

Detection Technique for mobile devices in Mobile Ad Hoc Network

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Master of Science in Computer Science and Engineering

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APPROVAL


This Thesis titled "Detection Technique for mobile devices in Mobile Ad Hoc Network", submitted by Jannah Mohammad (ID:173-25-633) to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of M.Sc. in Computer Science and Engineering and approved as to its style and contents.

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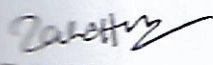

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DECLARATION

I hereby declare that, this thesis has been done by me under the supervision of **Dr. Sheak Rashed Haider Noori**, Associate Professor, Department of CSE Daffodil International University. Thanks for ICT ministry give me research 2017-2018 fellowship for complete this thesis.

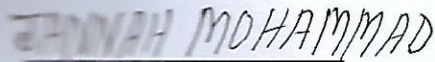
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Abstract

Mobile Ad Hoc Network (MANET) is a wireless communication system network which is self-configurable, infrastructure-less and connect mobile devices wirelessly. Mobile ad Hoc network is independent and dynamic and autonomous technology. When the existing network fails then we can apply Mobile Ad Hoc Network. In this paper we examined the basic working principle of Mobile Ad hoc network and later on detection of devices. Apart from that, we also discussed about the suitable frequency rate and wireless protocol for this MANET system. Analysis specific protocol and develop algorithm. Design circuit and test in circuit board for detect device. Analysis mathematics for remove noise. Getting better efficiency design a small module which call network detect device. Identify the specific protocol which enable range can detect device. All mathematical term will improve efficiency. The method apply for specific system development. Give the description of the present market in our country. Analysis the cost and minimize the cost for real time implementation. Statically describe why we need this system. Collect the previous data when system fails. Some way apply for emergency conduct. How operation system work for mobile device? Collect sample pattern and circuit design. Detail discuss part by part thesis contribution (detection ways). This thesis will be part of national development.

Keyword: Dynamic topology, Detection algorithm, IP calculation

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CHAPTER 1

Introduction

1.1 Overview

Detection system is a process when detection methods apply in a system the method identify in the object. Scientific techniques apply for detected object(laptop, mobile, smart watch).Mobile Ad Hoc Network (MANET) is a wireless communication system network which is self-configurable, infrastructure-less and connect mobile devices wirelessly. Develop a MANET system need to explain its types and real life implement example. It is necessary to discuss MANET security and implement technique. Security technique is important because of there is no network develop without security now a days. Develop a system for connect network there two types one is wire base and the other is wireless. This thesis topic is base in wireless system Ad Hoc Network and identify detection techniques for Mobile device detect.

1.2 Motivation

This thesis explain at first how to develop a MANET system. When network connection fail then we need another system to communicate. Suppose bad weather such as bumi compo, flood, overflow etc. This is one of the main reason for develop MANET. Then we need to detect device(Mobile).The Mobile detector device also use exam hall to abode unexpected behavior. Network technology update day by day now a day. Network system essential for any organization or government. Must provide those security. Also proper method apply There are many device allow to add network laptop, mobile, computer etc. Identify mobile device in here . Many types of mobile such as Smart phone ,black bray , iPhone etc .those can detected. Two types of wireless network one is culler and the other mobile Ad hoc network. Culler network is permanent solution. Sometime we need temporally solution base Ad hoc network for survive emergency. It follow LAN prospectus. But another advantage is it can also use WAN prospectus.

1.3 Rationale of the Study

The main focus of this thesis detection technique implement . If point out of this thesis main term.

1. Create MANET system low cost. When this system government use they have own access.
2. This network system no need tower.
3. This detection device implement here is also cheap.
4. Provide a solution for detect 3G,4G,5G this detection device.
5. It is modern process.

1.4 Research Objective Analysis

Assume the objective need to analysis research questions and briefly describe. The steps

1. Data sharing
2. Digital design
3. Security

1.5 Expected Output

Discuss and develop this system for Master thesis and also for ICT ministry. Goal of the thesis for national development. Here include in points

1. Dynamic topology use in this structure.
2. Result analysis have the solution detect nearby device.
3. Protocol implement in IEEE 802.11 g
4. IP calculation and calculation range of IP and also distribute device performance .
5. Frequency analysis and Collected data 2018

6. Algorithm analysis which Algorithm for detection suitable for device (Laptop, mobile phone) frequency use in sever side

1.6 Report Layout

This thesis topic has divided five chapters. First chapter include introduction part, First chapter describe that total overview in this thesis ,At motivation come to know that why need of this idea. Benefit are describes in rational study. Research question analysis need for find necessary object .Second chapter include Background parts. Study previous work and discuss it also provide better solution in Related works. Thesis summary include in Research summary. Find scope of the problem and challenge. Third chapter include research methodology. collect data and analysis data . Fourth chapter include Experimental Results and Discussion. Test circuit and briefly discuss design structure . Five chapter include in Summary, Conclusion, Recommendation and Implication for Future Research. Discuss about summary of the thesis. Share problem and future implementation scope.

CHAPTER 2 BACKGROUND

1.1 Background Study

In network topology there are many device and also node connected. Implement a system which system identify networking element is called detection System. Previous many techniques apply for detection. One of the term frequency detection and also area measurement. Design MANET system calculate for efficiency increase. Although speed convergence is better for detect device. Working process is here,

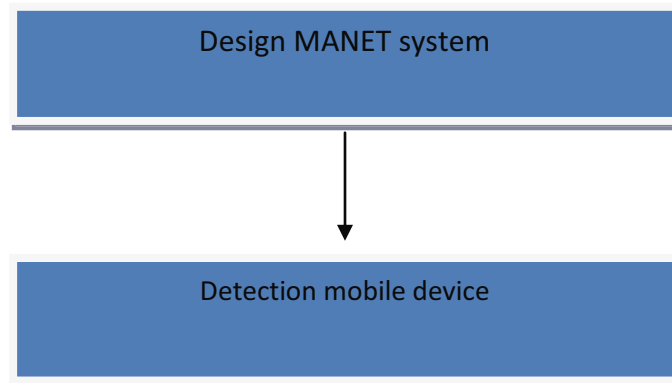


Figure 2.1: working process

According to this block diagram apply detection technique for device. Briefly describe all points in this thesis.

