

## Covering-based rough set classification system

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**Abstract** Medical data classification is applied in intelligent medical decision support system to classify diseases into different categories. Several classification methods are commonly used in various healthcare settings. These techniques are fit for enhancing the nature of prediction, initial identification of sicknesses and disease classification. The categorization complexities in healthcare area are focused around the consequence of healthcare data investigation or depiction of medicine by the healthcare professions. This study concentrates on applying uncertainty (i.e. rough set)-based pattern classification techniques for UCI healthcare data for the diagnosis of diseases from different patients. In this study, covering-based rough set classification (i.e. proposed pattern classification approach) is applied for UCI healthcare data. Proposed CRS gives effective results than delicate pattern classifier model. The results of applying the CRS classification method to UCI healthcare data analysis are based upon a variety of disease

diagnoses. The execution of the proposed covering-based rough set classification is contrasted with other approaches, such as rough set (RS)-based classification methods, Kth nearest neighbour, improved bijective soft set, support vector machine, modified soft rough set and back propagation neural network methodologies using different evaluating measures.

**Keywords** Rough set · Covering-based rough set (CRS) · UCI healthcare data · Classification · Experimental analysis

### 1 Introduction

Healthcare data classification systems are used for a variety of healthcare domains such as medical image classification and biological signal classification [1–6]. The key bases of this common unpleasantness are because of the lacking comprehension of biomedical systems and their connections, and the anonymity of healthcare outcomes and extents. Besides, various sicknesses show up in various levels, in mix with other related sicknesses and with various manifestations of mutable expansion and arrangement. Subsequently, it would be fundamental and extremely gainful to guarantee quick, precise and important analysis for various across-the-board and deadly diseases. That would furthermore enhance the adequacy of healthcare treatment and in addition the quickness and accuracy of the cure response, distressing the recuperation and future of the ill human being and the functioning proficiency of the medicinal elements. If we additionally consider the increasingly growing amount of various collected medical data, we can easily appreciate the necessity of its categorization and the expediency of such a classification framework. The regular development of different

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