IOSR Journal of Engineering (IOSRJEN) *www.iosrjen.org*
ISSN (e): 2250-3021, ISSN (p): 2278-8719
PP 15-19

Position and Health Monitoring System Using Iot and Raspberry Pi

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Abstract:*Health Monitoring Is Playing An Important Role In Soldier's Life.More And More Users Or Soldiers Have Used Medical Iot Sensors Such As The Blood Pressure Sensors And Heartbeat Sensors.They Wear These Sensors, And These Sensors Will Monitor Their Health Data Every Time.The Collected Information Is Monitored In Iot.In The Emergency Case The Soldiers Can Press The Emergency Button For Help.If The Soldiers Were Fired The Help Command Is Given From The Iot Server To The Nearersoldier.Theiot Medical Sensors Will Send The Sensor Information Every Time And So The Sensor's Data Will Arrive At Tb-Class Or Pb-Class.The Traditional Storage Mechanismcan't Satisfy The Requirements.So We Use The Cloud Technologies In Proposed System.*

I. Introduction

The World Of Medical Science Is An Emerging Area That Has Accelerated With New Technologies And This Is The Time When The Vision Of "The Internet Of Things (Iot)" Has Turned Into Reality .The "Internet Of Things" - Iot Is A Concept And Model Consisting Of Sensors And Development Boards Interacting With Each Other Connected Over The Internet Without Any Human Intervention Resulting Into A More Intelligent System. In Simple Words, Iot Refers To A Network Of Objects All Connected To The Internet At The Same Time. The Main Principle Of Internet Of Things (Iot) Is That The Objects/Things I.E. Sensor Nodes Identify, Sense, Process And Communicate With Each Other .Iot Has A Substantial Influence In Healthcare Domain. Still, There Are So Many People Who Do Not Have Access To Quality Healthcare Services, Thus Remote Patient Monitoringbecomes A Need. Health Monitoring System For Soldier In War Field Is Shattered With The Lack Of Communication Between The Soldier And The Concern Person . Thus To Address This Problem Information Technology Becomes A Need. Healthmonitoring Services Can Be Improvea
Lot With Iot-Enabled Health Monitoring Devices.

II. Related Work

In Order To Monitor The Users/Patients' Health Information,We Use The Rules To Process The Massive Iot Medical Sensorsinformation. Rules Were Applied To Monitor Some Events At Theearly Era. When Some Events Occur, The Rule Engine Will Triggerthe Rules And Then Sent Some Alarm Information To Managers.But, Unfortunately, Most Of Sthe Rules Are Set By Administrators.Users Cannot Set Rule Themselves, That Is To Say That The Earlyrules Are Almost Are The Passive Rules. Besides, Owing To Thevery Few Rules. The Existing Rule Engines Only Need To Processfew Rules And They Need Not To Process Massive Rules. Forexample, The Most Important Rule Algorithm Rete [1] And Treat [2] Cannot Process Massive Semantic Medical Ruleswell. Why Do We Need To Process Massive Semantic Medicalrules? With The Development Of Web 2.0, Iot And Cloudcomputing Technologies, Most Of Users/Patients Would Like Toset Some Medical Rules By Themselves.

The Rete Algorithm Provides A Generalized Logical Description Of An Implementation Of Functionality Responsible For Matching Data Tuples (Facts) Against Productions (Rules) In A Pattern-Matching Production System (A Category Of Rule Engine).A Production Consists Of One Or More Conditions And A Set Of Actions Which May Be Undertaken For Each Complete Set Of Facts That Match The Conditions.Conditions Test Fact Attributes,Including Fact Type Specifiers/Identifiers.Rete Reduces Or Eliminates Certain Types Of Redundancy Through The Use Of Node Sharing.It Stores Partial Matches When Performing Joins Between Different Fact Types.Thisinturn Allows Production Systems To Avoid Complete Re-Evaluation Of All Facts Each Time Changes Are Made To The Production System's Working Memory.Instead The Production System Needs Only To Evaluate The

Changes (Deltas) To Working Memory.It Allows For Efficient Removal Of Memory Elements When Facts Are Retracted From Working Memory.It Is Widely Used To Implement Matching Functionality Within Pattern-Matching Engines That Exploit A Match-Resolve-Act Cycle To Support Forward Chaining And

Inferencing.It Provides A Means For Many-Many Matching ,An Important Feature When Many Or All Possible Solutions In A Search Network Must Be Found.

