

**STUDY ON CONTEMPORARY RELATIONSHIP OF HRD TO HRM**

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**ABSTRACT**

As do to the advancement each unfamiliar financial backer had expanded their stake in holding of the organization and had acquired 100 percent control on management. Thus have representative their unfamiliar assignment to the different dependable positions. This is processed effectively in the activity where the cycle is normalized and doesn't need any extra individual ability. While the position which requires individual expertise and ability for doing the cycle and assignment which continue to change in relationship with the new task. Anyway this of type position request higher specialized skill and top to bottom neighborhood working information on assembling framework as the vast majority of the gear's are re-appropriated this appointment of unfamiliar expat to that position caused dis-fulfillment among the accomplished representatives. Though the subordinates working are having a quite a long while of involvement however their compensation and other compensation are not even close to this compensation of the unfamiliar expat while they are additionally taking the comparable practical obligation. This exploration had respected the end that this likewise prompts the disappointment among the accomplished workers. In these undertakings engineering industrial units the new enlisted workers generally get the association together with the craving of learning new technology and skill. Anyway on the off chance that this not granted as expected are dis-fulfilled

**Keywords:** Relationship , HRD , HRM

**INTRODUCTION**

The Conventional Relationship Between Hrd To Hrm

De Simone and Harris layout the ordinary worldview They let us know that 'in many associations, human resource improvement is a piece of a bigger human resource management division'. They likewise advocate that HRM is 'the viable usage of workers to accomplish the objectives and procedures of the association.' They (De Simone and Harris) partition the HRM capacities into essential capacities and auxiliary capacities. (You

# Implementation of Active Learning Tools in Modern Pedagogy

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**Abstract:** Now-a-days, it is important to integrate innovative tools in engineering education. It is need of hour that conventional teaching-learning techniques should be replaced by state-of-art tools that enable instructor to deliver the content in effective manner so that learners become proactive in teaching-learning process. Active learning tools play a vital role in modern day pedagogy. Today's pedagogical tools in active learning give that opportunity to learners to exercise their problem-solving skills and allow them to work collaboratively in groups. A detailed analysis of tools such as Kahoot, Eclipse crossword and flipped class is discussed in this paper. Our analysis involved engineering learners from Electrical and Electronics and Communication streams from our college. Participation of learners in activities such as Kahoot and Eclipse crossword was more compared to flipped class which indicates learners are more inclined towards puzzle solving and quizzing technique. We examined how these techniques improved students' approach towards learning. It is a prime duty of instructor to engage students in the activities which serves the purpose of learning by doing. Active learning tools play critical role in making students proactive in their learning phase.

**Keywords** - Teaching-learning, pedagogical, social, Kahoot, Eclipse crossword, flipped class

**JEET Category — Practice**

## I. Introduction

Advancements in technology and the application of the technology in every field have emerged tremendously in past few years. Engineering education and modern pedagogy is also going through a transitional period in terms of innovation and acclimatizing to the changes in teaching-learning process. State-of-art technology gives liberty to instructors working in educational field to come up with innovative tools and techniques that raises the bar of content delivery in classrooms and make the process more interesting and learner-centric rather than conventional instructor-driven. It is indeed a challenge for an instructor to encourage student communication and interaction. Creating a collaborative environment than enable a comprehensive learning is a challenge. There is always a gap between active learning and components of teaching viz. course material, assignments, assessments etc. Hence it is important to bridge the gap to promote a high level of student engagement. Key components in every course is to design the

course material for content delivery, formulating rubrics to evaluate assignments and developing methods to assess overall performance of students. Active learning tools are such tools that enable instructors with that extra dimension to deal with literature and empower the whole process of percolating the knowledge to the students. There are various online active learning tools available now-a-days such as Idea Spinner, Q&A Platform, Polling, Cubing, Four Quadrants, Whip around, JIGSAW [23] etc. that develop and elevate students complying outcome based education. These virtual tools also provides a rich and joyful experience to students and help them retain the knowledge. Thus active learning techniques are useful in upgrading the soft-skills as well as technical skills of the students.

