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dhruvay
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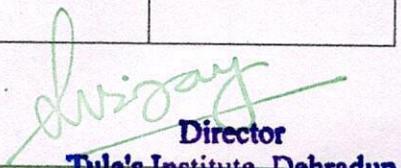
Vision

- To emerge as an academic centre producing world class professionals promoting innovation and research.

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- To promote intellectual and skilled human capital generation employment and entrepreneurship.
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- To establish as technology driven teaching learning institution.
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Taxonomy of the Amaranthaceae family in Banasthali Vidyapith campus

Dr. Prerana Badoni and Dr. Teena Agrawal

Abstract

Amaranthaceae is the angiosperm family, commonly known as the amaranth family. The name of the family is based on the genus *Amaranthus*. The characters of the family are based on the Chenopodiaceae family, some of the features resemble the prickly flowers family. Overall, the family contains 160 genera and around 2000 species, the exact number of the families varies litt to litt. The lineages of the family with the Caryophyllales orders in APG IV. Most of the species in the family are herbs, herbs may be annual in nature, they may be perennials in nature m some shrubs as well as the vines, lianas, and weeds are also found in this case. Many species have stems with swollen nodes, when secondary growth occurs in the stem, and roots, anomalous secondary growth can be seen, this anomalous secondary growth provides the means for adaption in the harsh environment to facilitate the growth of the plants. The leaves are simple, mostly alternate, and rarely opposite arrangement of the leaves can be seen. Stipules are rare in this family, they are found in the form of a very small outgrowth. The flowers are solitary, aggregates found in the form of the spikes, cyme, or panicles of the aggregates. Flowers are actinomorphic, complete, hermaphrodites, completes, with bracts, bracteoles. They are generally small. Some species have unisexual flowers perianth mostly five or ten, are found in groups of the pentamerous. One to five stamens opposite to tepals are found on the hypogynous disc. Fruits are utricles, the persistent calyx is the very unique feature of the family, C3 and C4 photosynthetic pathway has been seen in the family, and C4 pathway in many families lead to the divergent evolution.

In this research article, we are trying to present the Amaranthaceae family of the Banasthali Vidyapith, Newai, Banasthali Vidyapith has a large campus, a number of the flowering plants of the various taxonomy can be seen over there, in the monsoon season in the bare land a number of the plants with differing taxonomic status can be seen, in this research papers, we are focusing in the Amaranthaceae family having around 10 genera, since grazing is very common there, so some of the young plants are eaten by the grazing animals over there. Overall this is a small research paper on the taxonomy of the Amaranthaceae family which is very useful for the student of the BSC and MSc students who are reading the taxonomy as a subject.

Keywords: Amaranthaceae, angiosperm family, chenopodiaceae, Banasthali Vidyapith, C3 and C4, grazing animals, pentamerous

Introduction

The family Amaranthaceae family consists of the 165 genera and 2000 Species. Plants are found in the tropical and subtropical regions, generally, some of the species of the families grow in the summers and winter but several genera can be seen in the monsoon season. A long belt of the many plant genera can be seen in the rainy season. On our campus, we have seen around 9 genera of the taxonomic values. Some of the genera like, *Amaranthus* (10 species), *Achyranthus* (09 species), *Aerva* (08 species), *Celosia* (09 species), *Chenopodium* (10 species), *Digera* (06 species), *Alternanthera* (03 species), *Cyathula* (05 species), and *Gomphrena* (07 species) can be seen during the monsoon periods. Many of the genera are eaten as vegetables, some the eaten raw, and many of the species are eaten regularly by the wild tribes for the edible and medical aspects. The main objective of the work is to familiarize the student of the campus with the utility of the local flora as well as the medicinal and taxonomic importance of the flora available nearby for conservation of the plants [1-16].

Material and Methods

The present study is based on the field visits during the season from July 2017 to June 2018. A total of nine genera belonging to the Amaranthaceae family were reported & identified near the campus there is a large sanctuary name the Ranthambore tiger sanctuary in the tonk, here are a number of the tribal species can be seen, they use the plants for the several purposes.

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Effect of Organic and Liquid Manures on Yield, Yield Attributes and Economic of Urdbean

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

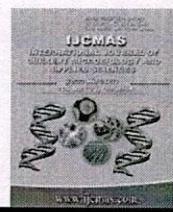
A field experiment was carried out in 2020 kharif season, on loamy sand soil at the S.K.N. College of Agriculture's Agronomy Farm in Jobner (Rajasthan). It included two foliar sprays of each of four liquid manures (control, 100% RDP panchgavya @ 5%, 100% RDP vermiwash @ 10%, and 100%

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RE Greenhouse Technology: A Solution for Healthy Future

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A B S T R A C T

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The requirement of diverse dietary needs have increased in the recent years due to the vulnerability of various diseases present in the environment that are likely to attack our body. So we need to have access to all types of fruits and vegetables round the year to boost up our immunity and keep up healthy. The greenhouse technology is of real help when we think of offseason vegetables and fruits. This article mainly focuses on the what, why and how aspects of the greenhouse technology.

Introduction

Greenhouse technology is a way towards achieving nutrition sensitive agriculture. It can be used to make sure that the farm business is sustainable and environmentally friendly. This will help farmers to make sure that they get the best quality food from their farms (Anil Kumar, *et al.*, 2016).

Greenhouse technology has been around for decades, but it has only been in recent years that it has become popular among farmers. There are many different types of greenhouses available on the market today, each with their own advantages and disadvantages. Some people don't think that using greenhouses can be effective because they believe that poor quality plants will still grow even if there are no lights in the greenhouse environment.

However, this is not true at all! In fact, these days many farmers use glass houses instead of plastic ones because there are so many benefits associated with them over plastic ones including:

Airtightness

Cleanliness

Durability

Lighting efficiency (low maintenance costs)

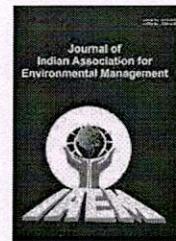
Another great benefit of using glass is its insulating properties which mean that air temperature inside stays constant even when outside temperature goes up or down during winter season; however some people feel uncomfortable about being surrounded



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An Assessment of Water Quality of Nainital Springs, Uttarakhand, India

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Abstract: Polluted water is wreaking havoc on humans and all other things on the planet. In the mountainous region, spring water is the primary supply of water for survival. The construction of road, settlement and other human activity are continuously increasing in upper catchment area in North West Himalayan region. It's a real important issue nowadays which are responsible for contamination and extinction of springs. This research aimed to determine the physico-chemical quality of Nainital surrounding springs water. Total eight sampling sites and nine water quality parameters were selected for analysis. As per findings the mean value of the pH was (6.94), Dissolved Oxygen (2.89 mg/l), Biological Oxygen Demand (0.83 mg/l), Total Dissolved Solid (11.29), Nitrate (0.54 mg/l), Calcium (105.97 mg/l), Manganese (0.07 mg/l), Zinc (0.02 mg/l) and Total Coliform (0.75, /100 ml of water). The spatial distribution map of all spring's water parameters was composed in ArcMap 10.2 using interpolation, kriging method. The current finding is following the BIS (Bureau of Indian Standard) and WHO (World Health Organization) acceptable and permissible limit. The total coliform concentration was showing contamination at site 1, 2, 4, 5 and 6. So, there is the need to manage, protect and minimize the human interference nearby these natural springs surrounding area to reduce the contamination and degradation of this precious resources by government involvement and local community awareness.

Keywords: Physico-chemical characteristics, Himalaya region, Nainital Spring, Kriging

I. INTRODUCTION

Water contamination is a hot topic these days all around the world. India's natural freshwater, which is accessible to humans throughout the country viz. ponds, tanks, lakes, and reservoirs have all been continuously polluted. Due to rising human population growth, which leads to increased water use, as well as expected climate change, the future of sustainable water supply is questionable. Uttarakhand is a state of India in North West Himalayan region. It is a hotspot of freshwater resources. Holly River Ganga, Yamuna is the major river of Uttarakhand and numbers of small river are flowing within the state. The source of these river water is glacier and springs. India has 5 million springs, and almost 3 million of them are in the Indian Himalayan region (IHR) alone (NITI Aayog, 2017). Mountains springs are extremely important since they are the primary source of water for drinking and other domestic needs in the highland habitat (Agarwal et al., 2012; Jasrotia et al., 2018). In Himalayan region, natural source of groundwater is spring. They are commonly handled by the community and are

not privately owned. The water qualities concerning physico-chemical properties of almost all springs nearby Nainital basin either within the acceptable or within the permissible limit (Maindoli et al., 2018). The quality of the spring water is good in but in summer months, it's scarce in Kumaon division of Uttarakhand state (Chhimwal et al., 2022). According to current estimations, the hydrosphere of the Earth contains a massive volume of water - roughly 1386 million cubic kilometres (Igor, 2000). The spring hydrograph, also known as the temporal discharge variation, is the only way to predict and regulate the spring's activity (Vashisht and Sharma, 2007). As a result of climate change and increased water consumption, water scarcity has become a global systemic challenge (Wegener et al., 2010). The freshwater shortage becoming more widely recognized as a worldwide systemic problem (Burek et al., 2016). The necessary primary resource of water availability is essential for socio-economic development and poverty alleviation. Water is an important primary resource, and the availability of this resource is a critical factor in both the expansion of the economy and the alleviation of poverty.

