INTERNET OF THINGS (IOT) DEVICE ENABLED USER PROGRAMMABLE ACOUSTIC SENSITIVE ACTIVATING OCCURRENCE IN CLOUD ENVIRONMENTS

N.Hanuman Reddy, K. L.Raghavender Reddy

Department of Computer Science & Engineering
Vardhaman College of Engineering, Hyderabad, India

T.Nirmala, A.Gayatri

Department of Computer Science & Engineering
MLR Institute of Technology, Hyderabad, India

ABSTRACT

Acoustic sensitive created by user and programmed into an Internet of Things (IoT) device. A set of programs along with data structures related to acoustic sensitive activating occurrence to the IoT device. When IoT device detects an occurrence of the acoustic sensitive activating occurrence, the IoT device emits acoustic sensitive related to activating occurrence. Users are able to customize acoustic sensitive to recognize a particular occurrence of signals. Acoustic sensitive can be programmed using different IoT devices in a various formats and transmitted to other IoT device. Acoustic sensitive activating occurrence can modulate an acoustic sensitive based on peripheral variable in various IoT devices in the cloud environments.

Key words: Internet of Things Devices, Acoustic Sensitive, Cloud Environments.

1. INTRODUCTION

In recent attempts, various researchers worked on securing short range devices communication based on capturing acoustic sensitive from smart phones. But when it comes to capturing acoustic sensitive in cloud where different IoT enabled devices releases sensitive information, attempts in this regard are very less. The further part in introduction presents the attempts made on IoT devices programming, activating acoustic sensitive, securing short range communication in smart phones by sensing acoustic responses in IoT enabled devices etc.

Bingsheng Zhang, Qin Zhan, Si Chen in their paper proposed *priwhisper* —a keyless secure acoustic short-range communication system for smart phones[1] which is designed to provide a software-based solution to secure smart phone communication without the key agreement phase.

Cloud computing can merge different types of IoT devices and also supports big data IoT analytics [7]. As far as now, only low level programming models or languages are considered for IoT programming and integration of devices. More focus on High level languages yet to be increased to support IoT programming.

IoT ecological system has devices as main users. Hence the crucial part of IoT is device to device communication where devices communicate with themselves without the involvement of any one. IoT devices communicate with each other involving collaboration to share or gather or forward [8] acoustic sensitive information which will be transformed into intelligence depending on IoT programming done among different devices with different network characteristics etc

2. PROPOSED SYSTEM

In the proposed system acoustic sensitive can be programmed using different IoT devices and in various formats. Acoustic sensitive are programmed by smart phones keypad. The smart phone comprises keypad and acoustic sensitive can be programmed with smart phone keypad. Acoustic sensitive comprises a sequence of key numbers representing different harmonious tone. Acoustic sensitive are programmed with a computer system.

An IoT device can transmit acoustic sensitive to another IoT device for storing and emitting acoustic sensitive. The IoT device further includes an ability to transmit a user-programmed data structure to another IoT device, where IoT device senses a presence of acoustic sensitive activating occurrence, the other IoT device emits the acoustic sensitive related to activating occurrence. The IoT device able to receive from another IoT device acoustic sensitive, user programmed data structures pertaining to a particular acoustic sensitive activating occurrence or signals.
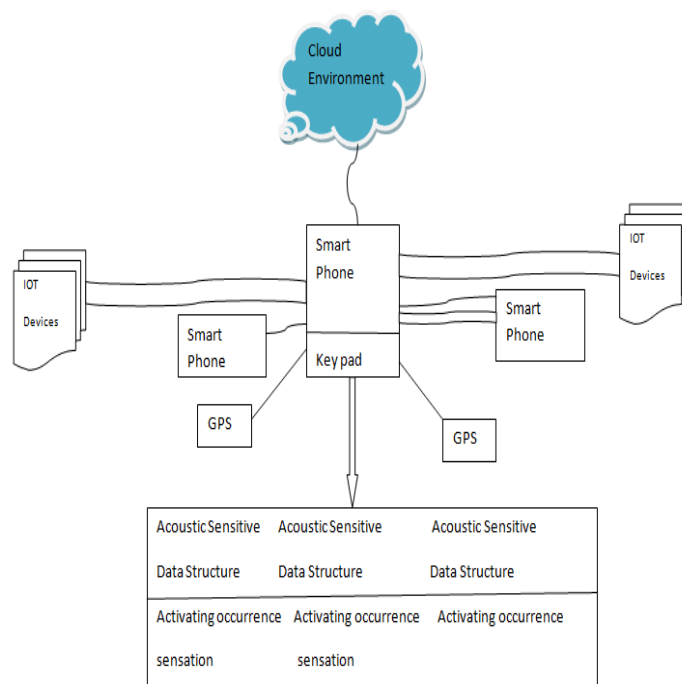