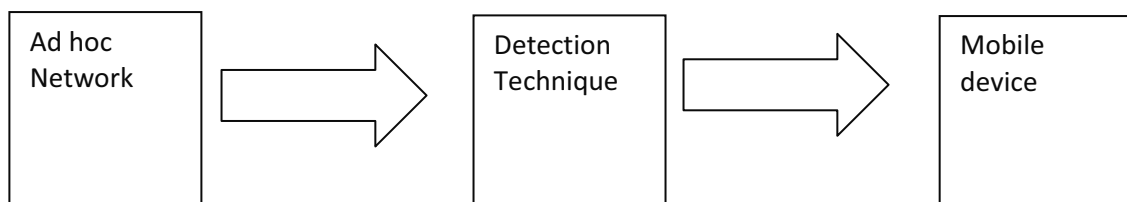


Figure 2.2 : Block diagram detection technique

2.2 Related Works

MANET is a completely autonomous technology which utilize the IEEE 802.11[1] standard for communication. For Example: Mobile phone, Laptop ,Smart wrist watch etc. MANET follows dynamic routing protocol to travel from one hops to next hops shown in Figure[2]

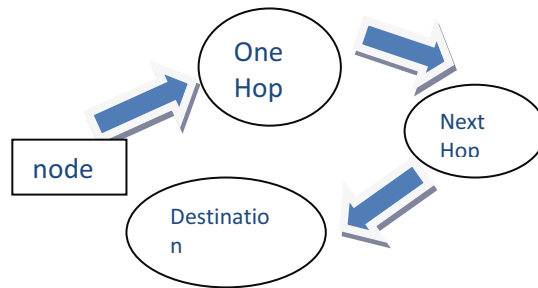


Figure 2.3 : node travel

Some of the benefits can be described as multiple access, low cost to implement and loop free. access[2] IEEE802.11 wireless protocol use three antenna .[3]Modify efficacy and efficiency of eight Selector antennas. Apply AODV routing algorithm, AODV concept has no allow multiple routes, Proper Security and Qos Support .

[6] Advantage of Clustering algorithm end to end throughput and overhead .Compeer between WCA and DWCA. But more efficient is [7]Energy Efficient Multi-Hop Wireless Sensor Network apply Fuzzy Logic implement in sever side.

[4]Multiple routing protocol means allow process communicate router to router .Classification of three types routing algorithm. Proactive, Reactive and Hybrid protocols .Actually Protocol depends on topology architecture. Proactive protocol table-driven protocol .when data update, we will need to refresh router/switch day by day. Other reactive protocol create lot overhead. Hybrid protocol use Dynamically in configure switch. Specify time need to remove collision

2.3 Research Summary

Design MANET Structure

1. Dynamic topology

Figure 2 we count hops as a nodes .Distributed wireless network. Operate Time Division Duplex (TDD) mode. So, sender and receive data (transmit) at a Different time. Abode collision.

Figure 2 acts like graph $G(V,E)$.

2. Energy /power

Battery life as known power (p) life dependent at topology structure.

Depend on time(t).

$$P = (\text{frequency rate} / \text{time})$$

$$\text{Cost} = (P = \text{frequency rate} / \text{time})\%$$

3. Limited Bandwidth

Maximum wireless frequency acts as a RF frequency.

Upper frequency

$$B = (n + \text{limit})$$

$$B(\text{uf}) = (n+ 1) + (n+\text{limit}) + \dots \dots \dots \infty$$

Cost depend on Bandwidth .

Example of signal Upper frequency

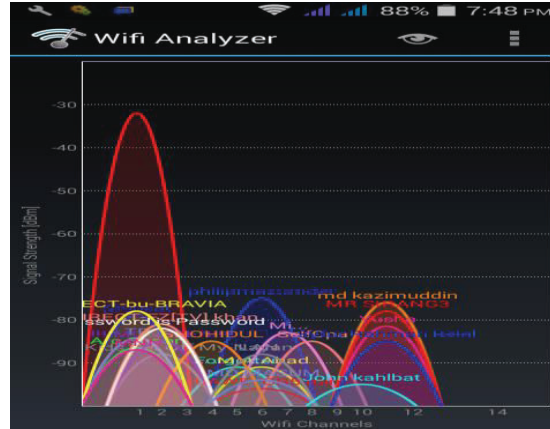


Figure 2.4 : measure upper frequency

About 60 in Android version frequency area simulation measure -68 dBm to -72 dBm between 27 asu to 14 asu in network type HSPA. The state of being other set 70 version simulate -77dbm of 24 asu. Signal produce indicate -85 dBm to 55 asu in 24 GHz .

4. Reliable connector(setup device on conection)

Ensure that security Wi-Fi Protected Access (WPA). If we use sever, we will setup time limit Network Time protocol (NTP). Ad hoc network not only use LAN it can also use MAN (World wide Interoperability for Microwave Access). We need router or switch for design Ad hoc network. Configure that step by step. Provide Access control link protocol for security.

Step 1: Topology instrument need(device)

Step 2: Implement logical part for enable device.

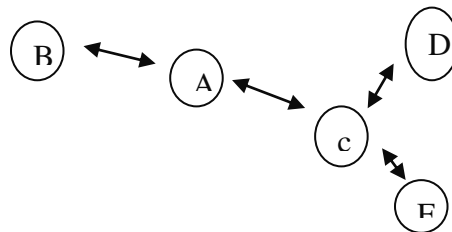


Figure 2.5 : Diagram of node traverse

Rout A

A	B	C	D	E	F
---	---	---	---	---	---

$\lambda =$

$n(A)+n(b)+n(c)+n(d)+n(e)+n(f)+\dots\infty$

for efficiency increase = $\beta(n+1)$

1. Distribute IP

Table 2.1: Consider addresses 192.168.0.0/20

Device	Network Address	Broadcast Address	Subnet Mask	First Host	Last Host
1	192.168.0.0	192.168.7.255	255.255.248.0	192.168.0.1	192.168.7.254
2	192.168.8.0	192.168.11.255	255.255.252.0	192.168.8.1	192.168.11.254
3	192.168.12.0	192.168.12.255	255.255.255.0	192.168.12.1	192.168.12.254

IP based on every device. Create Ad hoc network system need to distributed IP.

Wi-Fi, Modem has IP address. Internet connection in mobile need Wi-Fi(wireless local area networking) for network connection . Identify unique id use IMEI .

2. Configure interface line (name sever, login, password)
3. Protocol setup (telnet/SSH access)necessary
4. Ensure security

Operation system use

Setup: Linux and windows use for configure switch or router

Software : company has specific software for configuration network . putty is one of them.

User access software: laptop or mobile has service to access network . Sometimes App use for MANET connection.

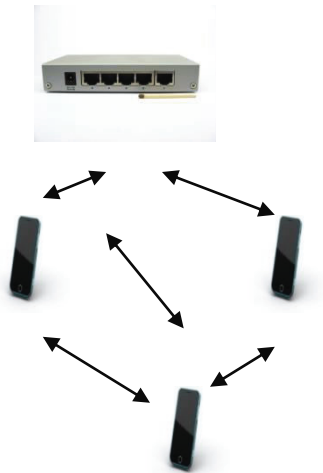


Figure 2.6: MANET System

2.4 Scope of the Problem

Develop the MANET system then want to minimize hardware size and provide better efficiency, generate optimal solution, reduce cost etc. about security issue login and protected password provide here. Cycle of client and sever if the system is dead then must message provide here. Benefit of this Ad hoc one path is death then can remove it or provide solution.