## II. Literature Survey

Active learning technique in a non-conventional way of approaching a teaching-learning process. It contrasts conventional teaching in terms of greater understanding of the subject literature through collaboration with peers, discussions and individual or group work through small projects [10]. A paper on Collaborative inquiry learning [11] shades light on improving engagement of students in class. It aims at bringing a new and promising culture of teaching and learning into the classroom where students in groups engage themselves into activities and develop a strong thinking on lines of how to tackle a problem and come up with a reasonable solution on their own. Conventional chalk and board technique is less productive than an active learning tool used for the same purpose. A comprehensive study [12] about integrating debate as an active learning technique in a group activity was found more effective than a conventional lecture in a class. With the advancements in technology, it gives as added advantage to the instructor to make use of tools based on the state-of-art technology and present an enriching experience to students in teaching-learning process. Various online gaming techniques give teachers and students a valuable returns [13]. Rapid information processing is a valuable aspect of leaning. In order to understand relevant course concepts in short duration of time in class, one of the ways can be to give a short time span and students are required to investigate the topic given to them, analyse the context or in some cases come up with a solution for a particular problem assigned by the course instructor. This definitely helps the critical thinking ability of students. Impromptu presentations can also be integrated as active learning tool [14]. It is required to bridge the gap between the conventional abstract class-based methods to fully immersive active learning activities which

## ANDROGOGICAL MEASURES TO IMPROVE EMPLOYABILITY OF ENGINEERING GRADUATES

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### Abstract:

Engineering Education in India is passing through turbulent times. It is seen that since 2018 the admissions for core branches such as Mechanical Engineering, Civil Engineering and Electrical Engineering is quite less compared to Computer Science and Engineering. Currently the supply of seats in engineering institutes exceeds the demand of seats. Institutions are unable to cope up with this sudden change and have reduced their intake in core branches or have altogether gone for closure of these branches over the last four years. Employability is one of the critical component for admissions. As the economy of nations boomed the demand for automation in manufacturing, use of Artificial Intelligence, machine learning has taken a quantum jump and the major IT companies over India had large hiring in these four years. In this work, the issues faced about employability of engineering graduates have been viewed from androgogical perspective and brainstorming was conducted with the stakeholders to arrive at the various issues ahead and the way to address the same. 26 measures were suggested by the various stakeholders be in alumni, parents, employers, training organizations, faculties. Google form was sent to the faculty members to solicit their opinion on the 26 points and Lickert scale of 1-5 rating was used to get the responses. Responses for 40 respondents (covering 6 Indian states) are analysed and the results are quite similar. 90% respondents agree that setting of new high tech labs and training for skill development, placement opportunities (Robotics, 3D Printing, Total Station QGIS, Revit, Sketch up), Functional MoUs with industries can help improve employability (with 70 % strongly agreeing). 90% respondents agree that finding out good sincere students (10-20%) i.e. segregation and grooming them in their field of interest, future plans can improve the knowledge, skill, attitude (KSA) for employment (with 50% strongly agreeing). 90% respondents agree that Self discipline /self management among students, attendance in college and responsibility in learning impact KSA of students (with 50% strongly agreeing). These responses are indicative that institutions need to align themselves in the changing times to make their students employable.

**Key words:** Androgogical Measures, Engineering Education, Employability, Engineering Graduates.

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### Introduction:

Engineers play a vital role in improving the quality of human life and India is one of the largest producers of engineers with 23 IITs (Indian Institute of Technology), 31 NITs (National Institute of Technology) and state universities offer technical education in the form of undergraduate, graduate and postgraduate programs [1].



# Implementation of Active Learning Tools in Modern Pedagogy

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# Smart Contract Using Blockchain For Safely Managing The Pharmaceutical Industry Record

**Akhilesh Hiremath Swami , Chetan Shripal Arage**DOI: <https://doi.org/10.47750/pnr.2022.13.S09.1199>

## ABSTRACT

Blockchain technology has facilitated rapid digital transformation across numerous industries, including the pharmaceutical business. Lack of transparency, trouble tracing medicines, distrust, and the distribution of drugs that have beyond their expiration date are just some of the issues plaguing the pharmaceutical industry. Many of these problems have already been addressed through the application of blockchain technology. Consequently, we need a system that can trace and track drug supplies at every level if we are to successfully combat the issue of counterfeiting. The supply chain process might be managed and tracked with unprecedented efficiency with the use of blockchain technology. This study presents the results of a systematic exploration of blockchain technology's potential applications in the pharmaceutical industry. We gathered it, analysed it, and validated it with a test database. According to the findings, blockchain technology has four main areas of possible use: combating the spread of counterfeit medicines, facilitating the distribution of genuine pharmaceuticals, tracing the origins of genuine pharmaceuticals, and ensuring consumers' physical and personal protection. In this study, we build and evaluate a blockchain-based system for managing the distribution of pharmaceuticals. Our proposed solution centres on a blockchain-based pharmaceutical distribution management system. Here, Ethereum is employed for the medicine supply chain management system. In the smart pharmaceutical industry, Ethereum can be used to track the distribution of medications in real time. Smart contracts enable the automated implementation of agreements, ensuring that all parties are kept in the loop without any unnecessary delay or third-party intervention. It also specified the algorithmic framework and application architecture for a distributed healthcare distribution network. Finally, we put our designed system through a series of tests to gauge its efficacy and practicality.

