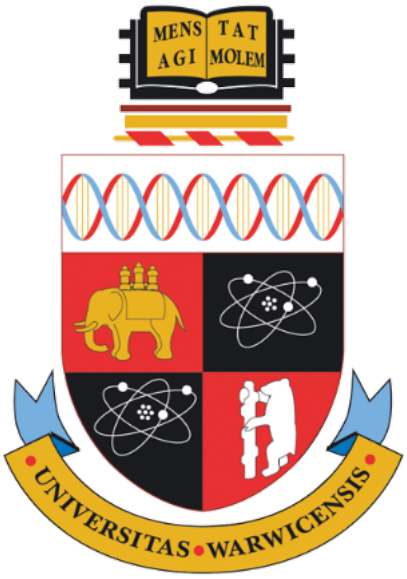

Using Ad Hoc Networking in Emergency Situations

Spreading information in an emergency situation to help both people in danger and the emergency services

Project Specification

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Abstract

When an emergency situation occurs, people want to tell others where they are and get help. This can often be difficult to do because key infrastructure that is heavily relied on could be damaged. Situations around the world show there is a significant need for systems to help peope connect with no, or very little, working cellular infrastructure. By using commodity hardware in our devices, survivors can oppurtunistically send information to nearby devices. This could then be sent to an internet connected device for transmission, other nearby devices or, the emergency services. Moving information in emergency situations could get alert those who save lives and could aid rescue efforts.

Keywords: Bluetooth, Ad Hoc, MANET, Emergency, Disaster

Abbreviations

MANET - Mobile Ad Hoc Network

Contents

Chapter 1

Introduction

Discuss some general background about MANETs and how they are currently used and what form

1.1 Motivations

In todays world, most people in the world rely on telecommunications to connect with family members, friends, work collegues and, very importantly, the emergency services. When we get a disaster, or group of them, as was seen in Puerto Rico in 2017, it can impact lives and even end them prematurely. A study estimates the increase in mortality at 62% [1], and this is thought to be an underestimate. Remote areas were hit hardest and were without services such as cellular data access for up to 41 days. This can make it very difficult for rescuers to know the situation in these places and creates a mismatch in information.
Incidents such as these illustrate the tragic consequences that can happen without vital services which are required in the world today. In 2016, the United Nations voted that access to the internet is a human right that should be protected [2]. This type of action brings into focus the need to have systems in place to help people maintain connectivity, even when traditional infrastructure fails.

1.2 Project Aims

The aim of the projec is to produce a prototype of a system which could be implemented by governments and technology companies which could help people. Companies like Google and Apple produce the Operating Systems for most phones but they don't have any sort of inbuilt emergency system like the one I hope to accomplish.

I want to explore the different ways this could be implemented, what holds them back and how well they actually perform in action. Also, I want looking

at why there is no widely implemented system such as this in consumer phones already.

1.3 Stakeholders

The stakeholders for this project would be those who can benefit from it. Those people are those who live in areas which are frequently affected by natural disaster and have weak infrastructure. These are the people that would benefit most from having a system which could help them maintain contact with the world if they couldn't through traditional methods.

Chapter 2

Research

Discuss the research that I've done so far. Talk about different approaches to the problem which have been implemented already. Discuss what they have done well and what could be improved. Also discuss other aspects such as routing.

Chapter 3

Ethical, Social, Legal and Professional Issues

3.1 Ethical Issues

Ethical issues arise when there are competing goods and competing evils. An example of this is using data collected through using a product to target certain groups without their consent. A firm may make more money by doing this, but whether it is right to do so is something that should be considered. Fundamentally, stakeholders in the project should be protected and their data shouldn't be used against them. Data should be kept anonymous and protected somehow, through traditional encryption or other means.

3.2 Social Issues

Social issues are those that may have an affect on the lives of many people. It could be problems which affect how they interact with other people or those relating to access to goods and services that others can but they can't.

3.3 Legal Issues

This project will deal with sending data about an individual to others and allowing them to hold and send this data to whomever they wish to send it to. There are legal issues as, without proper protections, this kind of data could be used against individuals that are in trouble, such as in a terror incident.

In this project, I will strive to protect sensitive data, such as location data, so that no one is privy to this information at any time if they shouldn't have access to it. As discussed above in Ethical Issues, this should be done by maintaining data privacy through encryption or other means.

Also, in any testing or data collection, a persons personal data should be kept private so that it can't be shared and used by people who shouldn't have access to it.

3.4 Professional Issues

Throughout this project, I will adhere to the BCS Code of Conduct [3]. I want to produce a research project which can be trusted and respected and so I will adhere to all rules that I am required to follow. This means I will also follow the Research Code of Practice at the University of Warwick [4]. This means all work I use to support my research will be referenced.

Chapter 4

Project Requirements

Come up with some basic functional and non-functional requirements

4.1 Functional

4.2 Non-Functional

4.3 Constraints

Chapter 5

Project Management

Do a gantt chart to go here and what tools I am going to use, e.g Git and Trello

5.1 Project Timeline

5.2 Project Tools

5.3 Risk Management

Chapter 6

Testing

Discuss the different approaches to testing that could be taken, Unit testing, integration testing etc

6.1 Unit Testing

6.2 Integration Testing

6.3 Success Management

Chapter 7

Conclusion

Short part with some final thoughts

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