Quantification Is Not Universally Implemented In Rete Engines ,And Where It Is Supported, Several Variations Exist.A Variant Of Existential Quantification Referred To As Negation Is Widely,Though Not Universally,Supported , And Is Described In Seminal Documents.Existentially Negated Conditions And Conjunctions Involve The Use Of Specialised Beta Nodes That Test For Non-Exixtence Of Matching Wmes Or Sets Of Wmes.These Nodes Propagate Wme Lists Only When No Match Is Found.The Exact Implementation Of Negation Varies.In One Approach,The Node Maintains A Simple Count On Each Wme List It Receives From Its Left Input.The Count Specifies The Number Of Matches Found With Wmes Received From The Right Input.The Node Only Propagates Wme Lists Whose Count Is Zero.In Another Approach , The Node Maintains An Additional Memory On Each Wme List Received From Th Left Input. These Memories Are A Form Of Beta Memory And Store Wme Lists For Each Match With Wmes Received On The Right Input.Ifawme List Does Not Have Any Wme Lists In Its Memory,It Is Propagated Down The Network.In This Approach , Negation Nodes Generally Activate Further Beta Nodes Directly,Rather Than Storing Their Output In An Additional Beta Memory.Negation Nodes Provide A Form Of 'Negation As Failure'.

The Treat Algorithm Introces A New Method Of State Saving In A Production System Interpreters Called Conflict –Set Support.Also Presented Are The Results Of An Empirical Study Comparing The Performance Of The Treat Match With The Commonly Best Algorithm For This Problem,The Rete Match.This Supports An Unsubstantiated Conjecture Made By Mcdermott,Newell And Moore,That The State Saving Mechanism Employed In The Rete Match,Condition-Element Support ,May Not Be Worth While..

III. Proposed Approach

The Medial Sensors Have Been Used To Monitor People's Health. In This Paper, We Design A Kind Of Semantic Medical Monitoring System Model In The Cloud Based On The Iot Sensors. Lots Of Iot Sensors Will Accept The Massive Sensor Data Every Time. All These Massive Sensor Data Will Be Stored In The Hdfs And Some Information Will Be Stored Into The Huading-S, A Column-Based Database. All These Huading-S Data Will Connect To The Medical Rule Engine.

Health Monitoring Is Playing An Important Role In Modern Medicine. More And More Users Or Patients Have Used Medical Iot Sensors Such As The Blood Pressure Sensors And Heartbeat Sensors. They Wear These Sensors, And These Sensors Will Monitor Their Health Data Every Time.In Order To Monitor The Users/Patients' Health Information, We Use The Rules To Process The Massive Iot Medical Sensors' Information. Rules Were Applied To Monitor Some Events At The Early Era. When Some Events Occur, The Rule Engine Will Trigger The Rules And Then Sent Some Alarm Information To Managers. But, Unfortunately, Most Of The Rules Are Set By Administrators. Here We Use Raspberry Pi Which Act As A Mini Central Processing Unit So It Made A Iot To Use Easily. So This Paper Present A Novel, Low Cost, Stand Alone And Flexible Raspberry Pi Based Health Monitoring System In The Field Of Military. In Our Project We Analysis The Health Parameter Of The Soldier And Continuously Monitoring In The Iot. The Gps Used To Trace The Longitude And Latitude Position Of The Soldier.

Monitoring Is The Observation Of Condition Or One Or Several Medical Parameters Over Time.It Can Be Performed By Continuously Measuring Certain Parameters By Using A Medical Monitor.A Medical Monitor Or A Physiological Monitor Is A Medical Device Used For Monitoring.It Can Consists Of One Or More Sensors , Processing Components ,Display Devices As Well As Communication Links For Displaying Or Recording The Results Elsewhere Through A Monitoring Network.A Medical Monitor Can Also Have The Function To Produce An Alert To The Controller When Criteria Are Set,Such As When Some Parameter Exceeds Or Falls The Level Limits.Then The Gps Tracks The Latitude And Longitude Position Of The Respective Soldier.

The Hadoop Distributed File System (Hdfs) Is A Subproject Of The Apache Hadoopproject.This Is Designed To Provide A Fault-Tolerant File System Designed To Run On Commodity Hardware.The Primary Objective Is To Store The Data Reliably In The Presence Of Failures Including Namenodefailures,Datanode Failures And Network Partitions.Thenamenode Is The Single Point Of Failure For The Hdfs Cluster And A Datanode Stores Data In The Hadoop File Management System. The Hdfs Uses A Master/Slave Architecture In Which One Device (Master) Controls One Or More Devices (Slaves).The Hdfs Cluster Consists Of A Single Namenode And A Master Server Manages The File System Namespace And Regulates Access To Files.