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Research Article

## Scrutiny of Novel Tosylacrylimidamide as Non-Classical Bioisosteres of Sulfonylurea in Type II Diabetes Mellitus through Synthesis, In Vitro and Docking Studies

Santosh K. Surve, Rutikesh Gurav, Akshay Gurav, Dr. Pradeep Lasonkar, Jeevan Kondre, Dr. Veerabhadra Kalalawe, Prof. Sunita S. Gawali, Prof. Shankar Hangirgekar ✉

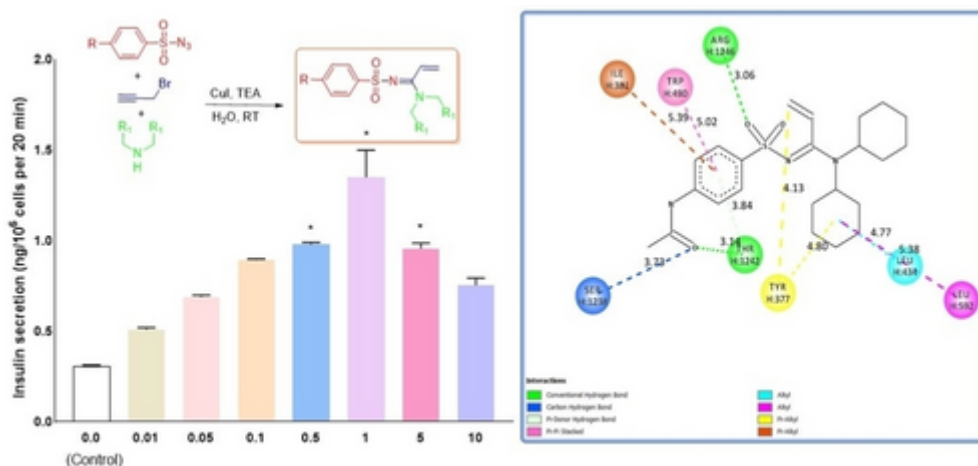
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### Graphical Abstract

A series of Novel Tosylacrylimidamide derivatives **4 a–j** were synthesized by non-classical bioisosteric approach of sulfonyl urea's. The analogs were synthesized from copper mediated multicomponent reactions of 4-Acetamidobenzenesulfonylazide, propargyl bromide, and secondary amines which led to the formation of Tosylacrylimidamide. All the synthesized derivatives were scrutinized for in vitro insulin secretion assay on MIN-6 cells. Amongst all synthesized derivatives compound **4 f**, **4 g**, **4 e** exhibited promising insulin secretion activity. Molecular docking was investigated for all active compounds and showed promising lead.



### Abstract

Article [Publisher preview available](#)Bio-synthesis of ZrO<sub>2</sub> for ZrO<sub>2</sub>@Ag-S-CH<sub>2</sub>COOH as the retrievable catalyst for the one-pot green synthesis of pyrazoline derivatives and their anticancer evaluation**WILEY**March 2022 · *Applied Organometallic Chemistry* 36(5)

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Authors:

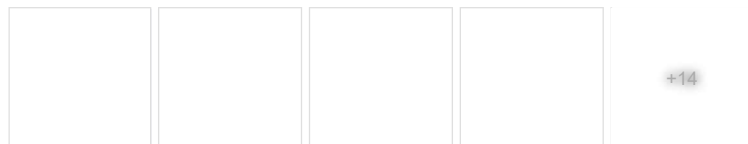
**Rutikesh Gurav**  
Shivaji University, Kolhapur**Rohit Dattatray Nalawade****Shivaji Dnyandeo Sawant****Nayak Devappa Satyanarayan**  
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[Citations \(4\)](#)[References \(78\)](#)[Figures \(19\)](#)

## Abstract and Figures

In the present work, *Ficus benghalensis* (F.B.) leaf extract was used for the synthesis of ZrO<sub>2</sub> nanoparticles. Further, ZrO<sub>2</sub>@Ag-S-CH<sub>2</sub>-COOH was synthesized using biosynthesized ZrO<sub>2</sub> and its catalytic potential was examined in the synthesis of pyrazoline from reaction of chalcone and hydrazine hydrate at room temperature. The structural conformation of ZrO<sub>2</sub>@Ag-S-CH<sub>2</sub>-COOH has been done using FT-IR, SEM, EDX, XRD, TGA-TDA, XPS, DLS techniques high turnover number (TON) and high turnover frequency (TOF), study. The ZrO<sub>2</sub>@Ag-S-CH<sub>2</sub>-COOH demonstrated outstanding catalytic activity for the synthesis of pyrazolines. The structures of the pyrazoline derivatives were confirmed by FT-IR, <sup>1</sup>H and <sup>13</sup>C NMR and mass spectrometry techniques. Synthesized pyrazoline were tested for anti-cancer activity against human lung cancer cell line A-549 study and confirmed by molecular docking investigations.