2.5 Challenges

First challenge is maintain time and dynamic data collection. Others here and provide solution later in this book

1. Frequency detection
2. Device detected distance Identify
3. Avoid collision and noise (Apply technique)

Chapter 3

Research Methodology

3.1 Research module

This Research take time eight month. Proper security and protocol apply. This topic is executing because of create new topology and create new system detection .Study it come to know that algorithm implement and focused in sever side in network architecture implementation For Ad hoc implement system study the whole networking security and protocol (IEEE802.11 protocol).

3.2 Research Subject and Instrumentation

Implement schema diagram. Here include relation between protocol in Ad Hoc

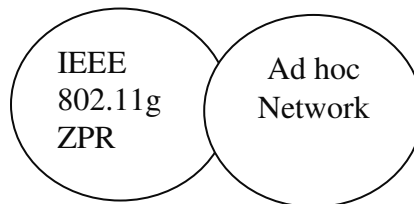


Figure 3.1 : Apply IEEE802.11 g protocol ZPR in Ad hoc network

Table 3.1 : Result Analysis algorithm

4G	ZPR	24 GHz	Speed high	detected
5G	ZPR	Upper	High	detected

Algorithm for detection device (Laptop, mobile phone) in frequency, Apply IEEE802.11 protocol for detect device.

Step1: Detection device ID(Mobile)

Step 2: loop (Search network frequency in Area)

Step 3:if (frequency range able)

Then Authentication.....

Step4:Execute (device detect)

Step5:elseif (frequency range unable)

Step6:end

Step 7: end

IEEE 802.11 protocol for wireless LAN. IEEE802.11 protocol is reliable for MANET.

Table 3.2: IEEE 802.11 update version

Version	Max rate	Spectrum	Year
802.11	2 Mbps	2.4 GHz	1997
802.11a	54 Mbps	5 GHz	1999
802.11b	11 Mbps	2.4 GHz	1999
802.11g	54 Mbps	2.4 GHz	2003

IEEE802.11

The original version IEEE 802.11 two net bits rates 1 or 2 (Mbit/s),plus forward error correction code

IEEE 802.11a

An OFDM(orthogonal frequency-division multiplexing) based air interface. Uses digital television and audio broadcasting. Frequency rate 4G available. One of disadvantage is high carrier frequency.

IEEE802.11b

Uses the CSMA/CA media access method and Complementary code keying modulation technique. Facility is point to multipoint configuration. Access point communities in omnidirectional antenna. Example of Bluetooth devices, baby monitors, cordless telephones, and some amateur radio equipment.

IEEE802.11 g

Use in orthogonal frequency-division multiplexing. Advantage of OFDM reduce multipath effects in reception and increase spectral efficient

IEEE 802.11 n

Frequency 2.4 GHz/5GHz and speed 600 Mbps. Adding multiple-input multiple-output antennas(MIMO)

Relation of the work

There is explain many version IEEE 802.11 . I use latest version in my work. Sometime we don't need large capacity or frequency . so its better we use it our area or work purpose.

Here is give layer description for design structure and in working process.

Application

A network is a collection of networking device. Example ad hoc device. The topic relate device mobile.

TCP

Transmission control protocol (TCP) is commutation protocol is use interconnected network device . one device to another device connection establish If we want to establish connected http to pc by TCP. Router(config): IP TCP 192.168.0.0 0.0.0.255 host 209.166.20.1 eq www

0.0.0.255 is calculation of ACL for security purpose.

End to end delivery process

Logical link control

LLC sub layer combination between media access control(MAC) and network layer. It provide multiplexing mechanisms. General packet radio service(GPRS) standard on frequency 2G/3G

IP(internet protocol)

Assign a unique numerical number in every network device

Table 3.3 : Route packet 172.168.10.0

IP	Subnet mask
172.168.10.0/8	255.0.0.0
172.168.10.1/16	255.255.0.0
172.168.10.2/24	255.255.255.0
Calculation IP	Calculation subnet mask

Operating system need for complete total design. Research summary include putty software for sample test. Briefly describe how does it work .

Distribute system

Large skill service. one computer can't provide service one time

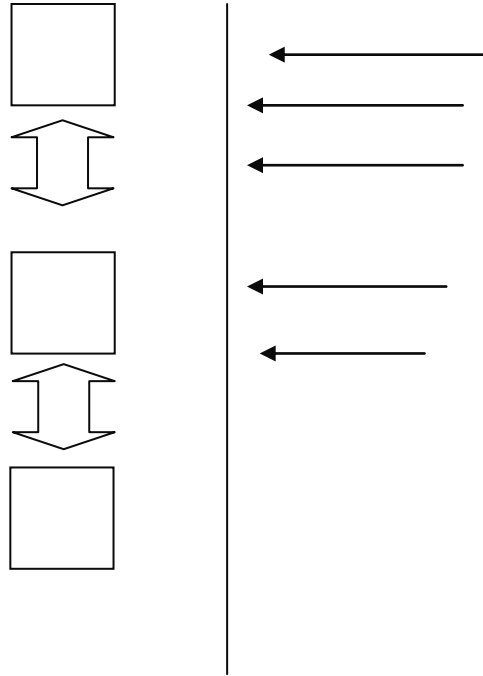


Figure 3.2 : Distribute operating system

Important for multiprocessing .because at the same time many user send request to the server. It is reliable , scale and robust. Part of Gps and Engine monitoring example mobile to mobile computing.

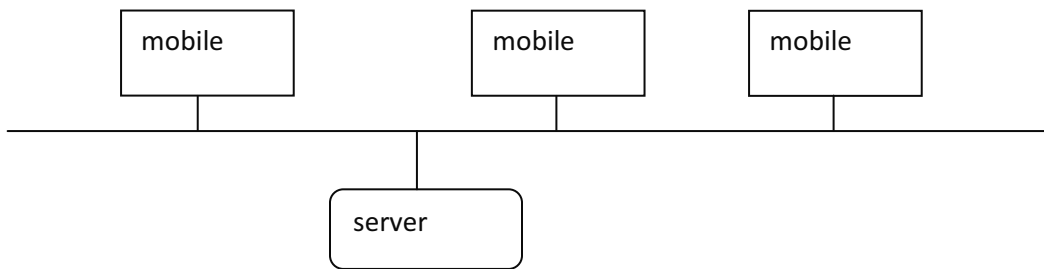


Figure 3.3 : Relation operating system

Sever : mobile computing router or connect device is sever

Client : mobile device computing is client

BSS(basic service set)

Together with all service set. Allow 802.11 protocol. BSS Id is a 48 bit to identify a particular area. Ad hoc network can communicate direct with one another without APs

AP(access point):Two or more device connected with Ap. Wireless AP facility that faster transmit rate provide. But as a ad hoc network not necessary to use ap. “WIANI: wireless infrastructure and ad-hoc network integration “discuss about increase the coverage and reducing additional infrastructure

