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(54) Title of the invention : MACHINE LEARNING AND FUZZY LOGIC BASED SMART DETECTION OF CHRONIC LUNG CANCER

<p>(51) International classification</p> <p>(31) Priority Document No :NA (32) Priority Date :NA (33) Name of priority country :NA (86) International Application No :NA Filing Date :NA (87) International Publication No :NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant :</p> <p>1)Yalla Venkateswarlu,International School of Technology and Sciences for Women Address of Applicant :Professor, Department of Computer Science Engineering, International School of Technology and Sciences for Women Rajahnagaram Rajahmundry, Andhra Pradesh India 533294 Andhra Pradesh India</p> <p>2)Dr Arvind Kumar Shukla,IFTM University 3)Mr. S V Dharani Kumar,GRT Institute of Engineering and Technology 4)Sujithra L R,Dr.NGP Institute of Technology 5)Dr.B.Suresh Kumar,Chaitanya Bharathi Institute of Technology 6)Dr.S.Praveena,Mahatma Gandhi Institute of Technology 7)Ms.R.S.Soundariya,Bannari Amman Institute of Technology 8)Dr J Nirmaladevi,Bannari Amman Institute of Technology 9)Ms. B. Vishnupriya,Bannari Amman Institute of Technology 10)Mrs.R.M.Tharsanee,Bannari Amman Institute of Technology 11)Dr.S.Sugumaran,Vishnu Institute of Technology 12)Mr.Rajendra Soloni,G M Institute of Technology</p> <p>(72)Name of Inventor :</p> <p>1)Yalla Venkateswarlu,International School of Technology and Sciences for Women 2)Dr Arvind Kumar Shukla,IFTM University 3)Mr. S V Dharani Kumar,GRT Institute of Engineering and Technology 4)Sujithra L R,Dr.NGP Institute of Technology 5)Dr.B.Suresh Kumar,Chaitanya Bharathi Institute of Technology 6)Dr.S.Praveena,Mahatma Gandhi Institute of Technology 7)Ms.R.S.Soundariya,Bannari Amman Institute of Technology 8)Dr J Nirmaladevi,Bannari Amman Institute of Technology 9)Ms. B. Vishnupriya,Bannari Amman Institute of Technology 10)Mrs.R.M.Tharsanee,Bannari Amman Institute of Technology 11)Dr.S.Sugumaran,Vishnu Institute of Technology 12)Mr.Rajendra Soloni,G M Institute of Technology</p>
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(57) Abstract :

Diagnosis of lung cancers based on Technology using Medical field data has created interest among the researchers. This invention focuses on Development of Machine learning and Fuzzy logic system supporting decision making in prediction of lung cancer using the dataset of the medical field using the technique of data mining. A novel method is proposed in this invention based on knowledge system for prediction of lung cancer using techniques of removal of noise, clustering and prediction. Fuzzy rules are generated using classification trees and regression trees that are used in the system based on the knowledge system. Testing of the proposed method is done on various medical dataset of patients. Remarkable improvement is obtained by the proposed method for prediction of lung cancer in the medical patient datasets. Combining the rule based fuzzy with noise removal CART along with the clustering techniques is effective in prediction of lung cancer from dataset of real world. This system based on training and knowledge assisted medical practitioners in the clinical analytical method in healthcare practice.

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## Patent Search

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**Abstract:**

Diagnosis of lung cancers based on Technology using Medical field data has created interest among the researchers. This invention focuses on Development of Machine le and Fuzzy logic system supporting decision making in prediction of lung cancer using the dataset of the medical field using the technique of data mining. A novel method i proposed in this invention based on knowledge system for prediction of lung cancer using techniques of removal of noise, clustering and prediction. Fuzzy rules are gener using classification trees and regression trees that are used in the system based on the knowledge system. Testing of the proposed method is done on various medical dai patients. Remarkable improvement is obtained by the proposed method for prediction of lung cancer in the medical patient datasets. Combining the rule based fuzzy with removal CART along with the clustering techniques is effective in prediction of lung cancer from dataset of real world. This system based on training and knowledge assiste medical practitioners in the clinical analytical method in healthcare practice.

**Complete Specification**

- Claims:1. A novel system based on machine learning and fuzzy logic is proposed for diagnosing of lung cancer using machine learning.
2. PCA method and EM method is used respectively for multi collinearity addressing and clustering of the data sets.
  3. The fuzzy rules are generated using classification trees and regression trees that are used in the system based on the knowledge for lung cancer prediction.
  4. Efficiency of the proposed method is analyzed by validating the system by conduction of experiments on the medical datasets of the public.
  5. Combination of PCA with clustering with the technique based on fuzzy rule to obtain the accuracy of prediction.
  6. Evaluation of the method is done using the input parameters and output parameter for diagnosis of lung cancer.

, Description:• The dataset is not complex as the data in the healthcare dataset of the big data.

- When the complexity of the dataset is more with characteristics that are unique then this issue is considered in developing novel method for overcoming the data processing challenges.
- Big data of healthcare includes heterogeneous, observations that are incomplete that are obtained from various sources.
- Mamdani algorithm is used for implementing the fuzzy model based on the logic toolbox of the MATLAB software.
- Combination of input and output MF obtains three dimensional curves that give a relationship among output and input.
- Interdependence is illustrated between output and input helps in exploring the lung cancer.
- Interdependence between input variables and the level of diabetes by the controlling surface obtained by the rules of fuzzy obtained by the dataset of PID and \_\_\_\_\_

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