Important drug molecules... FT-IR spectrum of ZrO<sub>2</sub> and... XRD spectrum of ZrO<sub>2</sub> and... EDX spectrum of ZrO<sub>2</sub> and... SEM images of ZrO<sub>2</sub> and... ZrO<sub>2</sub>@Ag-S-...

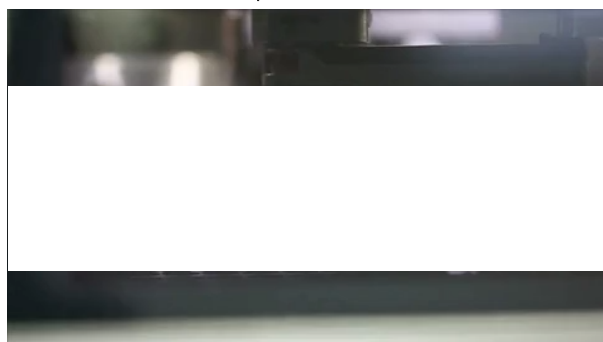
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Applied Organometallic Chemistry / Volume 36, Issue 3 / e6547

RESEARCH ARTICLE

## ***Ficus benghalensis* leaf extract in biosynthesis of Fe<sub>3</sub>O<sub>4</sub> for Fe<sub>3</sub>O<sub>4</sub>@Ag-S-CH<sub>2</sub>-COOH: A novel catalyst for synthesis of new 3,4-dihydropyrimidin-2(1*H*)-ones and their anticancer evaluation**

Rutikesh Gurav, Akshay Gurav, Sunita Salunkhe-Gawali, Sushilkumar Jadhav, Prafulla Choudhari, Sandeep Sankpal, Shankar Hangirgekar ✉

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### **Abstract**

The current manuscript elucidates *Ficus benghalensis* (F.B.) leaf extract-mediated green synthesis of Fe<sub>3</sub>O<sub>4</sub> nanoparticles as magnetic support for the synthesis of novel Fe<sub>3</sub>O<sub>4</sub>@Ag-S-CH<sub>2</sub>-COOH magnetic nanocomposite. The structure of Fe<sub>3</sub>O<sub>4</sub>@Ag-S-CH<sub>2</sub>-COOH is confirmed by various characterization techniques such as FT-IR, XRD, SEM, HR-TEM, BET, and VSM analyses. Catalytic potential of Fe<sub>3</sub>O<sub>4</sub>@Ag-S-CH<sub>2</sub>-COOH was tested for the syntheses of novel 3,4-dihydropyrimidin-2(1*H*)-ones through one-pot Biginelli reaction of aryl aldehydes, urea, and avobenzene. The Fe<sub>3</sub>O<sub>4</sub>@Ag-S-CH<sub>2</sub>-COOH exhibited outstanding catalytic activity towards Biginelli reaction and could be easily separated from the reaction mixture by an external magnet. Interestingly, catalyst could be recycled for four successive turns without considerable loss in the catalytic activity. The structure of novel 3,4-dihydropyrimidin-2(1*H*)-ones were confirmed by FT-IR, <sup>1</sup>H, <sup>13</sup>C-NMR, mass spectrometry, and single crystal X-ray diffraction technique. Synthesized novel 3,4-dihydropyrimidin-2(1*H*)-ones were tested for anti-cancer activity against human liver cancer cell line Hep-G2 along with anti-angiogenesis study and confirmed by molecular docking investigations.

### **CONFLICT OF INTEREST**





# [MerDABCO-BSA][HSO<sub>4</sub>]<sub>2</sub>: A novel polymer supported Brønsted acidic ionic liquid catalyst for the synthesis of biscoumarins and *ortho*-aminocarbonitriles

Pradeep Patil <sup>a</sup>, Archana Yadav <sup>a</sup>, Dattatray Chandam <sup>b</sup>, Rutikesh Gurav <sup>a</sup>, Shankar Hangirgekar <sup>a</sup>, Sandeep Sankpal <sup>a</sup>  

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## Abstract

In the present work, a novel polymer supported Brønsted acidic ionic liquid catalyst is synthesized by functionalization of Merrifield resin with DABCO, 1,4-butane sultone and concentrated H<sub>2</sub>SO<sub>4</sub> is reported. The structure of synthesized catalyst was confirmed by FT-IR, SEM, EDX, XRD, XPS, TGA and DTA techniques. The catalytic efficiency of novel Brønsted acidic [MerDABCO-BSA][HSO<sub>4</sub>]<sub>2</sub> was evaluated in the synthesis of biscoumarins from 4-hydroxycoumarin and aryl aldehydes in ethanol at 80 °C. Also, *ortho*-aminocarbonitriles were synthesized from cyclohexanone, malononitrile and aromatic aldehydes in ethanol:water (70:30 v/v) under ultrasonic condition. The catalyst exhibits good stability under thermal as well as ultrasonic conditions. The recycled catalyst demonstrated good catalytic efficiency for four cycles without significant deterioration in the catalytic activity. The present protocol offers advantages of operational simplicity, shorter reaction times and higher yields of the products.