Types

- 1.Stand alone
- 2.Controller base
- 3.Router with build wireless

Station

Set the IP for get back from the system is known the gateway. Suppose two pc IP 172.10.0.0 and 172.10.1.1 default gateway 192.168.1.1

Create surface

Ad hoc network : Hardware and software both to create ad hoc network

1. Router/switch
2. Device
3. Operating system(line/windows)
4. Software to install(putty)

Device detector : we need hardware element to create . Different types of IC use A3130 IC for 2G and LM386 for 3G,4G detection

0.22uF - 630V



Figure 3.4: Capacitor

If want increase capacity to detection device , Need this device for 2G detection device

Other requirement

1. NPN transistor
 2. +9 and -9 v power
 3. Capacitor
- Etc

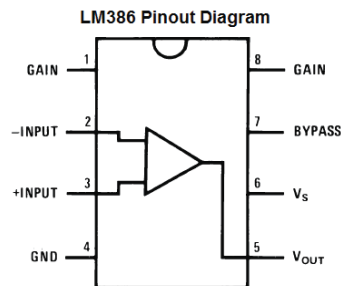


Figure 3.5: Block diagram of LM386

Working of LM386 IC pin

1. GAIN: Pin 1 and Pin 8 two pin use connect component to controlling. The detect device circuit implement use in 0.22 uf (positive and negative) pin.
2. Input (2&3): -Input (2) pin is negative input and +Input(3) pin is positive . The detect device circuit implement use in antenna pin 2
3. GND: Pin 4 the ground pin. The detect device circuit measure negative and include Led negative point.
4. V_{OUT} : Pin 5 is V_{OUT} . It is output pin of IC. The detect device circuit implement NPN transistor base pint in V_{OUT}.
5. V_s: Power supply pin. The detect device circuit implement use voltage(+9)

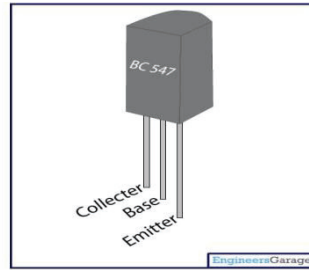


Figure 3.6: BC547 (transistor)

BC547: It is NPN transistor .



Figure 3.7 : Arduino(instrument)

That device is microcontroller facility. Can code implement

3.3 Data Collection Procedure

Data collection from internet, book, organization.

Table 3.4: Frequency rate Generation

Gener ation	1G	2 G	3 G	4 G	5G
Freque cy(f)	150 MHz/90 0MHz	.8 GH z	1 .6 – 2.0 GH z	2 -8 GH z	Capac ity 1G bps 3- 300 GHz

Table 3.5: Frequency rate use company

Company name	Frequency rate
Grameen Phone (Bangladesh)	900 MHz, 1800 MHz, 2100 MHz(2 GSM band)
Banglalink(Bangladesh)	2 GSM band
<i>Teletalk</i>	1 GSM band

Data 2018

Table 3.6: Network fail in bad climate

Bad climate	country	year	Network
Sidor	Bangladesh	2007	fail
cyclon	Bangladesh	2017	fail
flad	Bangladesh	2017	fail

3.4 Statistical Analysis

Collecting data from the source and analysis it then it call a part of statistical analysis.

Calculate Speed = Distance/Time

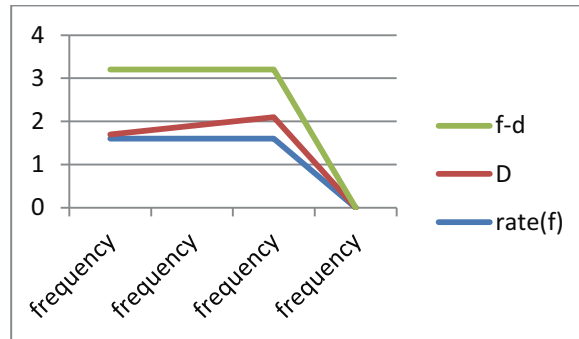


Figure 3.8: Show frequency rate

	rate(f)	D	f-d=detect
frequency	1.6	0.1	1.5
frequency	1.6	0.3	1.3
frequency	1.6	0.5	1.1

Analysis part

Collect Sample of same frequency rate but distance rate is not same device. When detection device apply, Identify D(0.5) is near . So, first device detected

Part of Reduce noise analysis:

Intensity=power/area

Example of one data $I=9/0.1=90 \text{ w/m}^2$ (test)

Assume the number power 9w,5w,1w but area = 0.1 m

Table 3.7 : Intensity level

I(Intensity)	P(power)	A(area)	Result(P/A)
1	9w	0.1m	90w/m ²
2	5w	0.1m	50w/m ²
3	1w	0.1m	10w/m ²

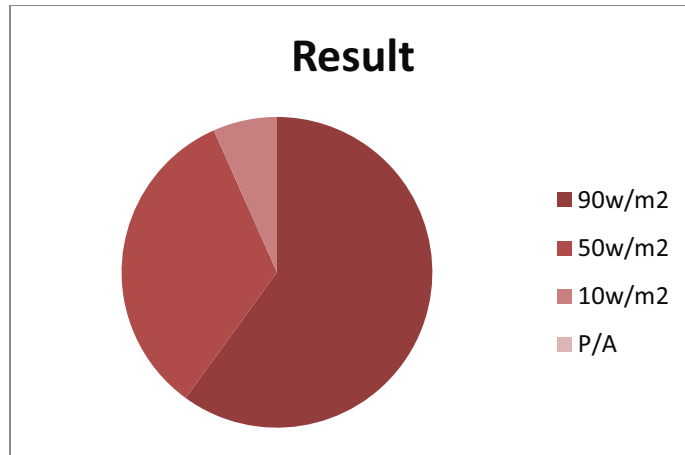


Figure 3.9 : Result(p/A)

Calculation

Figure 2 node travel one hops to next hops

Node travel one node = i

Another node = j

Distance = $|x_i - x_j|$

How can we detected device

Detected device need specific frequency. We need mobile detector device for detection mobile.

How to work network

Every device has specific IP address. When device (mobile) signal travel one place one place one to another. It change one network to another network (LAN).

3.5 Implementation Requirements

Set up Ad hoc network for access . Here is simple process analysis . Analysis the efficiency .

For detected wifi range need this setup. Android any version can provide this facility to setup. There is no buffering occur. Time is appropriate. Simulate it at windows.

