REAL TIME DEMENTIA PREDICTION SYSTEM USING INTERNET OF THING

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Abstract:- *Dementia is not a single disease; It's an overall term like heart disease that covers a wide range of specific medical condition. In order to overcome dementia and provide proper treatment to the elder people our project aims at developing an application for elderly age people dementia prediction where we can lively monitor the blood glucose, blood pressure, blood oxidation level which is measured using the sensors and if the condition is abnormal the SMS API will send a message to a mobile phone of the care taker or the old age home in-charge. The web application developed in this project displays the three parameters to the user on a computer that can be lively monitored using IOT. An efficient real time microcontroller is used to process the information and a wi-fi gateway is used to transmit the data wirelessly [1].*

Keyword: Dementia, SMS api, IOT, blood glucose, blood pressure, blood oxidation.

1. INTRODUCTION

Dementia refers to loss of memory characterised by impairment of brain functions. A group of symptoms include forgetfulness inability to speak or understand language, anxiety, mood swing and hallucination. Around 50 million people over world wide have dementia. The number will almost double every 20 years. It is more common in people over the age of 65but the onset of the disease can begin with when people are in 40's and 50's. Alzheimer's disease cases and clinical diagnosis at its early stage is extremely difficult.[8][9].
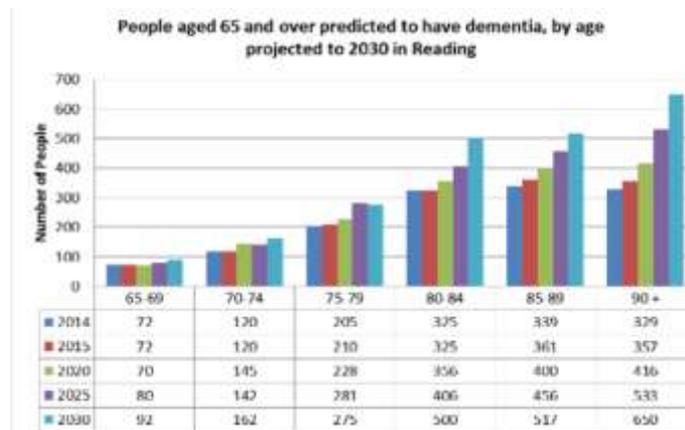

fig. 1 population survey graph

The above graph shows the rate of increase of dementia for old age groups above 65 years. In 2014, people at age group between 65 to 69 are affected overall 72 out of 100. People at age group between 90 are in increased ratio. Therefore, the graph infers the increased rate of disease due to increase in rate of age among individuals [2][3].

In this paper mainly aims in providing treatment to the elderly people by monitoring lively blood glucose, blood pressure, blood saturation level, heart rate, temperature by using sensor where the abnormal conditions can be indicated to the care taker by using SMS API system. the important parameters include IOT monitoring, microcontroller data processing and Wi-Fi gateway for the transmission of signals.

2. TYPES OF DEMENTIA

There are different kind of dementia which is mostly occurred to nerve cell damage and some pathological condition .

- ALZHEIMER'S DISEASE**:** there is no exact cause for this disease but person will have a amyloid plaques and tangles in the brain.[4]
- CREUTZFELDT-JAKOB DISEASE**:** They are triggered by prion proteins. A prion proteins is neither a virus nor a bacterium .One of the type of CJD is bovine spongiform encephalopathy(BSE).
- DEMENTIA WITH LEWY BODIES**:** Collections of protein that develop inside nerve cell prevent them from functioning properly .Similar to Alzheimer but it also may include sleep disturbances ,visual hallucinations and unsteady walking pattern.
- FRONTOTEMPORAL DEMENTIA**:** It triggers a change in behaviour how they related to others(i.e. movement and language).It involves loss of nerve cell.
- PARKINSON'S DISEASE: It is a motor system disorder .The sign includes trembling especially tremor in hand .It also includes difficulty in sleeping and speaking.[5]
- HUNTINGTON'S DISEASE: It is a genetic disorder which results from a defect from chromosome 4 .The person may experience on declining in thinking and reasoning skill and problem with coordination .MIXED DEMENTIA: This disease has condition more than one cause(lewy bodies along with Alzheimer's or vascular dementia)
- NORMAL PRESSURE HYDROCEPHALUS**:** It happens when a build-up of a cerebrospinal fluid causes pressure in the brain .The problem includes memory loss, problem with coordination and inability to control urination (common among older people).
- VASCULAR DEMENTIA**:** It is also called as post-stroke dementia when there is bleeding or vessel blockage in the brain .Early symptoms include inability to organise, plan and /or make decision.
- WERNICKE-KORSAKOFF SYNDROME**:** Result from a chronic deficiency of vitamin B1 or thiamine .The main effects of this syndrome cause by alcohol and poor diet. The chief symptoms are long term memory gap which can be filled or try to fill in with incorrect version what they happen to think. This is unintentional lying is known as confabulation.

3. METHODOLOGY

In order to overcome problems faced by dementia patient and to provide treatment to the elder people our project focuses with the help of MQTT mobile application. The MQTT is a light weight message queueing and transport protocol where it provides asynchronous communication takes place .A Wi-Fi enabled system provides a cloud storage that enables web application development using NODE JS as a software tool. An SMS API are used to allow web applications to easily send and receive text message through logic written for standard web frameworks .Message signal provides alert due to abnormal conditions of patient while live monitoring using IOT. The periodical recording of the abnormal conditions are inferred through graph generation.
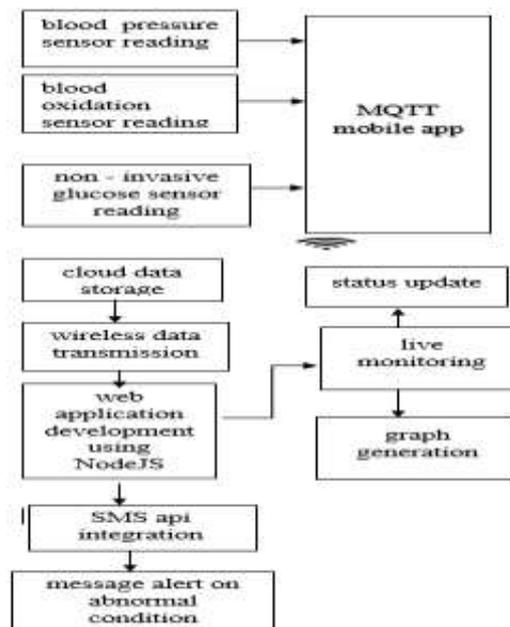

fig. 2 Methodology

4. REQUIREMENTS

Hardware Requirements

- Pc
- RAM: 4GB
- Harddisk: 1TB
- Processor:i5

Software Requirements

- Visual Studio
- XAMPP
- Node

5. EXPECTED RESULT

To check three parameters such as blood pressure level , blood glucose level, blood oxidation level and to save the life elder age persons. These parameter help for the doctor for the easy prediction of diseases and gives the app notification to the user. Some of the advantage of the proposed system are cheap and effective solution for dementia disease, Provides alert to the care taker of the elder age persons, Easy for doctor to predict the diseases, Automatic SMS option for emergency situation ,App notification to the user.

6. ACKNOWLEDGEMENT

7. APPLICATION

1. Used for home with elder persons.
2. Used for NGO's taking care of elder age persons.
3. Used for physically challenged elder age persons.

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