## Introduction

Since the last decade, ionic liquids (ILs) have been studied extensively in homogeneous catalysis owing to their significant characteristics such as low vapor pressure, high thermal stability, ability to solvate compounds of varying polarity and ease of product separation, etc. [1]. In order to achieve desired effects, task-specific ionic liquids can be obtained by selecting suitable cations and anions [2]. Among the task-specific ionic liquids (TSILs), sulfonic acid functionalized ionic liquids (SAFILs) have received paramount interest because of their efficient catalytic potential [3]. The catalytic activity of SAFILs has been demonstrated in Mannich reaction [4], Biginelli reaction [5], bis-indolymethane synthesis [6] and pyrazoline synthesis [7], etc. However, considering the stringent environmental concerns and the ever-increasing demand for sustainable processes, employing ionic liquid catalysts alone without support for organic transformations have some limitations. Therefore, supported ionic liquid phase (SILP) catalyst is an emerging concept in the field of heterogeneous catalysis [8]. Particularly, polymer-supported ionic liquids facilitate easy catalyst recovery, high selectivity, recyclability and less contamination of products with a catalyst [9].

Multicomponent reactions (MCRs) are a facile synthetic approach to access medicinally relevant heterocyclic compounds through the construction of two or more covalent bonds in a single reaction vessel [10]. MCRs offer several advantages such as atom economy, diversity-oriented synthesis, high bond-forming index, excellent yields, simple purification processes and minimal waste generation [11]. Moreover, developing MCRs using eco-friendly solvents, reusable catalysts and energy-efficient techniques have received significant research interest in green chemistry [12].

# **NEED OF ERA THE GROWING AVALANCHE AND BOON TO HEALTHCARE: BIG DATA**

**Shivani Kale<sup>1</sup> , Dr. Preeti Patil<sup>2</sup>**

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## **ABSTRACT**

*Earlier as the studies shows the death rate of patients were high due to lack of proper diagnosis , due to lack of resources and medicine on time. It was really impossible for doctors to get the information of patient within time using traditional means and analyzing that structured and unstructured data in time to rescue the patient. So the big Data in healthcare is being used to cure disease, predict epidemics, improve quality of life. So the paper focuses on how big data analytics will be helpful to cut down the death rate at certain extent in healthcare.*

**Keywords:** *Big Data, security, privacy, sharing, value, infrastructure.*

## **I. INTRODUCTION**

Abundance of health care big data is easy to access because of accessibly-written framework by big data and health analytics. Analysts and decision makers particularly those in hospitals and health systems is recommended for reading the data and health Analytics documents specially those in public health, pharmacy and biotechnology firms, clinical practices, health, accountable care organizations, medical homes, Medicare, health information technology companies, and medical device and diagnostics firms.[1]

## **II. BIG DATA AND HEALTHCARE**

The Big data with hadoop technologies are used to serve the public health with the following objectives:

### **Public health**

- 1) Disease patterns can be analyzed to track disease outbreaks and can be transmitted to improve condition of public health.
- 2) Targeted vaccines can be accurately developed with high speed, e.g., choosing the annual influenza strains.
- 3)The Population can be benefited by identification of needs ,predicting and preventing crises and providing services by turning huge amounts of data into intelligent information.

**Big data analytics also contribute to evidence-based medicine**

# Data Mining Technology with Fuzzy Logic, Neural Networks and Machine Learning for Agriculture



Shivani S. Kale and Preeti S. Patil

**Abstract** Farmers countenance failure as the crop cultivation decisions by farmers always depend on current market price as the production sustainability processes are not taken into consideration. So there should be some platform which guides the farmer for taking correct decision depending on their need, environment, and changing seasons. The system proposes Marathi calendar using nakshatras which guide farmer for crop cultivation decision. It aims to create methodologies to strengthen the farmers' economic conditions by providing informed decisions. The methodology used for the system specially uses data mining to generate expert decision along with the fuzzy logic, machine learning to give decisions appropriately to farmer for cultivation of expected crops.

## 1 Introduction

Agriculture theaters a vital role in India's financial system. Exploration in farming is intended for the sake of increased crop production at cheap expenditures and with amplified yield. Not only final product (crop produced) should be acceptable but also processes to develop that product should also be sustainable. Today's need is to train the farmer with sufficient as well as useful techniques necessary for farming. The farming usually depends on weather conditions and monsoon predictions. Each specific day in each and every season, according to farming practices has its own tasks to be worked out and if it is followed correctly it will consequence in increase yield of production.