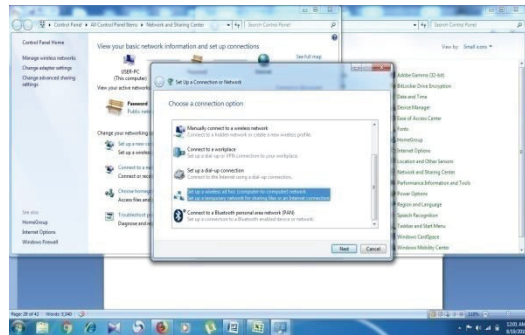


Figure 3.10 : Ad hoc network for access

How to make a Wireless Ad-Hoc Connection in Android manually, Steps

1. Select open network connection
2. Choose network option
3. Set up MANET
4. Next
5. Security (user name and password)
6. Internet connection

Complete

Android

1. Network option
 2. security(user name and password)
- complete

Different types of circuit for test: Design logical diagram and implement circuit.
Here is some circuit implement in circuit board

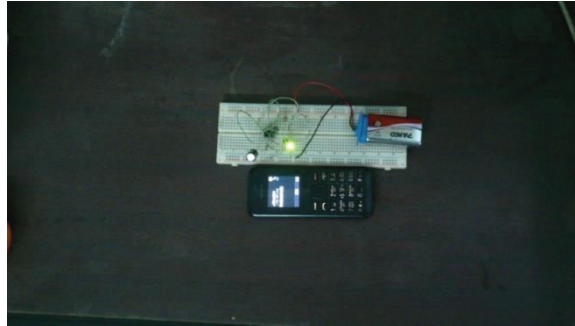


Figure 3.11 : Test 1

Test 1 : The logical diagram implement for 2G Mobile detected device circuit. For implement the circuit use for Ic(CA3130), power(+9,-9),Led, capacitor(0.22uf,47pf,100uf), resistor, transistor (BC548) etc.



Figure 3.12 : Test 2

Test 2 : The logical diagram implement for 3G,4G,5G Mobile detected device circuit. For implement the circuit use for Ic, power supply, Led, capacitor(0.22uf), resistor, transistor(BC547) etc.

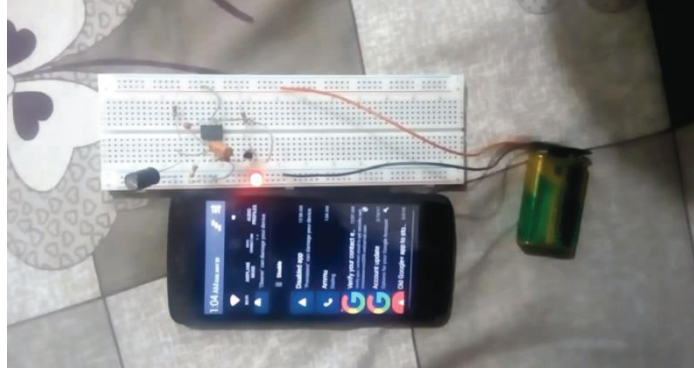


Figure 3.13 : Test WIFI

Total input and experiment provide this facility

1. Call incoming
2. Call outgoing
3. WIFI signal
4. Message incoming
5. Message incoming

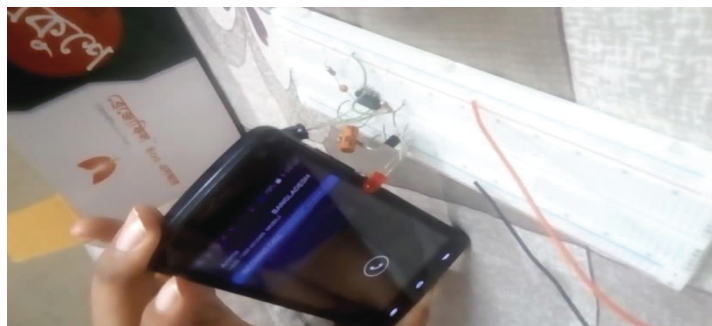


Figure 3.14 : Test 3

Test 3: Specific part of the circuit 0.22 uf not detected. Only detected 2G(Test 1)



Figure 3.15 : Test 4

Test 4: draw circuit and implement for 3G ,4G,5G

Arduino experiment

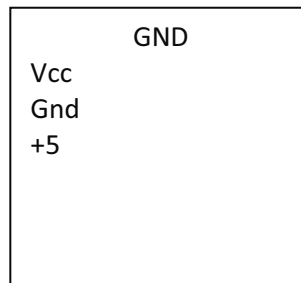


Figure 3.16: Arduino diagram

Here is block diagram of arduino . In arduino has proper facility all arrangement in one circuit.

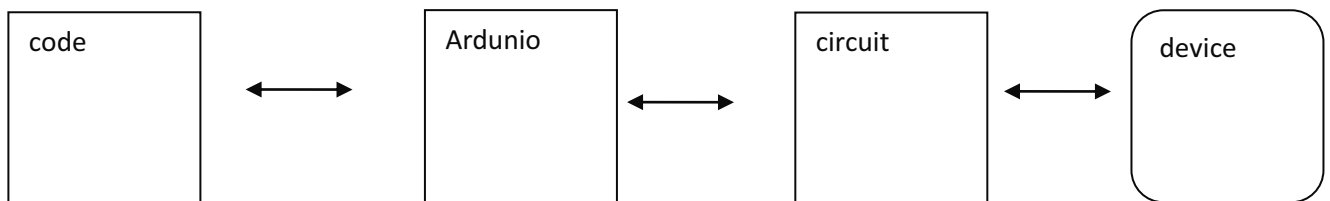


Figure 3.17 : Block diagram Arduino experiment

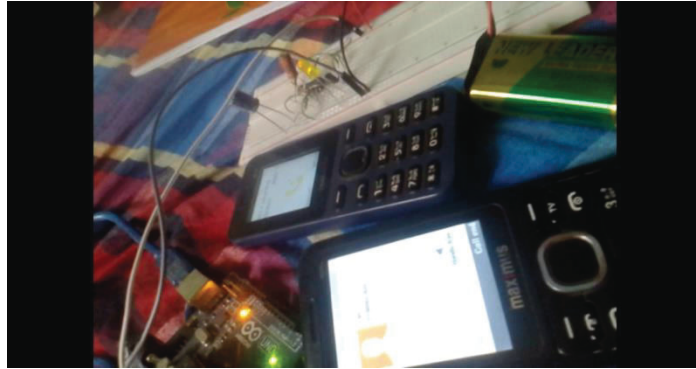


Figure 3.18 : Arduino experiment battery connect

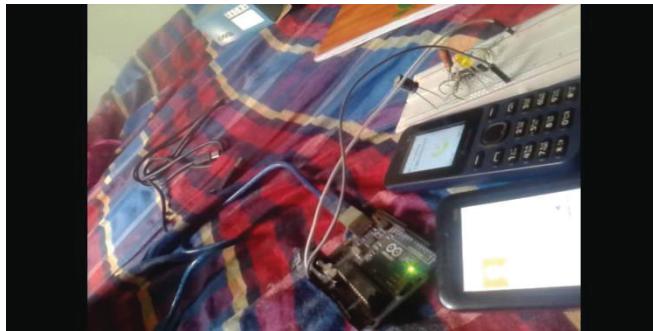


Figure 3.19 : Arduino experiment pc connect

Chapter 4

Experimental Results and Discussion

4.1 Approach of experimental

Although, properly complete thesis must need experimental result. Experimental Result is important for understand thesis. Solve mathematical equation for noise remove. The result shown in oscillator. Technically measure one phase sine wave for remove noise. Because of noise reduce efficiency. Detail about descriptive analysis. Circuit draw in circuit board and analysis result. Drawing circuit test. Design from the circuit basic a network detector chip. the chip conduct metal element and must soldering. That total thesis contribution here .