Figure 1 IOT device enabled user programmable acoustic sensitive framework

Acoustic sensitive activating occurrence has the ability of modulating an acoustic sensitive from an peripheral variable. The peripheral variable comprises global positioning systems, distance information and directional information and retail information.
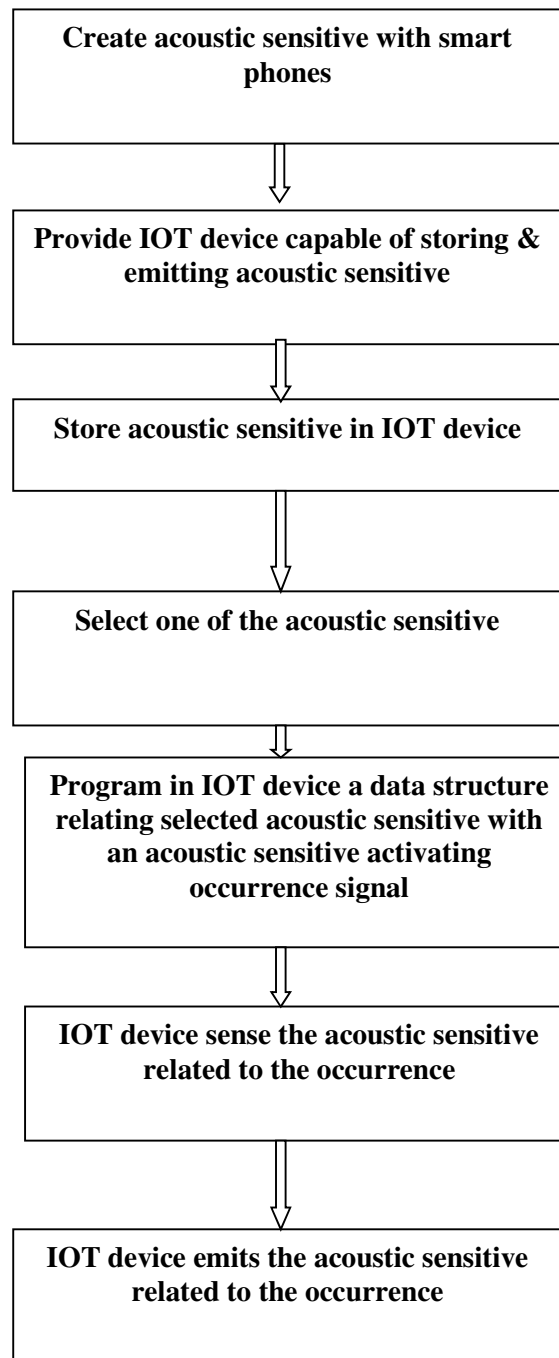
```
┌─────────────────────────────────┐
│  Create acoustic sensitive with │
│           smart phones          │
└─────────────────────────────────┘
                 ↓
┌─────────────────────────────────┐
│ Provide IOT device capable of   │
│ storing & emitting acoustic     │
│           sensitive             │
└─────────────────────────────────┘
                 ↓
┌─────────────────────────────────┐
│ Store acoustic sensitive in IOT │
│            device               │
└─────────────────────────────────┘
                 ↓
┌─────────────────────────────────┐
│ Select one of the acoustic      │
│           sensitive             │
└─────────────────────────────────┘
                 ↓
┌─────────────────────────────────┐
│ Program in IOT device a data    │
│ structure relating selected     │
│ acoustic sensitive with an      │
│ acoustic sensitive activating   │
│        occurrence signal        │
└─────────────────────────────────┘
                 ↓
┌─────────────────────────────────┐
│ IOT device sense the acoustic   │
│ sensitive related to the        │
│          occurrence             │
└─────────────────────────────────┘
                 ↓
┌─────────────────────────────────┐
│ IOT device emits the acoustic   │
│ sensitive related to the        │
│          occurrence             │
└─────────────────────────────────┘
```

Figure 2 Steps for creating an acoustic sensitive

User programming acoustic sensitive comprising steps of creating an acoustic sensitive, offering a IoT device capable of storing and emitting the acoustic sensitive, storing acoustic sensitive in the IoT device and programming in the IoT device a data structure relating to the acoustic sensitive with an acoustic sensitive activating occurrence. When IoT device senses an occurrence of the acoustic sensitive activating occurrence, the IoT device emits the acoustic sensitive related to activating occurrence.