Ethnobotanical information of gums and resin yielding plants of Kathua district of Jammu & Kashmir, India

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ABSTRACT

Present article reveals the documentation of important role and wide applications of gums and resins obtained from plants of Billawar and Basoli village in Kathua district, Jammu Division, J&K, India. During the survey a total of 24 gums and resin yielding plants belonging to 14 families and 21 genera were documented to be used for the treatment of various diseases and aliments. *Acacia nilotica*, *Acacia catechu*, *Anogeissus latifolia*, *Bombax ceiba*, *Butea monosperma*, *Azadirachta indica*, *Moringa oleifera*, *Terminalia bellirica*, *Mangifera indica*, *Tamarindus indica*, *Eucalyptus tereticornis*, *Terminalia arjuna*, *Pinus roxburgii*, *Pinus wallichiana*, *Cedrus deodara*, *Zingiber officinale*, *Cannabis sativa* and *Picea abies* were the dominating species which have medicinal values. These plants are used for the treatment of various diseases like snake bites, scorpion stings, diarrhea, dysentery, gastric problems, wounds, ulcers, injuries of joints, epilepsy and skin disorders etc. The observations were based on local folklore and interview with various communities and tribes of the Kathua district.

Keywords: Gums, resins, secondary metabolites, kathua and plant exudates

INTRODUCTION

Gums are found in a greater or less degree in about 44 families covering 1,900 genera and 21,000 species. Various organs of the plant may produce or secrete gums. Certain families of flowering flora are crucial as they have some of species which might be great gum yielders. Among them notable family is leguminosae, in which over hundred species of *Acacia* alone are known to yield gums, including gum arabic. Gums are probably applied to plant exudates which had oozed from tree barks and hardened upon exposure to air. Gums can be grouped into three major categories, namely: natural gums, modified gums and synthetic gums. In India, natural gums have been used

traditionally for multiple purposes (CSIR, 1985; Kala, 2010) with due course of time, their industrial applications have been conceived in food, pharmaceutical and other industries.

About 120 gum and resin yielding plants species are known to inhabit different eco-climatic zones of India (Kala, 2011). India ranks one among the major producing countries of this important commodity (Giri et al., 2008). The forests in central India support a rich diversity of tree species, many of them provide valuable gums. However, these tree species are less studied, especially with respect to their indigenous uses of gums. Being a crucial commodity for livelihood era, there are unsustainable harvesting issues, which affects the population of these species. At present, understanding the complex relationships between harvesting and conservation

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Studies on the biology of tobacco caterpillar (*Spodoptera litura*) fabricus on cabbage

Divya Rawat, Payal Gupta, Bhawana Gahtori, Manish Chauhan and Prem Singh

Abstract

The current investigation was carried out during the year 2022-23 at Department of Agriculture, Tula's Institute Dehradun. During *Rabi* season, studies on the life cycle of *Spodoptera litura* under laboratory conditions was observed at 28 °C with 66% relative humidity. The study revealed that the pest passed through 4 stages viz egg, larva, pupa and adult. The incubation period lasted for about 2-4 days with an average of (5±0.57) days. The mean duration was (3.66±0.88), (4±0.57), (4.66±0.33), (4.33±0.88), (4.66±0.33) days for the 1st instar, 2nd instar, 3rd instar, 4th instar and 5th instar, respectively. Mean pupal duration was (12.33±3.84) days. The total life cycle from egg to emergence of adult was recorded; 8.33±0.88 (male) and 9.33±0.33 (female) days respectively.

Keywords: *Spodoptera litura*, pest, larva, egg, adult

Introduction

Cabbage (*Brassica oleracea* L. var. *capitata*) belongs to the Brassicaceae family. It is an economically vital cruciferous vegetable, which is a rich source of Ca, P, Na, K, S, Vitamin A and dietary fiber. Major cabbage growing states in the country are Uttar Pradesh, Orissa, Bihar, Assam, West Bengal and Maharashtra. In India, cabbage is grown on a total area of 399 ha with an average production of 9095 MT. (Anonymous, 2019)^[5]. In Uttarakhand, production is only 69.35 tonnes ha (Anonymous, 2021)^[4]. Cabbage is attacked by many insects from sowing to harvesting viz, the tobacco caterpillar, cabbage butterfly, *Pieris brassicae*. Among these, the tobacco caterpillar is considered to be the most problematic (Chauhan *et al.*, 2022)^[8]. The tobacco caterpillar, *Spodoptera litura* (Fab.) is one of important polyphagous pest on crops, distributed throughout South and Eastern world, infesting 112 species of plants belonging to 44 families, of which 40 species were reported from India. It is widely distributed throughout tropical and temperate Asia, Australia and the Pacific Islands (Feakin, 1973; Kranz *et al.*, 1977)^[23, 24]. Though it is a serious pest of tobacco, the major host plants include tobacco, cotton, groundnut, castor, chilli, cabbage, tomato and sunflower. (Ramaiah *et al.*, 2018)^[16]. Biological studies is one of most important tools in pest management as they reveal the most opportune and vulnerable stages of the insect species (Ashwini *et al.*, 2016)^[5]. To develop pest forecasting models, the number of larval instars and other information about insect biology are useful. In order to identify and manage *Spodoptera. litura*, studies on biology, morphometrics, and growth will be helpful.

Material and Methods

The Biology of Tobacco Caterpillars

An experiment was conducted at Tula's Institute, Dehradun, in *Rabi* season in 2023. The culture of tobacco was maintained under laboratory conditions on cabbage plants and different stages were reared as per the method given below. The eggs were collected from Agriculture Farm Tula's Institute and brought into the laboratory, placed in a BOD incubator calibrated at 28 °C coupled with 66% relative humidity. In December, cabbage began laying eggs. Eggs were found in clusters on the lower sides of the leaves of the plants. During incubation, the eggs were placed over moist filter paper in Petri dishes. 10 newly hatched larvae were transferred singly to cabbage leaves free from insecticide kept in three petri-dishes which are lined with moist filter paper and provided with fresh leaves. The petri plates were cleaned of excrement and food residue every day. A change of filter paper and food was made every two days.

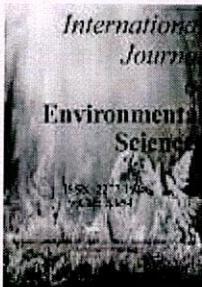
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**Full Length Research Paper****Effect of Apple Varieties on Chemical and Sensory Properties of Cider****Bhawana Gahtori*, Shivangi Negi and Divya Rawat**

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The enhancement of TSS (Total Soluble Solids), alcohol content, and titrable acidity as measured by organoleptic evaluation of processed products were examined as effects of incorporation of cider at various concentrations. Additionally, the product's changes in physico-chemical and organoleptic parameters were investigated while it was kept at room temperature and in a refrigerator. Golden delicious and Red delicious apple types were examined for making cider. Sugar was chosen for the creation of processed products because it is a rich source. Jam was created by mixing various amounts of apple juice with the other components. A semi-trained panel evaluated the organoleptic quality of the processed product in order to assess consumer approval of various finger millet concentrations. Citric acid, sugar, and apple skin were added to make jam. Physical characteristics such as TSS, hue, thickness, etc. were assessed. Since the Red Delicious variety has a high sugar content, a high phenolic content, a high pH, and a low titrable acidity, it can be effectively substituted for improved cider production. True cider, defined primarily by the production process, can be as complex as a glass of wine and is served in Manhattan's best restaurants as a perfect low-alcohol substitute for wine Prior(1920).

Introduction

The apple tree, also known as *Malus domestica* or *Malus pumila*, is a deciduous tree in the rose family best known for producing the delicious, pomaceous fruit known as the apple. It is the most widely grown species in the genus *Malus* and is grown as a fruit tree all over the globe. China accounted for 48% of the total 84.6 million pounds of apples produced globally in 2014. The United States, Turkey, Poland, and Italy were other significant exporters, accounting for 6% or less of global production. (Feb, 2017). Apples contain a variety of phytochemicals, such as flavonoids (such as Catechins, Flavanols, and Quercetin) and other phenolic compounds (such as Epicatechin and Procyanidines), which are concentrated in the apple's skin, core, and pulp but have no proven health benefits for people. (Bayer et al., 2004).

One of the fruits that is most commonly consumed is the apple. As a source of monosaccharides, minerals, dietary fiber, and numerous biologically active compounds, including vitamin C and specific phenolic compounds that are known to function as natural antioxidants, apples play a significant role in the human diet. Additionally, some experts believe that polyphenols are antimutagenic and anticarcinogenic substances. (Lee and Mattick, 1989; Miller & Rice-Evans, 1997).