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4. **Jagielska et al.**, illustrate solicitations to farming associated extents. They focused and discussed the parameter crop yield as very crucial factor for farmer. Earlier, the crop production prediction was calculated by the facts known to farmer as well as his experience on precise land, yield, and weather circumstance. They added discussion regarding statistics such as likelihood in concepts of probability, relationship rating with respect to fuzzy set concepts [4].
5. **Tellaeché et al.**, identifying pest in accurate crop growing. Author has reviewed different software applications with respect to weeds revealing and finding accurate spray pattern for respective crop and related weed. They have proposed a system for giving decisions to farmers to identify the correct pattern. The algorithms used for the expert system are KNN, Fuzzy logic techniques [5].
6. **Veenadhari** The author has taken into consideration the Bhopal district of Madhya Pradesh for the study. They analyzed effect of climatic conditions with respect to rabi as well as kharif crop yield. The technique used is decision tree analysis. The study is undertaken for soyabean and wheat crop. The effects of rain, temperature, humidity, etc., are studied. So the study shows that paddy crops are mostly affected by rainfall and wheat crop is having dependency shown for temperature parameter mostly [6].
7. **Shalvi and De Claris** In this paper the author stated that Bayesian network is a popular application frequently used for agriculture databases. The system designed for farming purpose uses most popular methodology of Bayesian network. Finally they concluded that Bayesian Networks are realistic and proficient [7].
8. **Chinchulunn et al.**, The paper categorize the data mining algorithms KNN rules into two classes, i.e., (1) Coaching (2) Testing. They proposed that fewer points need to be considered in first class [8].
9. **Rajagopalan and Lal** The comparative analyses of data mining technologies and their applications are considered for agricultural databases. For example they took KNN for application on daily precipitations simulation, etc. [9].
10. **Veenadhari et al.**, The author has discussed SVM methodology for categorization of data into two classes [10].
11. **Tripathi et al.**, They have shown the application of Support Vector Machine based algorithms on future weather prediction. They verify the results for weather alteration on precipitation over India [11].

As nearly all the ES (expert system) concentrates on exacting features of yield similar to insect, weeds, compost, etc. So all the expert systems and technology available for farmers are giving solutions to problems but they are scattered among different applications. So farmers are not getting ONE STOP solution. Similarly the expert systems are designed are either for particular area or for according to some climatic parameters. So farmer needs expert system which may possibly answer nearly all the questions and suggests the better solution for their existing situation.

Also none of the system helps the new grower about the knowledge of farming concept

### 3 Proposed Work

In any sector management is important aspect. Agriculture field is also management related field. In agriculture Informed decisions are taken by the farmers based on the knowledge experience he had. Nowadays due to complex, complicated, computational world, it is required to adapt exact activity or agriculture process for cultivation of crop. Also it is required to make sure that no farmer survives on one crop pattern. So we suggest that farmer should use multiple crop patterns as per season in all types of monsoon regions of India reason for cultivation and profit. So we used data mining along with Artificial intelligence, Machine learning and fuzzy logic for well-being of crop and overall agriculture sustainability.

The three terms we used are as follows and can be described as Fig. 1

#### (I) Artificial Intelligence

In this we proposed all farming activities are designated in such pattern so that it is automation of crop pattern. For the given selected crop AI will take inputs such as

- Climate needed for that crop, according to climate—Atmospheric temperature, humidity, sunlight, etc. These are the direct inputs taken from the local weather forecasting department of India
- Soil required for that crop (TYPES OF SOIL)
- Plowing date required for that crop in various range
- Harvesting date required for that crop in various range
- Insecticides bites for that crop
- Fungicide bites for that crop
- Fertilizers for that crop
- Water requirement for that crop.

All the inputs are considered by AI for any type of crop. The simple algorithm of AI can take this information as input for producing proper crop decision. The inputs are also taken by machine learning algorithm at highest level by using ANN. AI uses more static programming instruction (Fig. 2).

#### (II) Machine Learning application in agriculture [12]

Full exploitation of data mining technology can be done by machine learning. Machine learning actually processes the data for example study of pattern recognition in agriculture field for particular crop or suitable cropping pattern. It also makes comparisons to give most suitable crop pattern that can be produced. Machine learning uses dynamic program instruction as well as static programming instructions too. Machine learning takes changing inputs such as change in temperature value which in turn makes changes into

- Harvesting time
- Spraying patterns of Insecticide and Pesticide





Fig. 3 Mix cropping pattern

### 4 Result

There is no secret to success. It is the result of perfection, hard work, learning from failure, loyalty, and persistence. Productivity is never an accident. So for better crop yield and correct informed decision by farmer can be done using Machine learning algorithm. The following table shows the varying parameters input to agriculture and different algorithms we have used with the probable result (Fig. 4).

