separate the major activities inside the home. The issue is that the investigation has toperform two stages on the information to totally confine the mainactivities. Misusing apparatus use designs and identifythem for sudden behavioral change is exhibited in [12]. Theaim of the examination is to give all day and all night monitoringsystem to help individuals' misery from Alzheimer orParkinson sickness at least interruption level. The studyuses classification procedures to recognize unusual conduct ofpersonal vitality utilization designs in the home. Other studiessuch as [13] [14] [15], and [16] despite the fact that don't use smartmeters information, they utilize Internet of Things (IoT) infrastructuresin keen urban areas for creating applications that screen andprovide wellbeing administrations for patients.

III. EXISTING SYSTEM

Existing concept deals with providing backend by using mysql which contains lot of drawbacks i.e data limitation is that processing time is high when the data is huge and once data is lost we cannot recover so thus we proposing concept by using Hadoop tool.

DRAWBACKS

* We can process limitation of data.
* We get results with take more time and maintenance cost is very high.

PRO**POSED SYSTEM**

Proposed concept deals with providing database by using hadoop with Sparkwe can analyze no limitation of data and simple add number of machines to the cluster and we get results with less time, high throughput and maintenance cost is very less and we are using joins, partitions and bucketing techniques in Hadoop.

ADVANTAGES

* No data loss problem

- Efficient data processing

ARCHITECTURE DIAGRAM
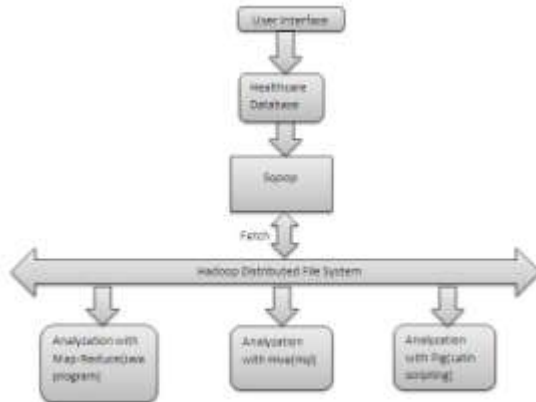
LIST OF MODULES
➢ Preprocessing Healthcare Database
➢ Storage
➢ Analyze Query
➢ Scripting Process
➢ Programming process

Preprocessing Healthcare Database:
   In this module, analyzing the data with different kinds of fields in Microsoft Excel then it converted into comma delimited format which is said to be csv(comma separator value) file and moved to mysql backup through Database.

Storage:
    The user takes mysql data into software tool by fetching the data through sqoop and stores in Hdfs.

Analyse Query:
   Using hive query language it can be analysed in different functions like partitioning, bucketing in structured table and produce in console output according to queries and analyzed in healthcare report based upon user activities.

Scripting Process:
   In this module, using pig scripting especially said to be an another easy tool in which more and more analytic can be done by unknown programmer also. Create relational table and store the data in hdfs .

Programming process:
   In this module, the data which is available in hdfs so while processing the data first internally it will going to convert into the (key, value) pair that input will goes to mapper then sorting and shuffling of data will happened and this intermediate data will going to pass to the reducer and internally combiner will combine the data of key and value data and finally it will going to pass to the hdfs for storage purpose.

IV. SYSTEM TECHNIQUES:
   MapReduce is a processing technique and a program model for distributed computing based on java. The MapReduce algorithm contains two important tasks, namely Map and Reduce. Map takes a set of data and converts it into another set of data, where individual elements are broken down into tuples (key/value pairs). Secondly, reduce task, which takes the output from a map as an input and combines those data tuples into a smaller set of tuples. As the sequence of the name MapReduce implies, the reduce task is always performed after the map job.
The major advantage of MapReduce is that it is easy to scale data processing over multiple computing nodes. Under the MapReduce model, the data processing primitives are called mappers and reducers. Decomposing a data processing application into mappers and reducers is sometimes nontrivial. But, once we write an application in the MapReduce form, scaling the application to run over hundreds, thousands, or even tens of thousands of machines

in a cluster is merely a configuration change. This simple scalability is what has attracted many programmers to use the MapReduce model.

ALGORITHM
- Generally MapReduce paradigm is based on sending the computer to where the data resides!
- MapReduce program executes in three stages, namely map stage, shuffle stage, and reduce stage.

MAP STAGE : The map or mapper's job is to process the input data. Generally the input data is in the form of file or directory and is stored in the Hadoop file system (HDFS). The input file is passed to the mapper function line by line. The mapper processes the data and creates several small chunks of data.

