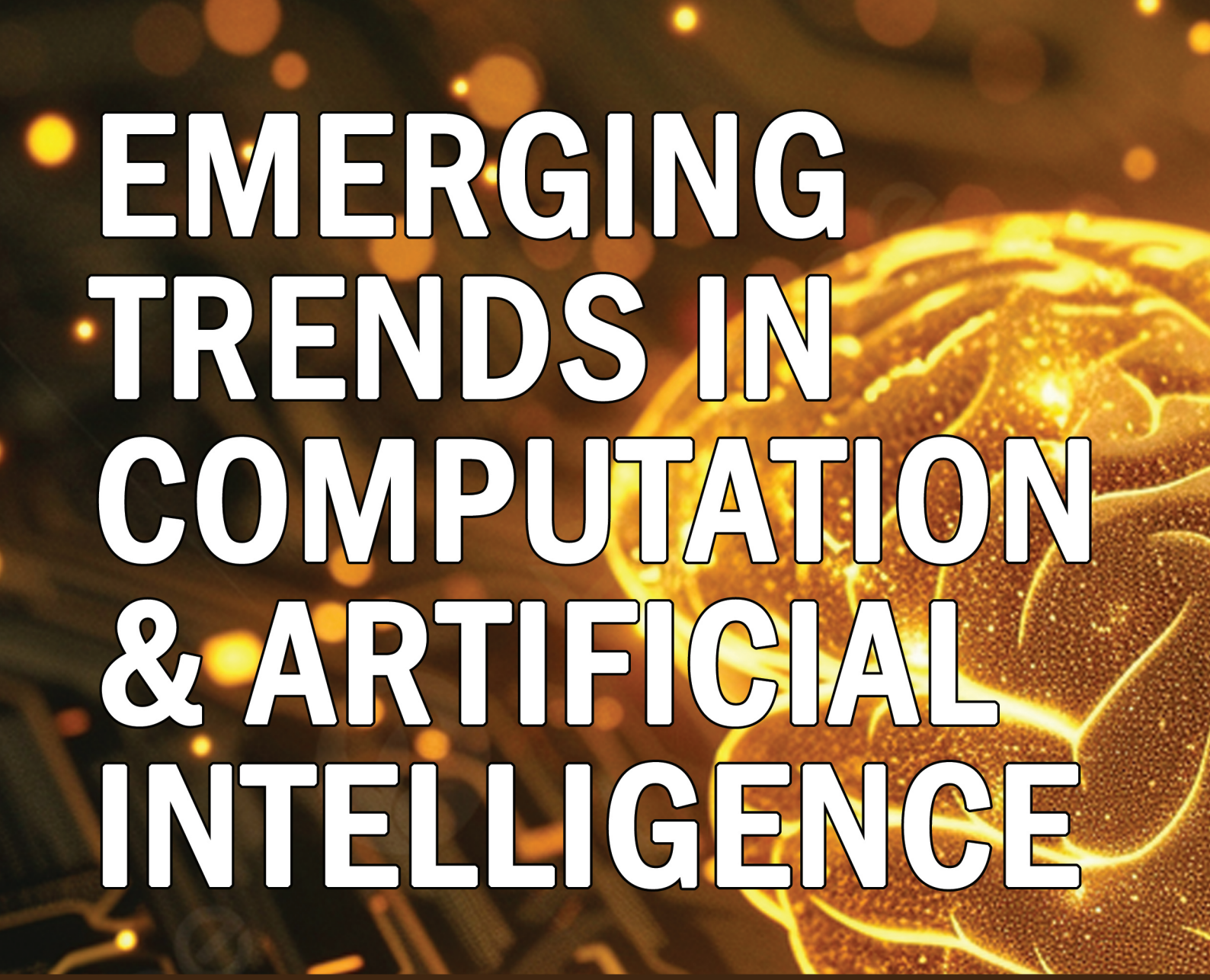

EMERGING TRENDS IN COMPUTATION & ARTIFICIAL INTELLIGENCE

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CHAPTER -7
CROP YIELD PREDICTION ANALYSIS OF INDIAN AGRICULTURE DATA USING ADVANCED MACHINE LEARNING TECHNIQUES

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ABSTRACT

Southern states of India consists all type of landscapes and soils with numerous irrigation technologies for growing all kinds of agricultural plants. An agricultural yield from South India fulfils our country needs and also generates huge revenue from the exports. In the previous research works in the agricultural mining and machine learning process focus the crop disease prediction and maximization of cropping yields. This work tries to find out the efficient classification technique for classification and analysis of season based yield production in the southern states of India. Naïve Bayes (NB), REPTree, AdaBoost, IBk and Random Tree classifiers from Weka are taken to classify the agriculture production data set based on seasons. An experimental result shows that the REPTree classifier produces 85.23% of accuracy in the 10 cross folds validation.

KEYWORDS

South Indian Agri Production, Classification, Season.

I. INTRODUCTION

In India, Agriculture is the one of main source of income to the rural area peoples and also the country. Especially in southern states of Indian landscapes like plains, coastal areas, hill areas, deltas and plateaus helps to growing numerous count of agriculture crops. Pulses, rice, millets, coconuts, fruits and vegetables category of the crops are important varieties in the south Indian farming.

Agriculture based income is the only source of micro level farmers. Various kinds of problems faced by the farmers in the agriculture cropping process and preserving the yields like drought, heavy rains and floods, diseases affected in the plants and yields, unhealthy soils and changed climatic conditions. Indian government supports the farmers and encourage to increase the agriculture lands through agricultural loans and subsidies, assistance though agriculture research institutes and department of agriculture. But Indian agriculture system needs better system forecast the agriculture yields, maximize the production, preserve and market the yields. Data mining helps to find the suitable crops for cropping, protect the crops from diseases and maximize the yields.

Agriculture based data mining techniques helps to farmers in the basis of soil classification and soil fertility diagnosis, analysis and forecasting of rain fall and weather, identification of suitable crops with disease detection in earlier stages, optimized usage of pesticides and insecticides and yield maximization.

Machine Learning (ML) techniques / algorithms/ models covers a learning process with the objective to learn from data set(training) to perform a task. In ML, set of attributes (features/variables) are called data. A feature can be nominal (enumerated like country name, gender), binary, ordinal (e.g., high or medium or low), or numeric (integer, real number, etc.). Performance metrics (statistical and mathematical models) are used to measure the performance of ML model on data (set of attributes). Finalized ML trained model utilized to cluster or classify or predict the test data (set of attributes).Tasks of ML categorized into learning type and learning models or the learning models hired to implement the particular task.

Depends on the data (set of attributes) and learning system, ML tasks are categorised as supervised and unsupervised. Normally data consists the sample inputs with its corresponding outcomes in the