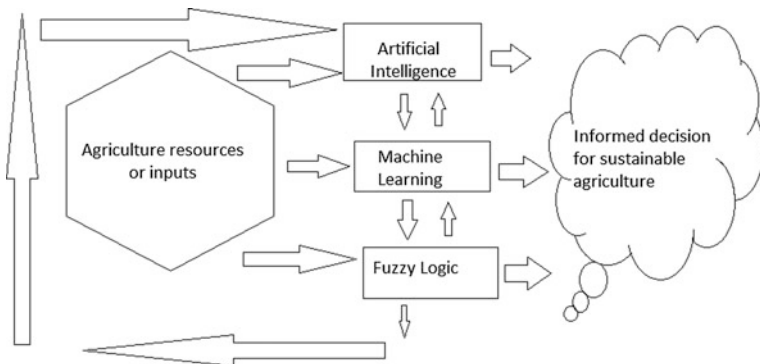


Fig. 4 Data flow of data mining for sustainable agriculture

is required for that but it can be handled all type of data by systematic approach of programmer or researcher.

So the paper has focused the possible inputs, outputs and usage of different algorithms to give correct decision to farmers for increased crop yield.

Now a day agriculture activity or decisions are very complex and not proper foundation for that by using data mining we can do that properly.

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## Application of modified ensemble technique using weights optimization for Crop Yield Prediction

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**Abstract:** Machine Learning is proved to be an effective tool for reasonable predictions as compared to other techniques. Initially single ML model is used on data to get predictions however, rather than one machine learning model replacing it with group of ML Models can diminish variance, bias or both of prediction. still variety of other characteristics to be examined with respects to accuracy, time and scale of the prediction. If a greater number of features affecting the prediction values are available the result generated will be more appealing and correct. This paper delivers framework to forecast yields with the application of Machine learning concept. The study has considered 11 crops with 15 features of 300 districts in India. Initially base learners' model such as Linear Regression, LASSO Regression, Decision Trees, Random Forests, Extreme Gradient Boosting (XGBoost), Support Vector Machines are trained and tested for predicting yield. unoptimized average ensemble (UAE) and proposed optimized average ensemble (POAE) is designed using base learners. The POAE is giving improved results (MSE =63114, Explain variance score = 0.92062 and R2 score = 0.92053) than UAE (MSE=81215, Explain variance score = 0.87058 and R2 score = 0.86841) with respect to performance metrics used.

### 1. INTRODUCTION

The Paper outlines study and implementation of different ML algorithms on variety of crops using variables which includes temperature, rainfall and different soil parameters for tentatively 300 districts of INDIA. The objective of paper is to suggest farmer what will be the tentative yield of crop. So, in first step base learner model is designed and applied and performance is measured. In step 2 ensemble technique is applied and measured the performance. Step 3 Optimized ensemble is applied and performance metrics are calculated. Comparison of all the models depending on different parameters are carried out. The Paper is basically organized into four sections. Dataset and Data preprocessing is included in section 1. The different ML methodologies are described in Section II. Section III is devoted for discussion of performance of models with the help of results obtained. To finish, the paper concludes with the findings in Section IV.

#### Data set

The dataset includes 15 features namely state, District, year, season, crop, temperature, rainfall, production, N, P, K, Ph, Fc, Oc, Zn. The dataset is having nearly 34,312 records. The data is from year 1997 to 2014. The data is collected from government website.

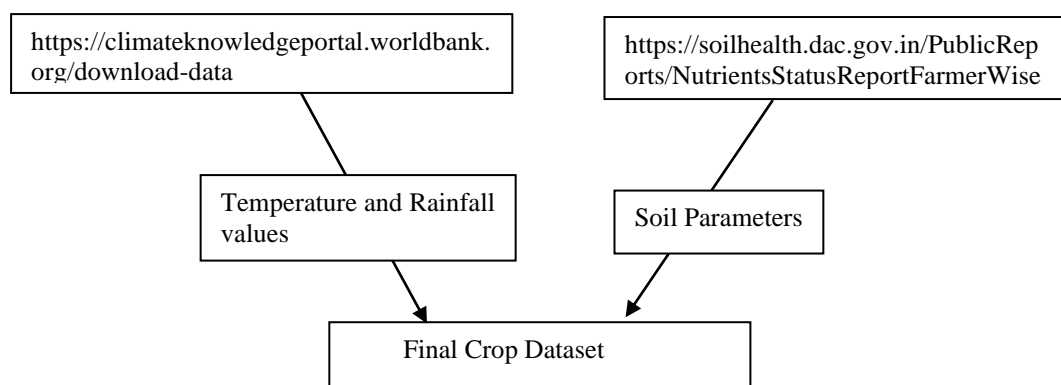


Figure 1: Dataset

#### Data Pre-processing

Step 1 – All rows with null values are to get dataset with proper values

Step 2 – Encoding

Season feature is encoded with 0 and 1

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## **Implementation of Green Building Concept to Hostel Building**

