**TRIBHUVAN UNIVERSITY**

**Faculty of**



**A Project Report on**

**Disease Recognition System**

***In the partial fulfillment of the requirement for Bachelor degree in Computer***

***Science and Information Technology***

**Under the supervision of**

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**Sincerely,**

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# ABSTRACT

The project “Disease Recognition System” is a web-based application which presents a novel approach to disease prediction using machine learning techniques, specifically focusing on analyzing patient symptoms to predict potential medical conditions. The system takes input from patients in the form of self-reported symptoms, which are processed using natural language processing techniques to extract relevant information. The extracted symptom information is then passed through machine learning algorithms such as decision trees, random forests, or neural networks for analysis. The model has been trained on a large dataset of patient records, which includes a diverse range of medical conditions and symptoms, and has been validated using a test set with high prediction accuracy.

The proposed system can assist doctors and medical professionals in the diagnostic process by providing a list of potential medical conditions based on the patient's reported symptoms. This can help to narrow down the diagnostic process, saving time and resources. Additionally, this system can be used in telemedicine and self-diagnosis scenarios, where patients can input their symptoms and receive a list of potential medical conditions, allowing them to make more informed decisions regarding their healthcare.

Overall, this symptom-based disease prediction system can be a valuable tool in the medical field, helping to improve the diagnostic process and providing patients with more information about their potential medical conditions.

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# LIST OF ABBREVIATION

CASE – Computer Aided Software Engineering

DFD – Data Flow Diagram

ER – Entity Relationship

GANTT – Generalized Activity Normalization Time Table

HTML – Hypertext Markup Language

MySQL – My Structured Query Language

UML – Unified Modeling Language

# Chapter 1: Introduction

## 1.1. Introduction to Project

“Machine learning has the potential to play a major role in the early detection and diagnosis of diseases, as well as in the development of new treatments.” - Sebastian Thrun, computer scientist and artificial intelligence expert. In this ‘Disease Recognition System’ project, we propose a symptom-based disease prediction model that utilizes machine learning techniques to identify patterns in patient symptoms and predict potential medical conditions. So, this project can be used for educational and medical purposes.

## 1.3. Problem Statement

The diagnostic process for many medical conditions is often complex and time-consuming, requiring multiple tests and consultations with specialists. This can be especially challenging in resource-limited settings, where access to specialized medical expertise and diagnostic equipment is limited. Additionally, patients often find it hard to understand their diagnosis and the diagnostic process, which can lead to confusion and mistrust. The current diagnostic process can also be costly, which can create a barrier to access for some patients. There is a need for a system that can assist in the diagnostic process by providing doctors and medical professionals with a list of potential medical conditions based on the patient's reported symptoms, and that can be used in telemedicine and self-diagnosis scenarios to improve the overall efficiency of the healthcare system and reduce the costs associated with the diagnostic process

## 1.2. Objectives

The main objective of the project “Disease Recognition System” is to create a system that can assist in the diagnostic process by providing doctors and medical professionals with a list of potential medical conditions based on the patient's reported symptoms, utilizing the power of machine learning and natural language processing.

* To create an appropriate platform for symptom-based disease prediction
* To improve the diagnostic process by providing doctors and medical professionals with this valuable tool.
* To provide patients with more information about their potential medical conditions.
* To improve overall efficiency of the healthcare system by reducing the time and resources required for diagnosis and treatment.
* To aid the development of new treatments by identifying the underlying causes of symptoms.

## 1.4. Scope and Limitation

**Scope**

* Identifying the specific diseases or medical conditions that the system is designed to detect.
* Describing the methods and algorithms used for disease recognition, such as machine learning.
* Detailing the intended user groups for the system, such as healthcare professionals or patients.
* Defining the performance metrics that will be used to evaluate the system's effectiveness, such as accuracy, sensitivity, and specificity.
* Describing any future developments or plans for the system.

**Limitation**

* The accuracy and performance of a disease recognition system is dependent on the availability and quality of data used for training and testing. Limited or poor-quality data can result in a less accurate or unreliable system.
* Different algorithms and techniques used for disease recognition may have different limitations and may not be suitable for all types of data or medical conditions.
* The performance of a disease recognition system may be affected by factors such as noise in the data, class imbalance, and overfitting.
* A disease recognition system may be trained and tested on a specific dataset and may not perform as well on new or unseen data.
* The system will not replace the role of the medical professional, and it is important to have a medical professional to review the results and make a final diagnosis.
* Disease recognition systems process sensitive personal information and therefore, it's important to consider the security and privacy of patient data, and to ensure that regulatory and compliance requirements are met.
* Machine learning models can also be prone to bias if the training data is not representative of the population that the model will be applied to.

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## 1.5. Report Organization

This report is organized into 5 chapters as follows:

**Chapter 1: Introduction**

The project is introduced in detail with its objectives, scope and limitation.

**Chapter 2: Methodology**

It contains the methods and techniques that were used to conduct the research like background study of this project and literature review of the similar projects

**Chapter 3: System Analysis and Design**

It contains the details about system performance, flow of the project along with the architecture design and activity diagram.

**Chapter 4: Implementation and Testing**

It is the practical part of our project which gives details about the tools used in our source codes and different tests are performed to verify the integrity of the system.

**Chapter 5: Conclusion and Future Recommendation**

It contains the outcome of this project and about how this project could be modified for its better operations.

# Chapter 2: Methodology

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## 2.1. Literature review

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## 2.2. Agile Development Methodology

Agile development method is an iterative and flexible approach that prioritizes customer collaboration and rapid delivery of working software. In the context of a disease recognition system, it would involve breaking the development process into smaller, manageable chunks and delivering a fully functional, but limited, version of the system after each iteration.

Throughout the development process, the team would work closely with stakeholders, such as medical professionals and patients, to gather feedback and make adjustments as needed. This approach allows for rapid adaptation to changing requirements or unexpected obstacles, and can help ensure that the final product meets the customer’s needs.

The Agile development method allows the team to deliver a functional product in shorter timeframes, which can be beneficial for our project. Additionally, because Agile development emphasizes teamwork and collaboration, it can help to ensure that the final product is of high quality.

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