

# High Alert in flood situation

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## ABSTRACT

Many of the bridges in cities designed on the stream are subject to deterioration as their life is invalid however they're still in use. they're dangerous to bridge users. because of significant load of vehicles, high water level or pressure, significant rains these bridges could get collapse that successively results in disaster. So, these bridges need continuous observance. Thus we send to proposing a system that consists of weight detector, water level purpose contact detector, Wi-Fi module, Arudino microcontroller. This method detects the load of vehicles, water level and pressure. If the water level, water pressure and vehicle load on the bridge crosses its threshold worth then it generates the alert through buzzer and motorcar barrier.

**Keywords:** IoT, Bridge monitoring, alert

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## I. INTRODUCTION

Now-a-days attributable to incidents of bridges or bridge piers severely broken by hurricane floods and earthquakes of times rumored annually. additionally to floods, typhoons and earthquakes may cause unfortunate accidents of fires, explosive gas leak and liquid chemical leak. totally different completely different} disasters and broken sites need different skilled disaster rescue data and instrumentation so as to realize optimum rescue results. However, lack data of data of knowledge} regarding the harm website will impede information management at the rescue center and operation, leading to poor rescue potency or maybe preventable causalities. Engineering structures ar chargeable for economical growth, development and evolution of the state. The structure includes buildings, dams, roads and bridges that have an effect on day to day a lifetime of folks. together with their own weight they're conjointly plagued by the surroundings. Scour is additionally one in all the most important causes for bridge failure. In 2016, a bridge collapsing incident occurred on Savitri stream in Mahad district because of sudden floods within the stream. with the exception of this, downside of collapsing might arise on landing field boarding bridges. This paper introduces bridge observation system that monitors the bridges through sensors and generate the alert. It primarily focuses on aging bridges.

## INTERNET OF THINGS (IoT)

The Internet of Things (IoT) is that the network of physical objects that contain embedded technology to speak and sense or act with their internal states or the external setting. ThistermwascoinedbyKevinchoreographerofProctera ndGamble, laterMITsAuto-IDCenterin1999.

### Components of IoT:

#### 1. Sensors:-

According to (IEEE) sensors will be outlined as: associate device that produces electrical, optical, or digital knowledge derived from a soundness or event. knowledge created from sensors is then electronically remodeled, by another device, into info (output) that's helpful in deciding done by intelligent devices or people.

#### 2. Networks:-

The second step of this implantation is to transmit the signals collected by sensors over networks with all the various elements of a typical network as well as routers, bridges in numerous topologies, as well as LAN, MAN and WAN. Connecting totally different the various} elements of networks to the sensors will be done by different technologies as well as Wi- Fi, Bluetooth, Low Power Wi-Fi , Wi-Max, regular local area network , future Evolution (LTE) and also the recent promising technology of Li-Fi

(using lightweight as a medium of communication between the various elements of a typical network as well as sensors). Layers of IoT: There are unit principally 3 IoT layers: one. Sensor Layer: principally liable for sensing pressure of water, level of water within the watercourse and cargo on bridges. 2. Network Layer: it's principally liable for sending knowledge from sensing element to bridge observation system. 3. Application Layer: it's principally liable for sending knowledge from Bridge observation System to Admin/users.

## II. LITERATURE SURVEY

### **To find and find structural damages in bridges exploitation IOT:-**

Crack is that the most typical threat to the protection of bridges. This paper analyzed the sensible application price of the net of Things technology within the crack identification of bridge structures and established a bridge structure health watching system supported the net of Things technology. On this basis, this paper conjointly studied a digital and intelligent bridge crack detection technique to enhance the potency of bridge safety identification and reduced the danger issue [1].

He primary objective of this task is to make an inexpensive bridge chase machine for developing international locations like Bharat. This project is aim to alter the system for choosing bridge chase devices. several bridges inside the Bharat ar obsolete or structurally deficient to soundly increase the lifetime of those bridges, review would be important. Bridge engineers have several duties and it's miles impracticable to expect one to understand. Our device can sense the crack within the bridge and signal can be given to manipulate space right away to prevent cars [2].

This study to investigate the determination of the brink of vibration derived from the vibration of the rail, once the train passes. Vibration thresholds ar used for the method of railway arrival detection during a vibration primarily based latch system. the brink of the detector node are sent to the arranger because the call of the closing of the railway gate. during this analysis is thought what proportion vibration once there's no train or once the train passes and also the train time passes [3].

The following paper is projected and developed design for bridge watching on a safer level taking into thought the varied parameters that ar concerned within the structural health of bridges. A 3-level distributed structure is adopted within the watching system, which incorporates a central server, intelligent acquisition node, and native controller. Acquisition nodes ar set across the bridge. One native controller manages all the acquisition nodes. each acquisition node has eight channels, which might simply and about sample the deviation of the road of sight, the vibration of the bridge because of a load of varied transports and yet the water level that once cross a threshold cause a flood [4].

In this paper, we have a tendency to highlight injury detection application; particularly we have a tendency to have an interest on Bridge Health watching Application. Environmental watching applications have a vital importance for the corporate as a full. The

network of a while not son detector is that the adopted technology to succeed in this goal. So, it ought to be capable to quickly offer, the knowledge regarding the physical phenomena occurring in its surroundings. during this paper, our principal objective is to find and to find damages in bridges by the utilization of wireless detector network. net of things presents an answer for injury in bridge of health watching [5].