Method and Material

The current study's goal was to obtain apple fruit juice for use in producing cider and fruit juice from other fruits. The following is a discussion of the work's comprehensive description:

Procurement of raw materials

The main ingredient used to make cider is apples. Apples that are suitable range in size from less than two inches in diameter to about eight inches. The quality of the apples used to make the final cider product determines almost all of its properties. These apples must be juicy, sweet, fully ripened, and have the right amount of natural acids and tannins to produce the best

Finger Millet: A Potential and Sustainable Crop for Hilly Region of Uttarakhand

Shivangi Negi

Received 2 August 2022, Accepted 2 November 2022, Published on 14 December 2022

ABSTRACT

Finger millet is an important crop among the small millets and third among millets in the area and production after sorghum and pearl millet in India. It is cultivated as a rainfed crop for its valued food grains and adaptability to a wide range of geographical areas and agro-ecological diversity in India. Finger millet occupies an important place in the agriculture of the Uttarakhand hilly regions. Apart from being a source of food, finger millet provides fodder for cattle which thereby reduces the pressure on rangelands and forests and helps to balance the delicate ecosystem of the Himalayas. Ragi is commonly called as "Nutritious millet" as the grain are nutritionally superior to other cereals providing a fair amount of proteins, minerals, calcium and vitamins in abundance to the people. Finger millet is an excellent source of methionine, Ca, Fe, Mn. It is appreciated by the people because it gets

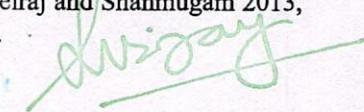
digested slowly thereby furnishing energy required for hard work throughout the day. The protein of finger millet has been reported to possess a fairly high biological value, which is needed for the maintenance of nitrogen equilibrium of the body. It has crude fiber content, which supply energy for a long time after consumption. There is a high demand for finger millet due to its high nutritional value with appealing flavor and taste. Finger millet possesses tremendous potential for product diversification. However, awareness about the inclusion of millets in our daily meals for healthy living is needed.

Keywords Diversification, Meal, Ragi, Rainfed, Small millet, Uttarakhand.

INTRODUCTION

Millets are one of the cereals besides the major cereals i.e. wheat, rice and maize. Millets are major food sources for millions of people, especially those who live in hot and humid areas of the world (Rani *et al.* 2017). They are grown mostly in marginal areas under those agricultural conditions in which major cereals fail to give substantial yields (Adekunle 2012, Wang *et al.* 2018). Millets are one of the oldest foods known to humans and possibly the first cereal grain to be used for domestic purposes (Maitra and Shankar 2021). Millets are small-seeded grasses that are hardy, thus grow well in dry zones as rain-fed crops under marginal conditions of soil fertility and moisture. Millets are unique from major cereals crops due to their short growing season (Michaelraj and Shanmugam 2013, Sarkar and Dutta 2014).

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Genetic analysis and inheritance patterns of YVMV resistance in okra [*Abelmoschus esculentus* (L.) Moench]

Bhawana Mamgain, Alka Verma, Rekha Dhanai, Manish Chauhan, Prerana Badoni, Anita Chauhan, SK Maurya, Manoj Raghav, Anju Arora, Nikesh Chandra and Ashish Mamgain

Abstract

A research was conducted at the vegetable research centre in GBPUA&T Pantnagar in 2022 showed that the YVMV Trait's complicated genetic inheritance pattern for disease tolerance. Generation means analysis involving six generations (P_1 , P_2 , F_1 , F_2 , BC_1P_1 and BC_1P_2) was evaluated in randomized block design with two replications at performed to investigate okra traits. However, generation mean analysis demonstrated that the inheritance of disease tolerance includes both additive and non-additive effects. Thus, the current study provides more evidence that the disease resistance against YVMV characteristic is controlled by a complex genetic inheritance pattern. The key genes for tolerance may be inherited by other okra crossings, but the virus strains that break tolerance may prevent them from maintaining tolerance over time. A persistent tolerance phenotype in okra may thus need the accumulation of additional genes.

Keywords: Disease tolerance, gene, non-additive, sustainable, trait

Introduction

The most important vegetable crop in India is okra (*Abelmoschus esculentus* (L.) Moench), commonly referred to as lady's fingers, gumbo, or Bhindi. It originates in the old world, probably in one of the African countries. It belongs to the family Malvaceae and the genus *Abelmoschus*. (De Candolle, 1883; Vavilov, 1951) [4, 13] Ethiopia is where it initially originated. However, according to Zeven and Zhukovsky (1975) [16], it came from the Hindustani centre of origin, specifically the regions of India, Pakistan, and Burma. It is an often cross-pollination vegetable crop. It has a somatic chromosomal number of $2n = 130$, and is amphidiploid of *Abelmoschus tuberculatus* with $2n = 58$, and is an unidentified species with $2n = 72$. The flower bud may be seen in the axil of each leaf node between the 6th to 8th leaf, depending on the species and takes about 22-26 days from initiation to full bloom. According on the cultivar, temperature, and humidity, anthesis occurs between 8 and 10 am (Purewal and Randhawa, 1947) [17].

For maximal growth and production, the crop has been adapted to tropical climates and vigorous, warm, humid weather. It is susceptible to drought and cold Nights temperature. The ideal soil moisture and temperature range for seed germination between 25–35 °C, with rapid germination observed at 35 °C and seeds fail to germinate below 17 °C. Most cultivars' flower buds have a tendency to desiccate and drop at temperatures over 42 °C, which reduces production. The ideal temperature range for growth is between 20 and 30 °C, and sunshine is just as crucial for okra yields. The first three weeks after sowing, a 50% reduction in sunshine had a negative impact on yield. (Adekiya *et al.*, 2017) [1]. The crop is simple to grow, making it particularly appealing to women who work in agriculture as a source of income and employment. Furthermore, it is grown using conventional farming methods with little or no focus on production. (Ariyo, 1990) [2].

Vitamins, calcium, potassium, and other minerals are present in okra. Consumable unripe Bhindi fruits have 18mg of vitamin C, 10.4g of dry matter, 3,100 calories, 1.8g of protein, 90mg of calcium, 1.0mg of iron, 0.1mg of carotene, 0.07mg of thiamin, 0.08mg of riboflavin, and 0.08mg of niacin per 100g. (Thirumalaikumar *et al.*, 2014) [12]. 20–24% protein and 13–22% edible oil are the two elements found in the dry seeds. Compared to other veggies, okra is more profitable.

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Studies on the Diversity of Tannins and Dyes Yielding Plants of Kathua District of J and K, India

Rupinder Kaur, Rekha Dhanai, Joshna Sharma, Sunil Puri

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ABSTRACT

Dyes are the manufactured or natural compounds used to color a variety of things. They are derived from many plant parts, including the leaf, stem, bark, rhizome, flower, buds and berries, among others. The diversity of plants that produce tannin and dyes in J and K's Kathua district is the subject of the current study. The current study provides information on 35 species of tannin and dye-producing plants from 31 genera and 20 families, along with information on their common names, families, components they are used for and their applications. With the aid of locals and the material that was readily available, the trees were recognized. The families such as Fabaceae and Combretaceae were represented by higher number of species. Natural dye-producing plants are extremely important in the socio-economic and socio-cultural lives of ethnic people, and promoting these products in a controlled manner can help to preserve tradition-

al knowledge and local biodiversity. However, it is concerning that indigenous expertise of natural dye extraction, processing, and application has dwindled as a result of the widespread availability of synthetic dyes.

Keywords Tannin, Dye, Traditional knowledge, Kathua district, Ethnic communities.

INTRODUCTION

Plants are employed not just for essential life-sustaining necessities like as food, fuel, and shelter, but also for clothing and natural colors. The interaction and approach of tribal communities with the forests is the vital reason for the discovery of various new herbals. Tannins are phenol glycosides and non-crystallizable compounds which are found in many plants product of secondary metabolism. Their water-soluble nature makes extraction simple and makes them valuable in a variety of chemical and medicinal applications. Complex, organic, non-nitrogenous, polyphenolic compounds with a greater molecular weight are known as tannins. They serve as antiseptics and are employed in the production of ink, leather goods and textile dyes. Tannins are amorphous, pale-yellow to brown-red compounds that are widely present in plants and can be extracted from their barks, stems, leaves and roots.