REDUCE STAGE : This stage is the combination of the **Shuffle** stage and the **Reduce** stage. The Reducer's job is to process the data that comes from the mapper. After processing, it produces a new set of output, which will be stored in the HDFS.

V. FUTURE ENHANCEMENTS

We will be using spark we can get result hundred times faster than Hadoop. The secret is that it runs in-memory on the cluster, and that it isn't tied to Hardtop's MapReduce two-stage paradigm. This makes repeated access to the same data much **faster**. **Spark** can run as a standalone or on top of Hadoop YARN, where it can read data directly from HDFS.

VI. CONCLUSION

To reach the 2050 energy efficiency as well as renewable energy targets and also for the future smart grids, effective use of smart metering technology is crucial. Rational energy use is a must for a larger group of companies, municipalities and public organizations because of the gain in importance of the energy costs and environmental issues. Hence proper information about their consumption is needed by them along with and its distribution between different activities. A total picture of their energy use, potential for savings, along with costs can be given to them by smart meter data analytics, enabling effective energy management. Smart meter sends energy consumption data at small intervals resulting in generating big data. Time and storage are two important factors that affect a lot on building any application.

REFERENCES

[1] N. United, "World urbanization prospect." United Nation, 2014.[Online]. Available: http://dl.acm.org/citation.cfm?id=308574.308676

[2] M. S. Hossain, "Cloud-supported cyber-physical localization framework for patients monitoring," IEEE Systems Journal, vol. 11, no. 1, pp. 118–127, March 2017.

[3] M. S. Hossain, G. Muhammad, W. Abdul, B. Song, and B. Gupta, "Cloud-assisted secure video transmission and sharing framework for smart cities," Elsevier, Future Generation Computer Systems Journal, April 2017.

[4] J. Liao, L. Stankovic, and V. Stankovic, "Detecting household activity patterns from smart meter data," in Intelligent Environments (IE), 2014 International Conference on, 6 2014, pp. 71–78.

[5] A. Yassine, A. A. N. Shirehjini, and S. Shirmohammadi, "Smart

meters big data: Game theoretic model for fair data sharing in deregulated smart grids," IEEE Access, vol. 3, pp. 2743–2754, 2015.

[6] A. Yassine and S. Shirmohammadi, "Measuring users' privacy payoff using intelligent agents," in 2009 IEEE International Conference on Computational Intelligence for Measurement Systems and Applications, May 2009, pp. 169–174.

[7] ——, "A business privacy model for virtual communities," Inderscience Publishers International journal of web based communities, vol. 5, 2009.

[8] Y. C. Chen, H. C. Hung, B. Y. Chiang, S. Y. Peng, and P. J. Chen, "Incrementally mining usage correlations among appliances in smart homes," in Network-Based Information Systems (NBiS), 2015 18th International Conference on, 9 2015, pp. 273–279.

[9] K. Jack and K. William, "The UK-DALE dataset, domestic appliance-level electricity demand and whole-house demand from

five UK homes," Scientific Data, vol. 2, no. 150007, 2015.

[10] J. Clement, J. Ploennigs, and K. Kabitzsch, Detecting Activities of Daily Living with Smart Meters. Springer, Germany, 11 2014, ch. Advance Technology and Societal Change, pp. 143–160. [Online]. Available: https://link.sp978-3-642-37988-8 10

[11] Q. Ni, A. B. Garca Hernando, and I. P. de la Cruz, "The

elderlys independent living in smart homes: A characterization

of activities and sensing infrastructure survey to facilitate

services development," Sensors, vol. 15, no. 5, pp. 11 312–11 362,

2015. [Online]. Available: http://www.mdpi.com/1424-8220/15/

5/11312

[12] C. Chalmers, W. Hurst, M. Mackay, and P. Fergus, "Smart meter profiling for health applications," in 2015 International Joint Conference on Neural Networks (IJCNN), July 2015, pp. 1–7.

[13] M. S. Hossain, "A patient's state recognition system for health care using speech and facial expression," Springer Journal of Medical Systems, vol. 40, no. 12, pp. 272:1–272:8, December 2016.

[14] M.S.Hossain and G. Muhammad, "Cloud-assisted industrial internet of things (iot)-enabled framework for health monitoring," Elsevier Computer Networks, vol. 101, pp. 192–202, June 2016.

[15] P. Pouladzadeh, P. Kuhad, S. V. B. Peddi, A. Yassine, and S. Shirmohammadi, "Mobile cloud based food calorie measurement," in 2014 IEEE International Conference on Multimedia and Expo Workshops(ICMEW), July 2014, pp. 1–6.