There is a requirement to style a system which is able to endlessly monitor condition of bridges. it's helpful for public safety and reduction in human losses. Such system can facilitate in disaster management and recovery. IoT-based bridge safety watching system is developed exploitation the WSN Technology. this method consists of: watching devices put in within the bridge surroundings, communication devices connecting the bridge watching devices and also the cloud primarily based server, a dynamic info that stores bridge condition knowledge, cloud primarily based server calculates and analyzes knowledge transmitted from the watching devices. this method will monitor and analyze in real time the condition of a bridge and its surroundings, together with the water levels and different safety conditions. This paper presents a comprehensive survey of SHM exploitation WSNs outlining and formula like injury detection and localization, network style challenges and future analysis direction.

### **To detect water level under the bridge that can help to take important decisions during flood conditions:-**

Many of the bridges in cities engineered on the stream area unit subject to deterioration as their life is expired however they're still in use. they're dangerous to bridge users. because of serious load of vehicles, high water level or pressure, serious rains these bridges could get collapse that successively ends up in disaster. So, these bridges need continuous watching. therefore we have a tendency to area unit proposing a system that consists of a weight sensing element, water level purpose contact sensing element, Wi-Fi module, and Arudino microcontroller. this method detects the load of vehicles, water level, and pressure. If the water level, water pressure and vehicle load on the bridge cross its threshold price then it generates the alert through buzzer and machine barrier. If it's necessary, then the admin assign the task to the staff for maintenance [8].

In this paper, first, a replacement sensing device that may at the same time monitor urban flash floods and hold up has been bestowed. This sensing device relies on the mix of supersonic vary finding with remote temperature sensing, and might sense each phenomena with a high degree of accuracy, employing a combination of L1-regularized reconstruction and artificial neural networks to method measuring information. Second, corresponding algorithms are enforced on a low-power wireless sensing element platform, and their performance in water level estimation during a six months check involving four completely different sensors is illustrated. The results demonstrate that urban water levels may be faithfully calculable with error but a pair of cm, which the preprocessing and machine learning schemes will run in real time on presently out there wireless sensing element platforms [12].

In this paper, we have a tendency to area unit planning to monitor the parameters of the bridge which is able to facilitate US to take care of the bridge and find the faults. There all time safety analysis of bridges includes the

subsequent components: (1) period analysis of weight. (2) period analysis of flood and real time detection of cracks water level.(3)The sensors can find the condition of the dynamic parameter of the bridge the great results show that the projected systems have potential to produce real time data of water level. additionally it'll unceasingly monitor for Water level below the bridge and keep a track of flood like state of affairs to avoid accidents. the most aim of this project is to reduce the structural damages and forestall the life and property [7].

#### **To measure the Load handling capability of the bridge:-**

This paper proposes a system which will tackle this downside, victimisation the model of net of Things (IoT) and mixing multiple autonomous sensors, like infrared sensing element, unhearable sensing element and cargo cell, to observe every household's foodstuff. The output of the machine is information that may be displayed on user's phone, so as to assist user's monitor the number of food left on their storage [10].

Many of the bridges in cities designed on the watercourse area unit subject to deterioration as their time period is expired however they're still in use. they're dangerous to bridge users. because of serious load of vehicles, high water level or pressure, serious rains these bridges might get collapse that successively ends up in disaster. So, these bridges need continuous observance. thus we tend to area unit proposing a system that consists of weight sensing element, water level purpose contact sensing element, Wi-Fi module, Arudino microcontroller. this technique detects the load of vehicles, water level and pressure. If the water level, water pressure and vehicle load on the bridge crosses its threshold worth then it generates the alert through buzzer and car barrier [4].

#### **To monitor and analyze in real time condition and environment of bridge to loss of living and finances:-**

It is necessary to watch and maintain the discharge current at the lower aspect by engineers and electrical firms, this paper describes the highlighted ideas of discharge current for general electrical devices or instruments. additionally to the current, numerous ways of mensuration discharge current ar reviewed. It additionally reports the present sensors in accordance with principle so as to say their positives and negatives. Whereas a number of the present sensing techniques rise with the new principles, for instance Hall-effect detectors and fluxgate sensor or advanced technologies like generator resistance result sensing and fiber-optic techniques which give alternatives in current sensing, virtually at cheap worth than ancient techniques similar to shunt resistors. additionally to the current, the system are changed with transmitter block and receiver block that ar connected to discharge current detector and remote controller severally. this will be used for processing and storage of information [9].

Now a- days true of Traffic is obtaining intense day by day. The traffic is major issue that contributes to the delay in reaching destination. This delay is a matter of life and death just in case of emergency vehicles like car, fireplace Brigade etc. This paper proposes associate approach that controls the Traffic Signals in order that once the emergency vehicle is on its thanks to a selected destination. the situation of car is half-tracked by victimization GPS. This location is send to the appliance. the appliance performs the

formula with the assistance of this knowledge and also the Google map. It controls the signals on its path. we have a tendency to additionally introduced a replacement blue light-weight to light to avoid the chaos within the mind of the folks waiting at the light. on top of survey shows the literature review for our system, from this review we have a tendency to have gotten plan for our project. In some paper, from this review we have a tendency to were studied the uses of sensors that were employed in totally different system. in keeping with this paper review, we have a tendency to additionally grasp {different totally different completely different} ways and different sensors accustomed monitor bridge. With the assistance of this study, it is straightforward to implement our project supported totally different sensors [13].

### **III. CONCLUSION**

The paper reports an IoT based system for the Bridge Health Monitoring, Damage and Flood Detection. Biomedical sensors provide water level, current sensor value, vibration sensor value, and load cell and gate status of every bridge to control room. This technology can be helpful to provide the accurate condition of the particular Bridge. Thus we can conclude that this system will act as a lifeguard to every person travelling from particular Bridges.

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