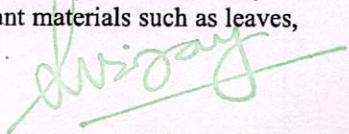
Tannins are secondary plant compounds found in stems, bark, leaves, flowers, seeds, and cell walls or vacuoles of dicotyledonous plants. These may be found in a variety of plant materials such as leaves,

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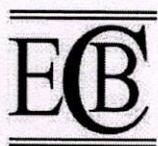
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MEDICINAL USES OF PTERIDOPHYTES FROM RAJASTHAN

Dr. Teena Agrawal¹, Dr. Suman Kacholia², Dr. Prerana Badoni³, Dr. Manisha Chauhan⁴, Dr. Ram Pal Ahrodia⁵

Abstract: Pteridophytes are a group of plants that represent important evolutionary advancements, such as the development of vascular tissues like xylem and phloem, in addition to a dominant sporophyte phase. Pteridophytes are used as ornamental plants due to their long foliage with specific patterns of branching and plant forms. They are also used as bioindicators of pollution, phytoremediators, and some are used as biofertilizers. During the invasion of land, pteridophytes developed several adaptations in morphology, anatomy, and reproductive strategies for successful habitation on land. In this process, they developed a number of secondary metabolites that help these plants thrive in harsh conditions. Some of these secondary metabolites have antimicrobial properties and are used as drugs against certain pathogens. The traditional system of medicines helps urban, rural, and tribal peoples in the treatment of many diseases without side effects. Pteridophytes (ferns and fern allies) hold immense value, although their economic and medicinal value is not well understood. Based on reports published within the last two decades, we have gathered information on medicinal ferns occurring in the Rajasthan state of India. The use of different plant parts of 11 species of ferns in Rajasthan by local peoples, especially tribes, for various ailments has been recorded. Commonly occurring species of the genus *Adiantum* are widely used in different parts of the state.

Keywords: Pteridophytes, fern, adaptation, seed, Rajasthan, medicinal, evolution.

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The performance evolution of hybrid nanofluid flow over a rotating disk using Cattaneo–Christov double diffusion and Yamada–Ota model

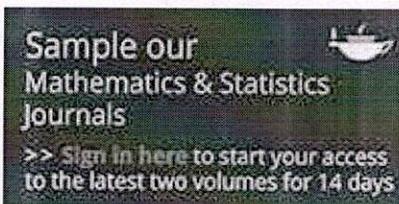
Himanshu Upreti & Ashish Mishra

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Abstract

The article addresses the problem related to Darcy–Forchheimer flow past a rotating disk with radial stretching and shrinking. The effects of viscous dissipation, convective heating and heating due to porous medium are considered; the heat and mass transfer expressions are modeled according to Cattaneo–Christov double diffusion theory. Additionally, a carbon nanotubes-based hybrid nanofluid is taken as working fluid. The mathematical model for existing problem is quite complex which is reduced to a simpler form (non-dimensional) by utilizing Von-Kármán similarity transformation. Then, these non-dimensional expressions are solved using Runge–

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Shadows of quintessential dark energy domain of outer communication

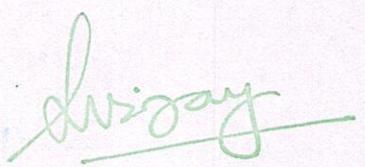
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Abstract

The rotating black holes in the quintessential dark energy correspond to three quintessential horizon. The domain of outer communication is the region between the two horizons. Here in this work, we study the photon region and shadows of the quintessential black hole. An observer stays statically in the domain of outer communication. The quintessential state is characterized by its mass (M), spin parameter (a), quintessential dark energy parameter (ω_q) and factor (γ). The dark energy parameter ω_q can take values between $-1.1 < \omega_q < -1/3$. The state $\omega_q = \text{pressure}(p)/\text{energy density}(\rho_q)$. This state parameter significantly affects the shadow of the black hole. We generalize all the geodesic equations of motion for ω_q and obtain the shadow of the black hole by a static observer at any arbitrary distance in the domain of outer communication. The black hole shadow observables: radius R_s , distortion parameter δ_s , and the shadow size. For the shadow radius R_s and area A , we obtain the angular diameter (θ_d) of the black hole shadow. The M87 and Sgr A* black holes shadow are $42 \pm 3 \mu\text{as}$ and $48.7 \pm 7 \mu\text{as}$ respectively. The Event Horizon Telescope (EHT) has obtained the angular diameter of the black hole shadow from $0.08/M$ to $0.12/M$ for the state parameter $\omega_q = -2/3$ when the static observer stays in the domain of outer communication.

Introduction

The observations of type Ia supernovae (SNe Ia) lie between the redshift range $z \in [0.01, 1]$. The Universe is going under the late time acceleration[1], [2]. According to general relativity, it indicates that there exists some strange energy component in the Universe which is responsible for the acceleration. The observational constrains over the state parameter ω_q provided by the large scale structure (LSS) and cosmic microwave background (CMB) is $-1.1 < \omega_q < -1/3$ [3], [4], [5]. The hypothesis is that the dark energy is compatible with the standard model of big bang cosmology (Λ CDM model) when the value of state parameter, the dark energy is considered as the cosmological constant. However, with the observations but still, there is a possibility that some significant components exist with state parameters other than -1 [6]. One of the simplest is the quintessence dark scalar field which is minimally coupled with the gravity[6]. The quintessential dark energy is characterized by its mass (M), spin parameter (a), quintessential dark energy parameter (ω_q) and factor (γ).



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Effect of higher dimensions on rotating

Balendra Pratap Singh^a   , Rahul Kumar^b  , Sushant G. Ghosh^{b c} 

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Highlights

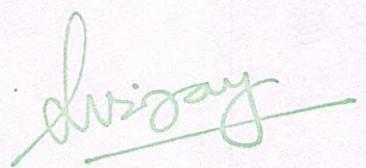
- The effect of higher dimensions on the shape and size of the rotating black holes.
- The null geodesic equations of motion in higher dimensional spacetime.
- The analytical study of observable with the increasing number of dimensions.
- The variation of the energy emission rate of the black hole with the increasing number of spacetime dimensions.

Abstract

The gravitation lensing features are different for gravities with the extra dimension. We find the sign of extra dimension in the supermassive black hole. In view of the new form of the higher-dimensional rotating black hole and demonstrate the higher-dimension. The shape and size of the higher-dimensional black hole shadow is mainly characterized by spin parameter (a) and spacetime dimensions (D). For the increasing values of dimensions D , the effective size of the black hole shadow decreases, and the size includes the shadow observables in higher dimensions with the data of M87 black hole emission rate for the higher-dimensional rotating black hole which increases with the increasing number of dimensions.

Introduction

One of the most interesting and intriguing predictions of general relativity is that for an infinite far observer, the black hole would appear as a black dark spot so-called shadow surrounded by the bright photon rings and for a rotating class of black holes, the shadow regions. Indeed, the shadow is a gravitational lensed image of the black hole, which we observe astrophysical black holes. The first observational evidence of the black hole M87 has been revealed by Event Horizon Telescope (EHT) collaborations in Akiyama et al. (2019).



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Flow Analysis of a Micropolar Nanofluid Between Two Parallel Disks in the Presence of a Magnetic Field

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The present article addresses the steady and laminar magnetohydrodynamics (MHD) flow of a micropolar nanofluid between two porous disks. The fluid is flowing uniformly in the inward and upward directions from both disks. The microrotation of the nanoparticles acts an important role in the flow regime. To show its significance, a comparative study of the analytical results and numerical results is presented. Titanium dioxide is chosen as nanoparticles in the water-based fluid. An appropriate transformation is used for transforming PDEs into ODEs. These nonlinear ODEs are computed by the differential transform method (DTM). The consequences of the Reynolds number, material parameter, and magnetic parameter on the radial velocity, axial velocity, and microrotation profile are graphically presented and discussed. The results calculated by DTM and the results calculated numerically are compared and tabulated. This comparison shows the accuracy and validity of DTM. The coefficient of skin friction is also tabulated and compared with the numerical result. At the end of this study, it is concluded that the behavior of the radial and the axial velocities and the microrotation profile are almost the same in the case of the Reynolds number and the magnetic field parameters.

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KEYWORDS: Steady Flow, Porous Disks, Micropolar Nanofluid, Water-Based Nanofluid, Titanium Dioxide, Differential Transform Method.

1. INTRODUCTION

The fluids, which contain the microstructures, are known as micropolar fluids. Eringen¹ was the founder who published the theory of microfluids. Eringen² modified his theory and published it again in 1966. Eringen³ and Lukaszewicz⁴ have released a book for the detailed study of fluids. This class of microfluids possesses certain simplicity and elegance in their mathematical formulations, which should appeal to mathematicians. Agarwal and Mishra⁵ and Agarwal^{6–8} used the problem of rotating disks in their study. They applied the HPM to achieve the solution of ODEs and compared the results with numerical method results. They solved the model numerically by applying the shooting and RKG45 methods. Pasha et al.⁹ discussed the flow as well as heat transfer characteristics in their problem.