4.2 Experimental Results

Result Analysis

Test 1

Frequency detection = 18 GHz (2 G) range only

Detected incoming and outgoing any mobile, Also detected message incoming and outgoing , Wi-Fi signal can detected .

Test 2

Frequency detection = 16-2.0 GHz (3 G) range

Time limit: The system implement need time 1cycle = n times

4.3 Descriptive Analysis

Detection system in server side analysis

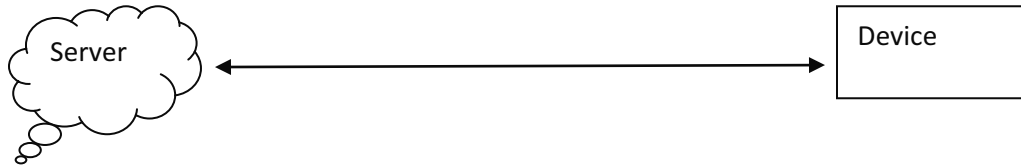


Figure 4.1 : Detection technique in server side analysis

In this thesis device(mobile) has ID .Which transparent in sever and encapsulate it and provide sever to destination. Implement the system provide password for security

Cloud computing

Information can storage in cloud computing. The detection technique essential part of cloud computing. Cloud messaging process here include

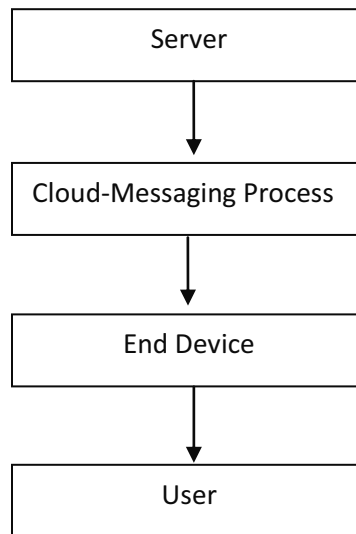


Figure 4.2: cloud messaging process

Server allow to cloud computing to getter data for storage. Cloud-message process include API. The end device (Mobile) add feature from cloud . like Gps

Ad Hoc Network Cloud computing

Ad Hoc Network cloud computing process in here. Server sild many internet access provide some is permanent and some are temporally. Organization buy temporally internet access service from server . From this process the organization use internet .

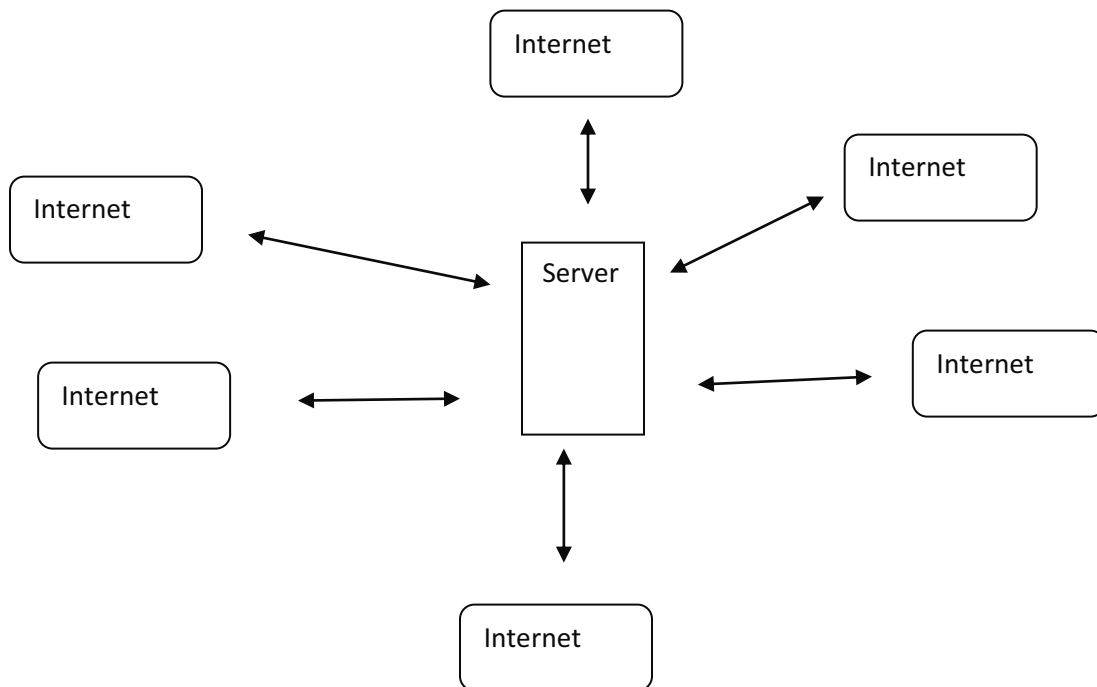


Figure 4.3 : Internet access(Server)

Divided internet access process steps. Here describe how work Ad hoc network and relation in this thesis. Here is briefly describe

Step 1:

Here is sample of one internet access. In private organization always collect internet access from temporally form server . same as in this thesis

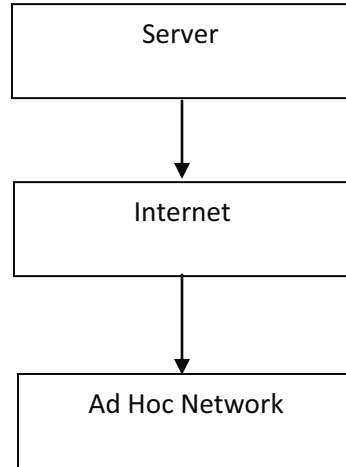


Figure 4.4 : Working principle of Ad hoc network

Step 2:

Here is diagram describe in frequency execution . the total process see in this diagram. Company has own tower . signal produce which provide different frequency rate. organization buy bandwidth for frequency generate . then user can access. Frequency rate called RRU. This thesis technique is that no need tower. Also describe a image android and pc to generate signal/frequency

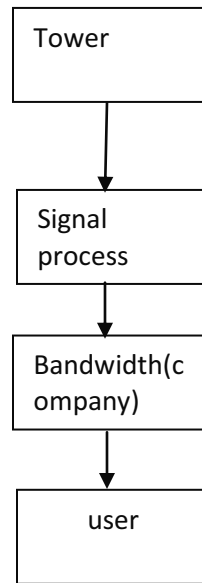


Figure 4.5 : Process of implementation

Routing techniques

Ad-hoc On-demand Distance Vector routing(ADOV)

Flood route request all neighbor

Search all neighbor .