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**ABSTRACT**

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## **Recent Technologies in Restoration of Dam Structure.**

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Shivaji University, Kolhapur, India*

### **ABSTRACT**

*The restoration of dam structure using modern technology is the main topic of this study article. Dams are*



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RESEARCH ARTICLE

## Design and synthesis of $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>@Ag-S-CH<sub>2</sub>-COOH nanocatalyst for one-pot synthesis of 2,3-dihydroquinazolin-4(1H)-ones and their anti-skin cancer activity

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### Abstract

The ongoing work describes the catalytic evaluation of  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>@Ag-S-CH<sub>2</sub>-COOH magnetic nanoparticles utilizing  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> obtained from waste iron rust for one-pot synthesis of 2,3-dihydroquinazolin-4(1H)-ones. As-prepared  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>@Ag-S-CH<sub>2</sub>-COOH nanoparticles were characterized by Fourier transform infrared spectroscopy (FT-IR), X-ray diffraction (XRD), scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy (EDX), dynamic light scattering (DLS), transmission electron microscopy (TEM), X-ray photoelectron spectroscopy (XPS), and Brunauer–Emmett–Teller (BET) technique. The catalytic performance of greener  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>@Ag-S-CH<sub>2</sub>-COOH nanoparticles was utilized in the synthesis of 2,3-dihydroquinazolin-4(1H)-ones. The excellent catalytic performance was shown by magnetic nanoparticles in addition to its ease of separation by an external magnet and can be recycled for five consecutive turns without significant loss of catalytic activity. Furthermore, the synthesized 2,3-dihydroquinazolin-4(1H)-ones were confirmed by FT-IR, <sup>1</sup>H, <sup>13</sup>C nuclear magnetic resonance (NMR), and mass spectrometry. Moreover, the synthesized 2,3-dihydroquinazolin-4(1H)-ones were evaluated for their anticancer efficiency against the human skin cancer cell line B16F10 along with molecular docking investigation.

### CONFLICT OF INTEREST STATEMENT

The authors declare that there are no financial conflicts of interest.

# PHOTOVOLTAIC AND PHOTOVOLTAIC THERMAL TECHNOLOGIES FOR REFRIGERATION PURPOSES: AN OVERVIEW

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## Abstract

Refrigeration systems have a broad range of applications, playing a critical role in human life. Especially, vaccine preservation in rural regions has become more critical than in the past during the COVID19 era. In this sense, meeting the cooling process's energy need with renewable energy is critical, as the grid cannot support it. Thus, solar energy has been extensively studied for use in refrigeration cycles. Compression, absorption, adsorption, desiccant, and ejector refrigeration cycles are frequently used in this configuration. This article discusses multiple studies showing various attributes' impact on a system's overall efficiency. Most previous reviews did not cover PV with refrigeration cycles. So, this paper surveys the literature on PV-powered cooling cycles. For better classification, PV technologies are categorized into three types: PV, PVT, and CPVT. With this regard, CPVTs still have a way to progress due to a lack of studies compared to PV. The works are divided into three main sections as Exergy Studies, Experimental Studies, and Simulation and Numerical Studies. This review paper categorizes and rates refrigeration-assisted solar systems based on exergy destruction, exergy efficiency, and COP of cooling cycles. The results showed that PV panels have the highest exergy destruction in most of the systems. It is concluded that using PV technologies has a great potential to supply cooling demand, especially in a hot climate condition. Moreover, the study's findings are anticipated to aid designers in scaling up photovoltaic-based cooling systems, resulting in more efficient and sustainable designs.

**Keywords:** Refrigeration, Solar panel, Photovoltaic, Photovoltaic thermal, CPVT, COP

## Introduction

As time goes by, renewable energy becomes vital, referring to the energy shortage on fossil fuels. In past decades, scientists paid more attention to using renewable energies like solar as a primary energy source. Many methods could use this energy, such as power production, refrigeration, food drying, water heating, and space heating. Another reason for using solar power, besides energy shortage, is the CO<sub>2</sub> issue. During the past decade, carbon dioxide has become one of the leading human problems. To solve this issue, many researchers reported new methods that could be concluded to use renewable energies. Solar power should be analyzed as a good example of renewable energy due to its low price and reachable energy. Researchers concluded that solar power could be one of the best in reducing carbon emission and global warming issues. As mentioned above, refrigeration cycles could couple with solar energy, and this source could supply the energy demand of cooling cycles.