



University  
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# A Survey on Wireless Sensor Network Applications in Healthcare

Project Proposal

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By

Tanu Nanda Prabhu - 200409072 - [tnb735@uregina.ca](mailto:tnb735@uregina.ca)

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# Topic

The topic I have chosen to work on is **wireless sensor networks** specifically used in applications of **healthcare**. I would do a theoretical research project, which mainly involves surveying different health care models implemented to date. Also, since healthcare applications these days consists of both wireless sensor networks (WSN) and the Internet of Things (IoT) technologies, a minor part of the survey on IoT will likewise be done.

## Introduction

### Health Care

Universally, the elderly populace is growing, and the general populace is getting older [1]. Because of the ever-increasing population, new diseases are putting more pressure on the health care systems. Infectious, deficiency, hereditary, and physiological, and the recently emerged virus (coronavirus) that has spread and killed thousands of people are just some diseases that have caused burdens for medical workers. Not only that, but a great extent of people also suffers from chronic illnesses. In fact, the Center for Disease Control and Prevention (CDC), says that every six in ten adults in the United States have a chronic disease and four in ten adults have two or more chronic diseases [2].

During 2015, the health care costs in the United States were up to \$10,000 per person [2]. Consequently, in Canada, health care expense is around \$4,640 reported by Fraser Institute [3]. In either case, people must pay a great deal of money for health care. A solution is needed to end the unsustainable, expensive healthcare costs. Wireless sensor networks along with the Internet of Things (IoT) can together solve this issue in healthcare by reducing the cost and make it better.

### Wireless Sensor Network

The WSN's can be characterized as a network of gadgets or devices (sensors) that impart the data (information) remotely [4]. To be more specific, the data here can be a sample of humidity, temperature readings, blood and glucose levels, etc [4]. The information is sent through various remote sensors called hubs by means of a gateway [4]. A gateway allows the data to flow from one discrete system (network) to another system [5]. A wireless sensor network was primarily used in military applications but was later extended to health care applications too. Some system models, for example, finger-worn ultrasound

test, virtual sign checking in emergency clinics, indoor and versatile maturing have demonstrated the capability of wireless sensor networks to empower early recognition of clinical disintegration through constant patient observation in medical clinics [6]. With the assistance of this innovation, individuals don't need to spend a ton of cash on medical services. They can monitor and improve their health status via the applications embedded with wireless sensors.

## **Problem Statement**

The project titled **“A Survey on Wireless Sensor Network Applications in Healthcare”** is based on surveying existing, distinct types of models, technologies of health care systems using WSN's. With the help of this project, we can have a strong understanding of the working of both Internet of Things (IoT) and wireless sensor network, which plays a significant part in medical services. Recent advances in the networking of wireless sensors have opened new doors in the health care framework. Therefore, I have chosen this field which helps me to explore and increase my knowledge of understanding since there are many opportunities in this field. A survey on wireless sensor networks on healthcare applications will explore the utilization of current best-in-class remote sensor networks in health care and will elucidate how different concepts of wireless sensor networks will go hand-in-hand in such applications. Since there are a good deal of advances in this field, there is a need to review some life-changing models, try to draw some insight, and then provide an attempt to improve its approach if needed.

I hope my research survey will help to come up with a model that can cure the global pandemic that is being faced today after the crisis is over. Finally, this project provides a future heading to adapt to the furthest reaches of existing arrangements.

## **Expected Results**

In this project, I would conduct a survey on different models of health care using wireless sensor networks. I would present some delegate applications or models used in the medicinal services field. Furthermore, the difficulties would be portrayed, along with a necessary degree of dependability and trustworthiness. A need to guarantee the protection and security of clinical information will also be explored.

## Scope of the project

The different sections and topics that would be covered in the project are:

**Section 1:** This section will give a brief introduction and foundation about remote sensor systems, medicinal services and their connection.

**Section 2:** Outline of innovations utilized in WSN's. This area would diagrammatically clarify the advances and significant ideas in WSN's.

1. Wireless sensor network node and its aspects
2. Conventions of WSN's, and its methodologies etc.

**Section 3:** Featuring uses of remote sensors in healthcare. Here different types of models developed in health care using wireless sensor networks would be explored.

**Section 4:** Discussing the results. This would be the major focus of the project. In this section, I would compare different models along with their results to derive better insights.

**Section 5:** Benefits and challenges of wireless sensor network in health care.

**Section 6:** Future research and conclusion, this section will suggest future enhancement of the existing models.

## References

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