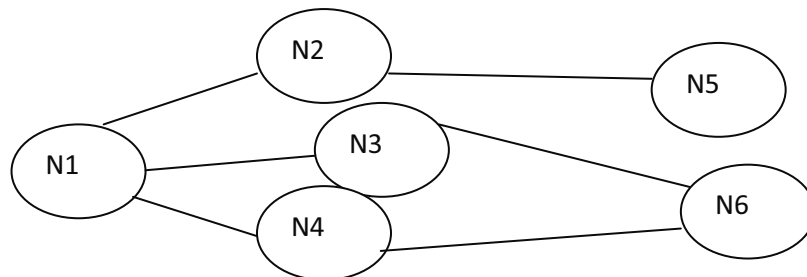


Figure 4.6: Routing techniques algorithm

kmeans_worksheet analysis The K-means Clustering Algorithm

It is faster

But when link fail we need many data update

This algorithm Only use sever side not client side

Output collect

Number: 2

Two area data find

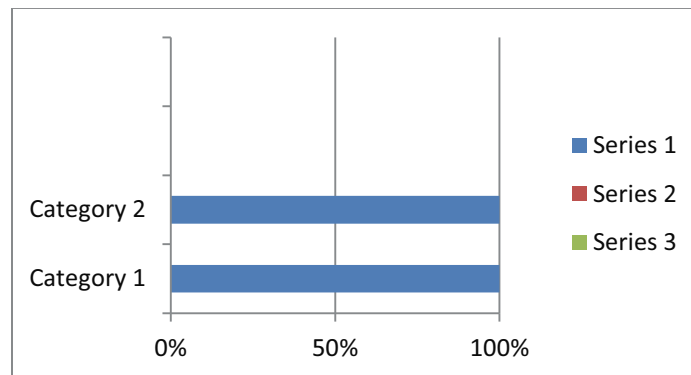


Figure 4.7:Code implement in math lab

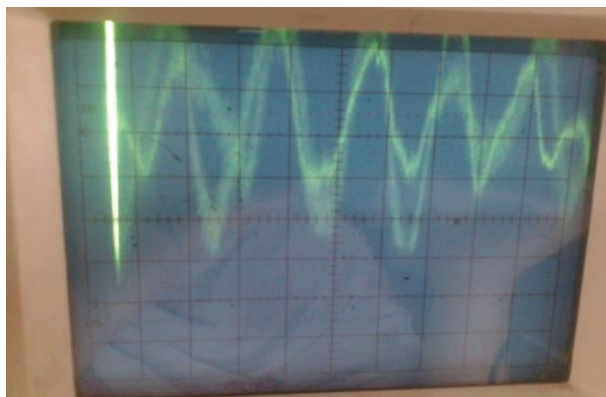


Figure 4.8 : Test mobile phone detector frequency

Data collect from lab

See mobile detection device at oscilloscope

Detection device speed range dependent on antenna.

The data collect from lab in oscilloscope with positive and negative voltage (+9v,-9v)

1. Find only positive signal
2. Find negative signal

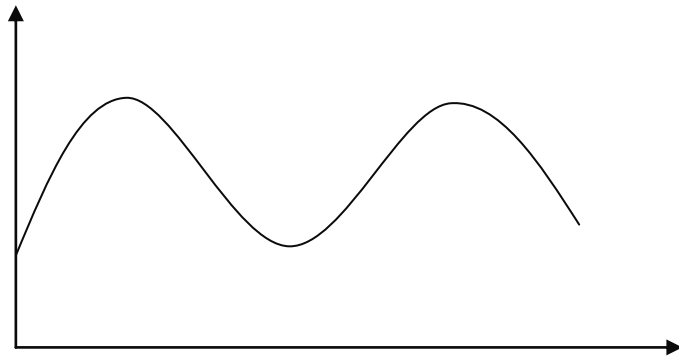


Figure 4.9 : reduce noise

Digital signal symbol(when reduce noise)

$$\begin{aligned}df/dt &= \Delta f \\ &= d^2f/dx^2 + d^2f/dy^2 + \dots\end{aligned}$$

Detection device (wave) is measure one signal here. Energy change when power change

Intensity=power/area

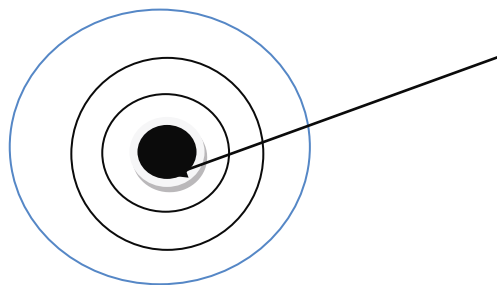


Figure 4.10: wave

Sound calculation mobile detector device

$$I=9/0.1= 90 \text{ w/m}^2$$

Packet drop

Ad hoc is temporally design for that reason

1. Packet drop
2. Packet drop create link error

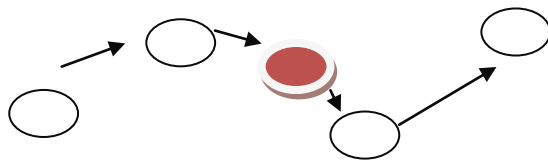


Figure 4.11 : read node drop

One type of attack in here Ad hoc. For detection MANET has many security issue.