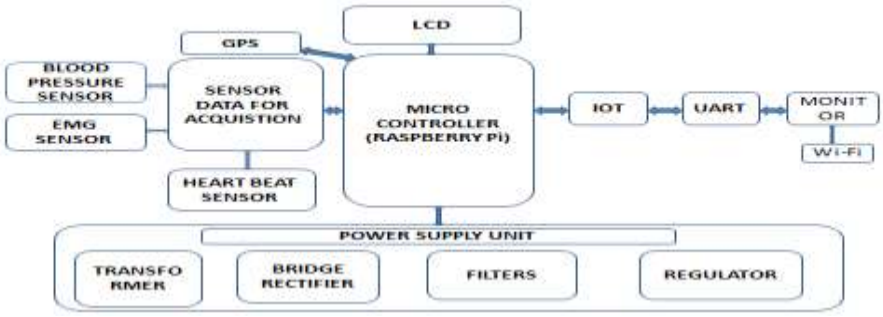


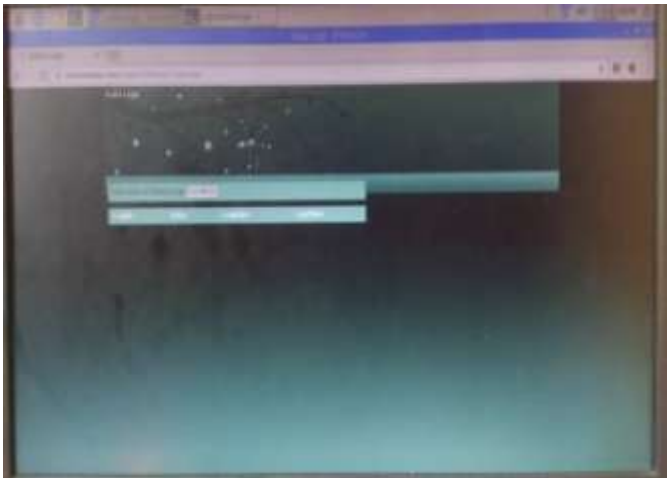
Fig 1 Proposed System Design

IV. System Implementation

The Raspberry Pi Is Defining The Whole Process.Initially The Input Is Given By The Sensors Which Are Connected To The User.All The Relevant Data Are Being Monitored And Stored In Both Raspbian Page And Iotpage.The Controller Cannot Accept The Data Which Is In Analog Form But The Sensors We Use Will Generate Signals Of Analogforms.In Order To Convert Them To Controller Acceptable Form We Go For Some Intermediates And Here We Use Spi (Serial Peripheral Interface).Since Spi Is Full Duplex And It Is Employed In The System For Communication Between Raspberry Pi And The Other Peripherals.Now The Data Is Accepted In Digital Form By The Controller And It Will Be Monitored.The Cloud Is Connected To The Raspberry Pi So That The Data Can Be Viewed In Both .By Using Uart (Universal Asynchronous Receiver Transmitter) Cloud Is Connected To The Monitor .The Threshold Value Of The Sensors Are Fed Into The Controller And It Continuously Monitors The Data . When The Value Gets Exceed Or Falls Below The Threshold Value Then The Alert Gets Displayed In Both The Pages.The Gps Is Also Connected To The Controller.When There Is An Occurance Of Panic Condition This Gps Comes Into Account Displaying The Latitude And Longitudinal Values Of That Specified Person Who Uses It.At Once The Gps Value Displayed Then The Location Of The Nearby Soldier To The Soldier In Help Wiil Be Tracked And Information Will Be Passed So That Immediate Help Can Be Given To The Soldier Who Is In Critical Situation.

V. Results

Raspberry Pi Home Page



VI. Conclusion

in This Paper, We Design A Kind Of Semantic Medicalmonitoring System Model In The Cloud Based On The Iot Sensors.In Our Framework, Massive Numbers Of Iot Sensors Will Acceptthe Massive Sensor Data Every Time. All These Structured Andsemi-Structured Iot Sensors Data Will Be Stored In The Databasehuading-S, And All The Iot Non-Structured Data And Huading-S Files Will Be Stored Into The Hdfs. All Structureddata That Stored In Thehuading-S Will Become The Dataconditions Of Billions Of Semantic Rules Set By Millions Of Usersor Patients. When The User's Or Patient's Health Indicators Dataaccepted From

The Iot Sensors Is Beyond The Normal Data Range,The Medical Rule Engine Will Send The Alert Information To Theusers Or Patients. Later, In This Paper We Design Two Algorithms.The First Is The Massive Semantic Medical Rules Processingalgorithm Without External Communication And The Second Isthe Massive Semantic Medical Rules Processing Algorithm Withexternal Communication. Finally, Our Simulation Experimentshows That The Algorithm 2 Is Better Than Algorithm 1.

References

[1] Forgy, C.L. Rete: A Fast Algorithm For The Many Pattern/Manyobject Pattern Match Problem [J]. Artificial Intelligence.19(1982).Pp: 17-37.

[2] D. P. Miranker. Treat: A Better Match Algorithm For Aiproduction Systems[C]. In Proceedings Of Aaai 87 Conferenceon Artificial Intelligence, Pages 42-47, August 1987.

[3] J.Blumenthal Et Al.,"Weightedcentriod Localization In Zigbee-Based Sensor Networks".In Ieee International Symposium On Intelligent Signal Processing.Pp.1-6 Oct 2007

[4] W.H.Kuo Et Al.,"An Intelligent Positioning Approach:Rssi-Based Indoor And Outdoor Localization Scheme In Zigbee Networks." In International Conference On Machine Learning Cybernetics,Qingdao,Pp.2754-2759,July2010