A fluid, which contains nanoparticles (nanometer-sized particles), is called a nanofluid. These fluids are structured suspensions of nanoparticles in a base fluid. Water,

kerosene, ethylene glycol, etc. are some of the base fluids because they have very low heat transfer coefficients. Metals, oxides, and carbides are the nanoparticles, which are used in nanofluids. Therefore, nanofluids contribute as a catalyst to increase the heat transfer coefficient in fluids. Choi and Eastman¹⁰ was the first who used the term nanofluid in his research. Eastman et al.¹¹ examined this theory of nanofluid experimentally. Waqas et al.¹² discussed the flowing nature of nanofluid in disks. They also discussed bi-convection and thermal effects. Hayat et al.¹³ and Krishna and Chamkha¹⁴ elucidated the problem of parallel disks and discussed the nature of the velocity and temperature profiles. They also tabulated the Nusselt and the Sherwood numbers. Krishna and Chamkha^{15–19} also analyzed hall and slip effects in different models of disks and plates. Khan et al.²⁰ investigated the transmission of heat between two disks. They used a water-based nanofluid consisting of copper as nanoparticles. They applied the parametric continuation method to get the solution. Ferhi et al.²¹ analyzed the flow and the thermal characteristics in the micro tall cavity, which is filled with water-based nanofluid with Al_2O_3 . Krishna et al.^{22–25} discussed heat and mass transfer in the flow of various fluids and problems. Reddy et al.,²⁶ Khan et al.,²⁷ Sankar et al.,²⁸ and

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Research Article

A comparative analysis of MoS₂-SiO₂/H₂O hybrid nanofluid and MoS₂-SiO₂-GO/H₂O ternary hybrid nanofluid over an inclined cylinder with heat generation/absorption

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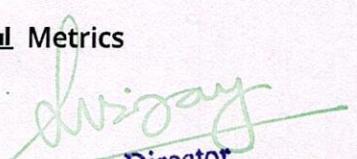
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Abstract

The present investigation concerns the hydro-thermal characteristics of two different types of hybrid nanofluid flow, namely MoS₂-SiO₂/water hybrid nanofluid and MoS₂-SiO₂-GO/water ternary hybrid nanofluid flow toward an inclined cylinder in the presence of heat generation/absorption and viscous dissipation. Emerging problem occurs as nonlinear partial differential equations (PDEs) included conservation laws of mass, momentum and heat transportation. The relatable problem can be changed into the set of ordinary differential equations (ODEs) using similarity transformations.


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Hybrid System for Driver Assistance

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Abstract

In the past four Years, Road Traffic Injuries (RTI) ranked fourth among the leading cause of death. Nearly 1.3 million people die every year on the world's roads and 20 to 50 million people suffer non-fatal injuries, with many sustaining a disability as a result of their injury. However, active safety systems like ABS (Anti-lock Braking System) and ESP (Electronic Stability Program) offer possibilities for improving traffic safety by assisting the driver in his driving task.

During poor weather conditions, most of the driver assistance system doesn't produce accurate results. In order to assure road safety, the researchers have paid attention on developing various driver assistance systems. The goal of our proposal is to build an intelligent driver assistance system (using the sensors) the Driver, to deploy in a car, as a step toward building an intelligent vehicle. The hybrid driver assistance system is for more safety. It provides the passengers with more safety than the passive and active driver assistance system. The system has autonomous vehicles, intelligent vehicles, and smart highways.

Keywords: Road Traffic Injuries, Anti-lock Braking System, Electronic Stability Program.

Introduction

Most of the driver assistance systems used currently is derived as a visual based system interaction channel which displays complex information at a high rate [3]. As this requires a high visual processing capability the driver attention to the driving task is considerably reduced. Hence, there is a tendency for information to be misread as the driver's attention ceases and is not focused at the right place due to visual information overload. These driver assistance systems increase the driver's reaction time to detect an event or incident and reduce the view of the road whilst driving [4]. The in-vehicle environment becomes information-intensive where the visual channel

PREDICTION OF STOCK PRICES USING GENETIC ALGORITHM FEATURE SELECTION AND NEURAL NETWORK

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Abstract— A trustworthy data base for our stock price forecast may be found in the financial market's abundance of indicators that seek to explain changes in stock price. Due to their distinct industry sectors and geographical locations, individual stocks are cluttered with a variety of factors. As a result, it is vital to find a multi-element aggregate it really is ideal for a given inventory to evaluate its value. For function selection, the Long STM (LSTM) neural community inventory prediction version defined on these studies will appoint a green Genetic Algorithm (GA). First, we use the GA to rank the relevance of the aspects. The excellent aggregate of objects is then derived from this rating the usage of a trial-and-mistakes methodology. Finally, we integrate the excellent elements with the LSTM version to are expecting stocks. The CSI three hundred inventory dataset and in-intensity empirical investigations the usage of the China Construction Bank dataset display that the GA-LSTM version can forecast statistics better than the baseline methods.

Keywords- Genetic Algorithms (GA), Neural network, LSTM, financial market, Stock prediction, Neural Network.

I.INTRODUCTION

The number of publicly traded companies is growing quickly along with the social economy, making stocks one of the hottest issues in the finance industry. The path of diverse monetary behaviours is often motivated through the fashion of the inventory marketplace, so teachers are an increasing number of that specialize in a way to expect inventory costs. Because the inventory marketplace statistics consists of non-linear, excessive noise, complexity, and temporal features, teachers have studied the inventory prediction approach extensively. The

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A Comprehensive Survey of Various Machine Learning Techniques to Counter Security Issues Related to Mobile Malwares

Survey Of machine learning in mobile malware

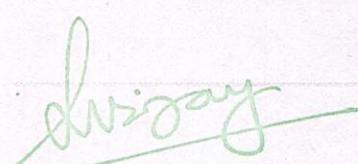
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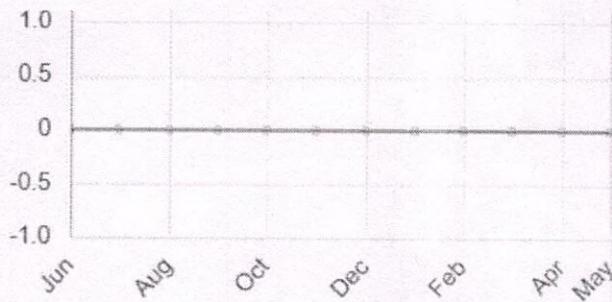
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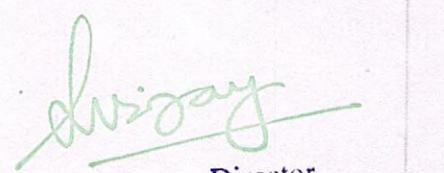
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Abstract

Malware has been used to attack mobile devices since it first appeared. The two main types of independent mobile malware attacks are mobile fraud apps and embedded hazardous apps. If one wishes to successfully fight against the cyber dangers posed by mobile malware, a detailed understanding of the permissions specified in apps and API requests is important. This study uses permission requests and API calls to build a powerful categorization model. Android applications use a wide variety of APIs, therefore we've developed three alternative categorization strategies: ambiguous, dangerous, and disruptive, to make it simpler to identify harmful apps. The findings suggest that dangerous

Prognostic And Diagnostic Prediction Models Of Invasive Cancer In Women And Its Detection Accuracy Via Developing Machine Learning Techniques

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DOI: 10.47750/pnr.2022.13.S07.536

Abstract

Cancer is a common disease, and it takes several human lives every year. It is generally classified on the basis of the tissue from where it originates, such as carcinoma or lymphoma. However, a single tumour may possess several types of heterogeneity. Cancer management is a tedious task due to its heterogeneity. Cancer causes >50% of the total deaths in developing countries due to poor diagnosis. Breast Cancer (BC) is the most heterogeneous cancer and massive molecular data is available on it; however, classification of the information is imperative for its management. Machine learning is an evolving tool that can be used to classify heterogeneous breast cancer datasets.

Objective: Proper classification of tumour diversity and diagnosis of BC using ML approaches can improve the chances of survival; effective prognosis can help clinicians recommend the right treatment.

Methods: Machine learning (ML) classifiers used for classification in the study are Classification and Regression Trees Naive Bayes Classifier, Artificial Neural Networks, Support–Vector Machines and Logistic Regression.

Results: ML is the most efficient tool for classifying the diversity of breast cancer datasets existing with heterogeneity in risk factors. The experimental findings show that the logistic regression model gives the highest accuracy (96.60%), with a lower error rate than other models.

Conclusion: ML appears to be a powerful and practical tool for the categorisation of breast cancer. Massive data concerning breast cancer is available, and crucial features can be extracted through ML. This research paper presents a review of machine learning tools used in the extraction of vital elements of tumour categorisation proposing a prognosis.

Keywords: Cancer, machine learning tools, accuracy, recall, recurrence, survival, prognosis.

A Novel Dates Palm Processing and Packaging Management System based on IoT and Deep Learning Approaches

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ABSTRACT:

The demand for dates is on the rise, and countries like India are producing them in large quantities. However, the manual process of processing and packaging dates can be time-consuming and requires a lot of human labor. Additionally, the temperature during the processing of dates is critical, as improper temperature can harm the fruit. To store dates for a extended time deprived of any harm, they need to be packed in airtight packets, which is currently done manually. In this research, we suggest an well-organized and programmed method by means of the newest machineries to reduce the need for human labor and improve the accuracy of the process. The proposed model is a prototype that uses internet of things (IOT) methods for easy one-to-one care and control through a smartphone app. It is also furnished with various instruments to automate the method and purposes. Our research shows that this system has the potential to revolutionize the field of involuntary dates dispensation and wrapping. One of the main benefits of the proposed system is its ability to reduce the reliance on human labor, which can be in short supply in the dates industry. By automating the process and using advanced technologies, the system can improve efficiency and accuracy, leading to better quality dates and reduced waste. Additionally, the incorporation of various sensors and actuators allows the system to perform a wide range of functions and processes automatically, further reducing the need for human intervention.