Abode collision

should not have execute same time any signal node

In digital signal symbol add infinity . because signal is infinity range

But when we provide protocol the area identify

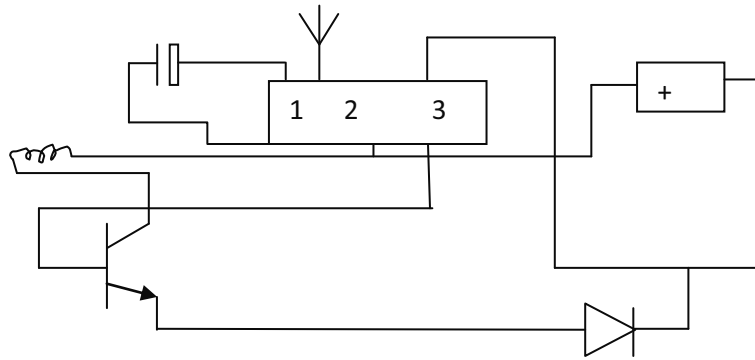


Figure 4.12 : 3G ,4g circuit detect device

2g circuit extra element use

- 1.resistor
- 2.extra capacitor

New element use new circuit

1. Antenna



Figure 4.13 : copper wire antenna

Security Techniques

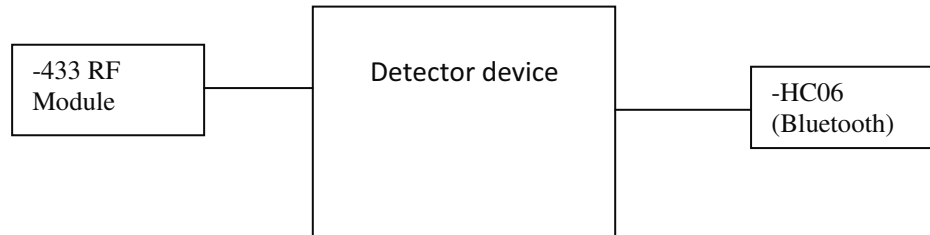


Figure 4.14 : Block diagram jammer

Create chip design

Outcome of the 3G,4G,5G detector circuit. Design a chip

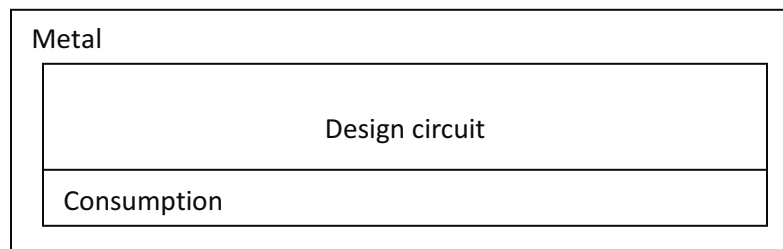


Figure 4.15 : chip

Thesis Contribution

Pattern analysis

Collect pattern(signal) by multiplexer. Figure MUX has one line input line and two output one is connected by checker and the other connected by AND. The checker store bit type of enable range pattern . The AND enable for MUX signal and the other is checker . The output of the AND collection of the range similar pattern . The technique is that collect similar type of pattern range can enable detect device .

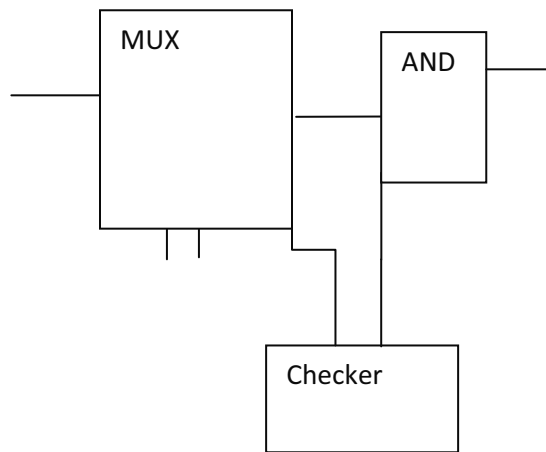


Figure 4.16 : pattern analysis

Sensor

Magnetic sensor can detect range of mobile device in MANET. The range include $\Theta < 2n < \infty$ in here. Magnetic sensor purpose detect in enable positive sensor node(pn) to negative node(n) and negative sensor node(ns) to positive node.

Protocol

Briefly describe in chapter 2 IEEE protocol . IEEE 802.11 in ZPR has capability .Table 1 has chart frequency range. ZPR is most reliable technique use in interface.

Synchronization

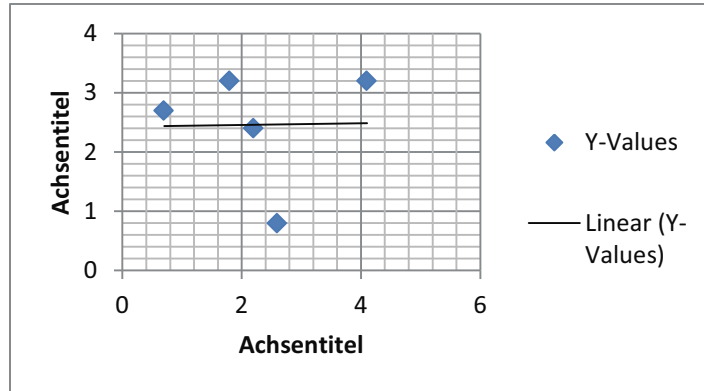


Figure 4.17 : Ad Hoc node travel

Figure[1] $D = |x_i, y_i|$

For multiple signal

$X(n) = (x_1, x_2, \dots, x_n) \dots [1]$

$Y(n) = (y_1, y_2, \dots, y_n) \dots [2]$

Algorithm-1 apply one cycle Figure[2]

$Y(n) = 0 < (y_1, y_2, \dots, y_n)$

The given sample figure[2] in

y-values $y(n) = 0 < y(n+1)$

Antenna

The range of antenna area measure(t_n) in MANET. The Destination node(d) in MANET

. Search for detect antenna (t).

4.4 Summary

Collect frequency chart ,Data collect 2018.book internet. Collect company data 2018 Robi company employee help to collect data. All company has same data frequency rate in Bangladesh. But teletalk has half bandwidth. Better facility provide Grameen is better. Focus Also facility which company not use. Time and distance analysis. Data collect from DIU lab. IP calculation. Follow network rule.

Chapter 5

Summary, Conclusion, Recommendation and Implication for Future

5.1 Summary of the Study

Collect accurate data 2018 . But data update day by day . Though frequency rate is better , For broadcast not use recently some company . The most data present in market .Such as microwave frequency 7,15,18,23,25 GHz, data collect from robi & gsm band 900,1800,2100 MH

Test 2 face problem the device



Figure: 5.1 error occur

Collect 25 v then apply it circuit. The circuit cant consume volt then it one time test count. Finally solve the problem. The oscilloscope detect noise . Solve it by technique. The K-means algorithm Analysis . It detect similar type of sample same range output provide. If collect pattern similar but the high is not same, it cant detect. Need encapsulation techniques apply Now I have done this study

5.2 Conclusions

Concept work process first design MANET system and detected mobile device. MANET use military operation , Commercial, Government work. Fist we need to detected device for people survive of emergency situation. Then design MANET for need network

5.3 Recommendations

1. One type of protocol IEEE 802.11 . Its layer also example
2. Frequency rate 3g present in market.
3. 4g frequency not easily availed
4. 5g is not present a days so some company is not use their bandwidth

5.4 Implication for Further Study

The reference include most update research paper . If use microcontroller for programmable device .then have more efficient in this network and device .security problem solve. Working progress is present in the thesis. Analysis the paper most update data collected. Describe benefit of them and provide better efficiency.

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Corresponding Author: SaharAdabi, Computer Engineering Department, Science and Research Branch, Islamic Azad University, "A Novel Distributed Clustering Algorithm for Mobile Ad-hoc Networks"
- [7] "Fuzzy-Logic Based Distributed Energy-Efficient Clustering Algorithm for Wireless Sensor Networks s"Ying Zhang 1,2, Jun Wang 2,*, Dezhi Han 1, Huafeng Wu 3 and Rundong Zhou 1 Received: 4 April 2017; Accepted: 29 June 2017; Published: 3 July 2017

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