The proposed system offers a system that permits formation of exclusive acoustic sensitive by users, rather than limiting to one, or a few, pre-programmed acoustic sensitive in the IoT

device. Users can customize acoustic sensitive that are identifiable that are associated with activating occurrence from a particular IoT device in the cloud environment. The transmission of acoustic sensitive for use with other IoT devices allows in different formats with various IoT devices. This feature can be used in various applications like smartphones, email, messaging services, scanners and other systems using acoustic sensitive applications.

3. CONCLUSION

The discussion in this paper is about proposing that acoustic sensitive can be programmed using different IoT devices and in various formats. An IoT device can transmit acoustic sensitive to another IoT device for storing and emitting acoustic sensitive. The transmission of acoustic sensitive for use with other IoT devices allows in different formats with various IoT devices further which can be used in various applications like smart phones, email, messaging services, scanners and other systems using acoustic sensitive applications. Further work is to identify efficient data structures for programming acoustic sensitive within different IoT devices and analyze how acoustic responses would be activated and captured in different IoT enabled devices for use in various applications like email, messaging services etc.

REFERENCES

[1] Zhang, Bingsheng, et al. ${\ssr {PriWhisper}} $: Enabling Keyless Secure Acoustic Communication for Smartphones. *IEEE internet of things journal* 1.1 (2014): 33-45.

[2] B. Zhang *et al*, "${ssr{PriWhisper}}$: Enabling Keyless Secure Acoustic Communication for Smartphones, in *IEEE Internet of Things Journal*, 1(1), pp. 33-45, Feb. 2014.doi: 10.1109/JIOT.2014.2297998

[3] S. Chen, M. Li, Z. Qin, B. Zhang and K. Ren, AcousAuth: An acoustic-based mobile application for user authentication, *2014 IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS)*, Toronto, ON, 2014, pp. 215-216.

[4] S. Goel and R. Negi Guaranteeing Secrecy using Artificial Noise IEEE Transactions on Wireless Communications 7(6) pp.218021892008.

[5] Google Google Wallet URL: http://www.google.com/wallet/ index. Html accessed: 2014-01-23.

[6] B. Zhang Z. Qin S. Chen M. Li C. Wang and D. Ma Pri Whisper: Enabling Keyless Secure Acoustic Communication for Smartphones IEEE Internet of Things Journal 2014

[7] S. Nastic, S. Sehic, M. Vögler, H. L. Truong and S. Dustdar, PatRICIA -- A Novel Programming Model for IoT Applications on Cloud Platforms, *2013 IEEE 6th International Conference on Service-Oriented Computing and Applications*, Koloa, HI, 2013, pp. 53-60.

[8] Venkata Siva Rao. A, M. Srinivasa Rao and K. Pushpa Rani, Shrewd Street Dividers Driven By IOT Technology, International Journal of Civil Engineering and Technology, 8(7), 2017, pp. 385–389.

[9] Hariharr C Punjabi, Sanket Agarwal, Vivek Khithani, Venkatesh Muddaliar and Mrugendra Vasmatkar, Smart Farming Using IoT, International Journal of Electronics and Communication Engineering and Technology, 8(1), 2017, pp. 58–66.

[10] S. Nithya, Lalitha Shree, Kiruthika and Krishnaveni, Solar Based Smart Garbage Monitoring System Using IOT, International Journal of Electronics and Communication Engineering and Technology, 8(2), 2017, pp. 75–80.

[11] O. Bello and S. Zeadally, Intelligent Device-to-Device Communication in the Internet of Things, in *IEEE Systems Journal*, 10(3), pp. 1172-1182, Sept. 2016. DOI: 10.1109/JSYST.2014.2298837.