Keywords: Internet of Things, Dates, Packing and processing management

1. INTRODUCTION

Dates are a popular and nutritious fruit that are grown and consumed around the world. They are an important part of many cultural and traditional diets, and have a wide range of health benefits. In recent years, the demand for dates has increased significantly, leading to an increase in their production [1]. However, the process of processing and packaging dates can

Voice Based Sign Language Detection For Dumb People Communication Using Machine Learning

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Abstract

Around 2.78% of the population in our nation cannot speak (dumb). The fundamental way that two people engage is through communication. Since ancient times, people have used speech to interact with one another. Although science and technology have added comfort to human life, there are still some who are less fortunate who are battling to discover a solution that would make communication for them simpler. People who have trouble speaking utilise sign language that is based on hand movements. This programme enables the blind and deaf to interact with seeing people despite their communication challenges. This study suggested a novel method of FFNN (Feed Forward Neural Network) prototype that can automatically recognise sign language to assist normal individuals in more effective communication with those who are hearing, speech, or visually challenged. This system identified of the hand signal feature point extraction given with Feed Forward point extraction given with Feed Forward neural network. Hand Gesture Recognition with Voice Process system using HMM (Hidden Markov model) is used to provide the communication for dumb people and the normal people.

Keyword: Gaussian feature extractor, FFNN, Neural Detection, HMM, Video acquisition, Hand Detection.

I. INTRODUCTION

Humans interact with one another through sharing their thoughts, ideas, and experiences with others around them. When compared to communication between blind and prehistoric seeing people, communicating with a dumb person presents a significant difficulty. In order to express ideas fluently with a speaker's words, the orientation, movements, facial expressions, body posture, arms, and hands movement. People who are unable to talk use sign languages to communicate with other voice-impaired people as well as with regular those who understand sign language. Interpreters are required to explain the meaning of sign languages to people who can speak but are not familiar with them. It is not always feasible for someone to be present all the time to translate the sign languages, though.

The integration of Artificial Intelligence (AI), Medical science, and computing algorithms are utilized to mimic how people learn, thereby increasing its accuracy. In order to manage image identification effectively, machine learning is essential. Based on the intensity of the pixels in colour or black and white photos, it may determine whether an object is a digital image. Machine learning comes in a variety of forms, including virtual personal assistants, computer predictions, social media services, video surveillance, and online customer support, among



BIBLIOGRAPHIC ANALYSIS TO UNDERSTAND THE FIELD OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN FINANCE BY ESTABLISHING ITS CORE IDEAS, MAJOR TOPICS, AND RELATED STUDIES

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ABSTRACT:

There is a new wave of research being done in the field of finance that makes use of artificial intelligence (AI) and machine learning (ML). Too far, however, no review has provided a comprehensive overview of this study's history. In order to fill this informational void, we give a survey of current artificial intelligence and machine learning projects in the financial sector. We estimate the subject organization of AI and ML research in economics from 1986 through April of 2021 using co-citation and bibliometric-coupling analysis. We find three broad categories of finance scholarship that are approximately identical for both modes of study, including (1) portfolio creation, valuation, and investor behaviour; (2) financial fraud and distress; and (3) sentiment inference, prediction, and planning. We also use co-occurrence and fusion analyses to identify trends and research areas in the field of artificial intelligence and machine learning applied to the financial sector. Our findings offer an evaluation of AI and ML for the financial sector.

Keywords: Bibliometric analysis, Artificial intelligence, learning, Finance, Machine, Review.

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SALES PREDICTION AND ANALYSIS OF SUPERMARKETS USING RIDGE AND POLYNOMIAL REGRESSION TECHNIQUES

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Abstract

Due to the obvious rapid growth of global shops including e - shopping, daily competition amongst numerous shopping complexes as well as large super markets is growing fiercer& more aggressive. Every marketplace tries to attract the interest of consumers by providing tailored as well as restricted discounts, such that the quantity of revenues with each product can be projected for the company's managing inventory, shipping, including logistical services. Nowadays, supermarkets run own branches and franchises, known as Big Marts, keep records of every product's revenue information in order to forecast possible customers' needs & adjust inventory control. Monitoring the information warehouse's storage space is a common way to find abnormalities as well as general patterns. This generated data may be utilised by merchants like Big Mart to anticipate the future sales volume using different machine learning approaches. For estimating the sales of the company such as Sales -Mart, a predicting model is constructed utilizing XGBoost, Linear regression, Polynomial regression, as well as Ridge regression approaches, and that it reveals that the system provides the best model.

Keywords: Big Marts; Anomalies; sustainable; machine learning

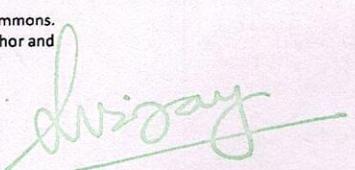
1 Introduction

Due to the obvious rapid growth of global shops including e - shopping, daily competition amongst numerous shopping complexes as well as large super markets is growing fiercer& more aggressive. Every marketplace tries to attract the interest of consumers by providing tailored as well as restricted discounts, such that the quantity of revenues with each product can be projected for the company's managing inventory, shipping, including logistical services [2]. The present machine learning model is quite powerful, and so it gives ways for estimating or forecasting sales in any type of company, which is incredibly useful in overcoming low-cost

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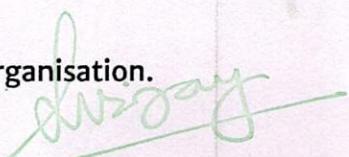
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Supervised deep learning-based paradigm to screen the enhanced oil recovery scenarios

Rakesh Kumar Pandey, Asghar Gandomkar, Behzad Vaferi , Anil Kumar & Far

Scientific Reports **13**, Article number: 4892 (2023)

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Abstract

High oil prices and concern about limited oil reserves lead to increase (EOR). Selecting the most efficient development plan is of high interest to optimize economic cost. Hence, the main objective of this study is to construct a novel deep-learning classifier to select the best EOR method based on the reservoir's rock and fluid properties (depth, porosity, permeability, gravity, viscosity), and temperature. Our deep learning-based classifier consists of a one-dimensional (1D) convolutional neural network, long short-term memory (LSTM), and densely connected neural network layers. The genetic algorithm has been applied to tune the hyperparameters of this hybrid classifier. The proposed classifier is developed and tested using 735 EOR projects on sandstone, unconsolidated sandstone, carbonate, and conglomerate reservoirs in more than 17 countries. Both the numerical and graphical investigations approve that the structure-tuned deep learning classifier is a reliable tool to screen the EOR scenarios and select the best one. The designed model correctly classifies training, validation, and testing examples with an accuracy of 96.82%, 84.31%, and 82.61%, respectively. It means that only 30 out of 735 available EOR projects are incorrectly identified by the proposed deep learning classifier. The model also demonstrates a small categorical cross-entropy of 0.1548 for the classification of the involved enhanced oil recovery techniques. Such a powerful classifier is required to select the most suitable EOR candidate for a given oil reservoir with limited field information.

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DISCRIMINATING STATISTICAL FEATURE FOR WIDEBAND SPECTRUM SENSING

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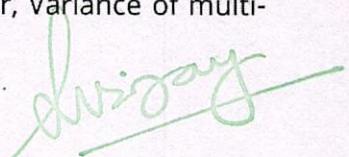
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DOI: <https://doi.org/10.59277/RRST-EE.2023.68.1.14>

Keywords: Cognitive radio, Low signal-to-noise ratio (SNR), Variable noise floor, Variance of multi-scale moving average, Wideband sensing

Abstract

Spectrum-aware devices and cognitive radios with wideband spectrum sensing will be an integral part of 5G or beyond wireless broadband. They must be fast and energy efficient for opportunistic dynamic access to the licensed spectrum. Compressed sensing (CS) methods can implement wideband sensing with reduced time and power consumption but are inaccurate at low SNR. Eigen methods are one of the best among non-CS methods but are high in computational cost. In this paper, we present a simple feature named the variance of multi-scale moving average (VMMA) that



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Analysis and Effectiveness of Digital Marketing with Rural impact on Marketing Strategies

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Abstract

India boasts the world's biggest and fastest-growing economy, yet the country is more often known as the "nation of villages." Seventy percent of India's 1.3 billion people still call one of the country's 6.5 million villages home, and half of the country's people depend heavily on agriculture for their livelihood (Shireesh Diveker 2017) One effect of urbanisation and infrastructural development was to bring rural areas closer to urban centres. Due in part to the proliferation of mobile phones and, to a lesser extent, the internet, people living in India's rural regions have become more familiar with the urban way of life. It was a spur to the people of rural regions to increase their prosperity and raise their living standards. Numerous telecommunications companies have tried various tactics to break into the rural market. There is no denying the attractiveness of the rural market for service providers, as it affords a plethora of opportunity. But it is more complicated than it first seems. There are a lot of complications with rural marketing, and service providers must work hard to find diplomatic solutions to these issues. The study's overarching goal is to learn more about how digital marketing could affect people in rural locations and to catalogue the unique difficulties that those people encounter.

