# Fakulti
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**SOME DISTANCE BASED SIMILARITY MEASURE OF NEUTROSOPHIC**
**SETS AND THE APPLICATION TO MEDICAL DIAGNOSIS**

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# ABSTRACT

Diagnosis is the process of determining which illness or condition is causing a person's symptoms and indications. The patient's medical history and physical examination are frequently used to acquire the essential informations for diagnosis. Medical diagnosis have many uncertain informations. The neutrosophic set is a combination of the fuzzy set and the intuitionistic fluffy set which can deal with uncertainty, vagueness and imprecision. Thus, this study aims to focus on distance based similarity measure of neutrosophic set to analyse medical diagnosis patient's risk. In this study, some distance based similarity measures will be based on Hausdorff distance, Hamming distance, and Euclidean distance. Then, a case study is conducted by using the data on the severity level of the existed symptoms and diagnosis found in one patient. The three distance-based similarity measures resulting the values more than 0.5 which show the patient possibly suffer from the disease. The obtained similarity measures are then ranking to identify patient disease. After that by using entropy weight method to make another comparison between three distance-based similarity measures which show more consistent result. This evaluation and diagnosis approach is applicable to a wide variety of other resources and the environmental problems.

# 1 INTRODUCTION

## 1.1 Research Backgroud

The process of recognizing which disease or condition causes a person's symptoms and indicators is known as medical diagnosis. The term "diagnostic" is most commonly used, with the medical context implied. The information needed for diagnosis is usually gathered from the patient's medical history and physical examination. During the process, one or more diagnostic procedures, such as medical testing, are frequently performed. Posthumous diagnosis is sometimes regarded a type of medical diagnostic. Diagnosis is an important part of a doctor's visit routine. The diagnostic technique includes categorization tests from a statistical standpoint. A vast amount of information is available to medical specialists thanks to contemporary medical technology, and medical diagnosis contains unclear, inconsistent, and indeterminate information, which is mandatory in medical diagnosis. A defined association between a symptom and a disease is frequently based on this ambiguous, contradictory data, which leads to us making medical diagnosis decisions. The majority of diagnosis issues involve pattern recognition, which medical experts use to make decisions. Medical diagnosis has proven to be effective in a variety of settings, including telemedicine, space medicine, and rescue services, among others, where human diagnosis is difficult to come by (Ali et al., 2018).

To prevent the mortality, many expert have introduced the decision-making method that can help reduce the mortality of the disease. This method can help to diagnose the disease in the early stage so from that the precaution can be taken to prevent the death. However, the system that have been introduced in the literature, so it's had a lot of deficiency that make the expert not confidently to use the method. In 1965, Fuzzy sets that deal with vagueness and imprecision had been proposed by Zadeh. The fuzzy sets have been derived for many extensions and the branch is neutrosophic sets. Neutrosophic set is a speculation of fuzzy set and intuitionistic fluffy set. In neutrosophic rationale, a recommendation has a level of truth (T), a level of indeterminacy