Keywords: Urban life style, Digital Marketing, service providers, Rural Marketing

Introduction

India's consumer products industry is comprised of two distinct yet interdependent submarkets: the urban and rural markets. Bringing goods and services to a provincial market is an example of rural marketing ,which aims to meet the needs of customers and further the goals of businesses in both urban and rural areas. What we mean when we speak about "rural marketing" is the process of transferring products from rural regions to urban centres, or vice versa. Examples include flowerpots, planters, and other wares that are produced in rural regions yet sold and marketed in metropolitan centres. We also see that the product's marketing is below par since the seller is uneducated and uses antiquated methods, such as gathering the merchandise in one location before selling it. In contrast, we see that when a product is made in a city, its promotion takes on a more interesting form. As an example, if a vehicle is built in a city and then sold in a rural region, the city-based manufacturer will need to choose a location with a sizable population and send a representative who is proficient in a language spoken by the target market. Hence, these are the primary distinctions between rural and urban marketing. Both the sale of agricultural goods in metropolitan centres and the sale of manufactured goods in rural regions fall within the purview of rural marketing .



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Fig.1. Distinct ways of Rural Marketing

Enhancement of Brain Tumor Detection Mechanism using Deep Learning

 PDF (<https://www.provinciajournal.com/index.php/telematique/article/view/754/624>)

Keywords:

Brain tumor, deep learning, MRI, Edge detection

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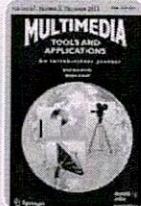
Abstract

Research work has focused on enhancement of performance during detection of brain tumor using deep learning mechanism. However there have been several researches in field of brain tumor detection and deep learning but the major issue is performance. In proposed work the integration of edge detection to existing deep learning mechanism-based brain tumor detection has reduced the time consumption. Moreover, the time taken to detect the tumor consider pre trained network also get reduced. First, RGB2 Gray conversion is used to change the size of previously altered images. Following that, an edge detection technique is used. The probability of a tumour is calculated based on the qualities that are removed from the images. Artificial neural networks are employed in the following step to identify tumours.

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Deep learning with invariant feature based species classification in underwater environments

Published: 28 July 2023

Volume 83, pages 19587–19608, (2024) [Cite this article](#)

Multimedia Tools and Applications

[Aims and scope](#)[Submit manuscript](#)[Maninder Kaur](#) & [Sandip Vijay](#) **145** Accesses [Explore all metrics](#)

Abstract

Researchers are paying more attention to the classification of underwater species from images. The main goal of the researchers is to make a pre-processing algorithm that uses an enhancement mechanism to find the exact region of species. It is crucial for marine researchers and scientists to estimate the region of species for classification on a regular basis, but this is a challenging task due to uncleanly captured images. The main causes of such a problem are variation in light of the underwater environment, species concealment, irregular backgrounds, low resolution, and indirect variations between some species patterns. To address these issues, we propose an Invariant Feature-based Species Classification (IFSC) model that employs a pattern-net-based Convolutional Neural Network (CNN) as a deep learning model in an

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Biogeography Based Novel Intelligent Crop Yield Prediction for Productive Agriculture using IOT

Ashok Kumar¹, Ranjan Walia^{2*}, Sunil Semwal³

Abstract

The cultivation sector is a significant part of the Indian economy. To generate high-quality products for end consumers, various quality testing on agricultural crops is required. To engage diverse applications in the Digital Agriculture Domain (DAD), the traditional approaches can be combined with contemporary innovations like the wireless sensor networks (WSNs) and Internet of Things (IOT). The framework of an IOT system with a device for delivering biological data in progress is shown in this study. The system has the ability to compute common conditions for yield area and expectation using Artificial Intelligence (AI), and it can do so based on scores for the data that has been provided. The proposed system in order to process the raw data and provide predictions about the current second (regular) air temperature, relative air tenacity, and wind speed, an AI count employing supervised machine learning is developed. The system is supported by an Android application since the structure should be adaptable and simple for a common man to utilize. The proposed system has a 92% overall accuracy rate.

KeyWords: Internet of Things, Crop Yield Prediction, and E-BBO, Machine Learning

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2925

1. Introduction

The numerous applications available for the Internet of Things are helping it gain popularity. The Internet of Things (IOT) is the framework accustomed process, transmit, and control any internet-connected device.

India's economy is based on agriculture, and its agro industry has enormous potential. Crop selection is a crucial aspect of agriculture, thus farmers must choose the correct crops and crop-related characteristics. Fungi, bacteria, and diseases could also harm these crops [1-4]. The intelligent method based on a novel theoretical framework that makes better crop yield estimates by using the energy equation was used in one of the findings, and despite low spatial resolution and quality, remote sensing images studied be more accurate when estimating the crop yield rates correctly, and it was verified in real time [5]. The source of the infection can be estimated as a problem for the farmer due to a decline in crop quality and quantity. An expert is needed to differentiate between the disease and the plant species' origin. It is impossible to see disease or the species of the

plants that make up a vast pasture of crops, hence it is impossible to provide visual proof of either [6-9]. Since a variety of leaves may be absurd, tedious, and exorbitant to bear numerous master for separating evidence. In order to identify leaf diseases in vast fields of crops, we are putting into practice an image selection technique. A webcam can take a picture, and then a leaf spot is taken for training and testing purposes. In conjunction with an image collecting and advance selection technique to identify the disorders, software used was MATLAB [10].

There was work done on the diseases of the grapes' leaves using a picture handling approach, using data from the grape crop field [9]. This study examined methods for using computations and image handling techniques to identify ailments in grape plants [2].

The national economy's core component, energy, plays a crucial role in assuring both the supported advancements in both the economy and people's quality of life.

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Mobile Clustering Protocol Using Heterogeneous Fuzzy System (MCPHFS)

Ashok Kumar¹, Ranjan Walia^{2*}, Sunil Semwal³

Abstract

The challenge of extending the life of wireless sensor networks is the most crucial ones. WSN (Wireless Sensor Networks) contains one hundred or more sensor networks nodes for the purpose of detection. These sensor nodes have a limited battery life, and charging them is still a challenge. For the purpose of extending the life of WSN, numerous optimization strategies had been developed. A well-liked suggestion for extending the network's survivability is clustering. The initial hierarchical clustering method, LEACH (Low Energy Adaptive Clustering Hierarchy), is a distributed probabilistic strategy to find cluster heads. Following that, a variety of protocols were devised, each of which involves picking and turning cluster heads in order to achieve energy efficiency. However, none of these protocols take into account expected remaining energy, or the sensor node energy that is still operating after being chosen as a cluster head and successively a full round. In this article, we introduced mobile clustering protocol using heterogeneous fuzzy system, which illustrates the introduction of MSNs (Mobile Sensor Nodes) in an atmosphere with heterogeneous sensor nodes along with adding a fuzzy-based clustering method that can improve the sensor network durability by using energy prediction for smart cluster head selection. In comparison to LEACH, Fuzzy-LEACH, LEACH-ERE and EEHC, the simulation results of MCPHFS (Mobile Clustering Protocol Heterogeneous Fuzzy Based) indicate a considerable enhancement in terms of HND (Half Node Dead FND (First Node Dead)).

KeyWords:fuzzy inference engine,Cluster head, mobile sensor nodes, wireless sensor networks,predicted residual energy

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NeuroQuantology2022; 20(16):3032-3041

2216

Introduction

The development of compact, wireless sensor nodes with minimal power, on-board computation, and communication capabilities that can be utilized for detecting has recently been made possible by MEMS (Micro Electro Mechanical Systems). The principal applications of WSNs are in the traffic monitoring, the environment, and battlefield activity [2] and [3]. A BS (Base Station) is positioned remote from the deployment region in a WSN, where sensor nodes are distributed arbitrarily. Every sensor node is in charge of sensing the area around them and sending that data to the BS. Since these sensor nodes run on batteries which are non-rechargeable, it is crucial to design sensor networks with low energy consumption [4]. A wireless sensor node is depicted in a block diagram in Fig. 1. Shows detection unit, centralized

controller unit, power supply unit and communication unit, are the four fundamental parts of a sensor node. Additional components that depend on the application may be present, such as a locator, a power source, and a mobilizer.

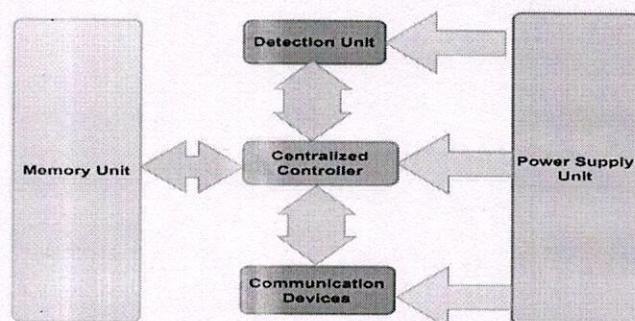


Fig.1. Wireless sensor network system

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Detection Unit: Sensors and analogue to digital converters are the two parts that often make up



Home Plasmonics Article

Graphene/Au/MIP-Coated D-Shaped Optical Fiber-Based SPR Sensor for Ethanol Detection

REVIEW Published: 27 June 2023

Volume 18, pages 1639–1649, (2023) Cite this article

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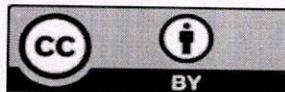
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Vatsala Sharma, Amit Kumar **Sunita Saharan & Sunil Semwal** 441 Accesses 4 Citations [Explore all metrics →](#)

Abstract

In this article, an optical bio-chemical sensor based on D-shaped optical fiber is presented for ethanol detection application. The gold and graphene nanolayers are coated for inducing the SPR over an optical fiber flat surface. The molecularly imprinted polymer (MIP) thin film is also coated over the gold film to enhance the molecular interaction between the sensing fluid and the sensing surface. The ethanol concentration is detected with reference to the 0% concentration and increased to 90% in a sample solution. The shift in resonance wavelength detects the concentration of the ethanol in the fluid sample due to the change in RI. The result shows a very good agreement between the concentration of ethanol in fluid and the resonance wavelength (RW) shift. The maximum obtained average sensitivity is 2.5 nm/concentration (every 10%) or 714 nm/RIU with Au/MIP thin film and 1137 nm/RIU for graphene/Au/MIP thin film. Based on the result and optical properties of the proposed sensor, it might be used as a real-time alcohol detector. This sensor can protect foods and drinks from the imbalance of chemicals and preservatives.

Dr. Avijay
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Performance Analysis of 16-Bit qALU using Reversible Logic Gateswith QCA for Quantum Processors

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Abstract:

The NAND, NOT, and NOR logic gates which are utilised to realise the hardware modules of the system, are examples of basic classical logic gates that make up the hardware basics of electronic circuit systems. In addition to this, a useful system has been described for designing and implementing quantum processors by using reversible logic gates to analyse the performance of ALUs. Additionally, it shows that QCA might be used in quantum computers, assuming that the underlying technology can be made workable. When considering energy-efficient computations, reversible or information-lossless circuits are crucial for digital signal processing, communication, computer graphics, and cryptography. By preventing information loss, reversible logic is utilised to lessen the power dissipation that occurs in classical circuits, which is particularly promising because it allows for extremely low power computations like nano-computing for quantum processors. Because bits of information are lost during logic operations, typical digital circuits waste a lot of energy. It is well known that an Arithmetic and Logical Unit is one of the most fundamental operational units in the quantum processor (ALU). The design and implementation of an innovative r/q 16-bit ALU that improves the overall performance of quantum processors while carrying out the task in the digital signal processing domain are discussed in this study. When reversible gates were used in place of logic gates, the power dissipation in terms of information bit loss was significantly reduced. Simulation of these circuits is done by QCA Designer tool and language used for programming is very high-speed hardware integrated circuit hardware descriptive language, Verilog HDL. The power and delay analysis of the various sub modules is performed and a comparison with the traditional circuits is also carried out. The designed ALU has better efficiency as it has less power losses and reduction in power loss upto 39 % is obtained.

Keywords: - Reversible logic gates, Fredkin Gate, Toffoli Gate, qALU, Low Power Dissipation, gates, QCA.

Introduction:

In present technology of the signal processing, the VLSI concept based on the power scattering is highly desirable because due of the increasing complexity of VLSI circuits, which grows every year as a result of the rising demand for more logical components in smaller volumes. As a result, power dispersion has emerged as the fundamental problem in the VLSI area. The fundamentals of reversible logic come from the thermodynamics of data preparation, as shown by typical irreversible logic circuits, which generate heat as a result of the loss of data during calculation. According to Landauer theory, heat is released from circuits built with irreversible

components due to the loss of data bits. It is shown that losing one bit of data results in a loss of energy equal to $KT \log_2$ joules, where K is the Boltzmann constant and T is the temperature at which the activity occurs. i.e., the conventional logic gates-based circuits with deterioration in the performance of the processors. It is termed as reversible logic gate only if it has a dedicated output terminal for each input i.e., for a logical gate with n inputs there should be n outputs. Enhancing the capabilities of these logical circuits has been an important research field that must work at low power levels due to the growing desire for more portable, smaller system designs with greater

Impact of Employee Engagement on Turnover Intention in the Context of Hospitality Industry

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Abstract:

The aim of the current study is to investigate the perception of employees for their work engagement and its role in their turnover intentions, in the hospitality industry in the Northern region of India. The three drivers of employee engagement have been used viz., Cognitive

Reviewing the role of established HRM practices in SSI's performance & Development An evaluative study of Dehradun, Uttarakhand, India

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Preeti Rana, Kamlesh Joshi, Swati Yadav, Ranit Kishore, Anupam Nautiyal

Abstract

Purpose – The study aims to investigate the impact of Human Resource Management (HRM) practices on the performance of Small Scale industries and entrepreneurship development in Dehradun, Uttarakhand, India. The focus is on identifying the key performance indicators of the firms and examining how HRM practices are associated with these indicators.

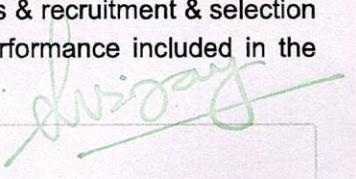
Design/methodology/approach –study aimed to investigate the role of management practices in the performance of small scale industries and entrepreneurship development. The study used a structured questionnaire to collect data from 100 entrepreneurs to determine whether they followed established industrial practices based on management principles and how these practices affected their businesses. The study used multiple regression to analyze the results.

Multiple regression is a statistical technique used to examine the relationship between two or more variables. In this case, the study likely used multiple regression to analyze the relationship between management practices and SME performance. The study may have used various independent variables, such as the use of human resource management practices, financial management practices, or marketing management practices, to predict the dependent variable, SME performance.

Findings – The research confirmed that incorporation of human resource management practices are very important for growth and development of SSI's sector in study area. The different predictors of HRM like training and development, employee engagement, proper industrial relation practices & recruitment & selection procedure have a significant impact on various set of dependent variables of performance included in the study.

How to Cite

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Guest editor : Dr. Krishnaveer singh

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Ancy Antony Vattoly, Silpa M A, Sruthy K A, Keerthana T U, Anwar Fazil P K and Dr. Umesh U

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Dr. J. Ramya, Dr. Ghousia Nasreen, Dr. Ruby Khan, Dr. Shikha Dabral, Jasmeet Kaur and Dr. G. Hudson Arul Vethamanikam

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DETERMINING ECO-FRIENDLY PURCHASE INTENTION: AN EMPIRICAL ANALYSIS IN INDIAN
AUTOMOBILE INDUSTRY

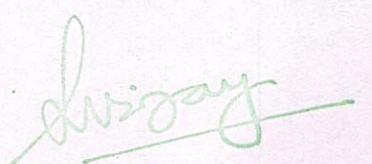
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SUSTAINABLE SUPPLY CHAIN MANAGEMENT IN AGRO-FOOD INDUSTRY

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and Dr. NEETI MATHUR



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Artificial Intelligence's Integration in Supply Chain Management: A Comprehensive Review

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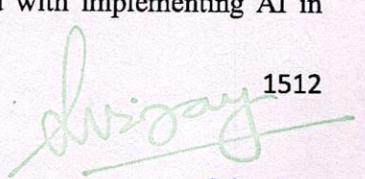
Corresponding author: ahmed.legalaid@gmail.com

Abstract

Supply chain management is a complex and dynamic field that requires efficient planning, coordination, and execution to meet customer demands while minimizing costs. In recent years, Artificial Intelligence (AI) has emerged as a disruptive technology with the potential to transform various aspects of supply chain management. This research paper provides a comprehensive review of the role played by AI in supply chain management, highlighting its applications, benefits, challenges, and future prospects. The paper discusses how AI can enhance supply chain visibility, demand forecasting, inventory management, logistics optimization, and risk mitigation. Furthermore, it explores the impact of AI on decision-making processes and collaboration within the supply chain network. The paper also addresses potential challenges and ethical considerations associated with the adoption of AI in supply chain management. By examining the current state of AI in supply chain management and analyzing its potential future developments, this research paper aims to provide valuable insights for practitioners and researchers in the field.

This research study offers a thorough analysis of how artificial intelligence (AI) is used in supply chain management (SCM). AI has emerged as a disruptive technology that has the power to completely alter many different sectors, including SCM. This essay examines the use of AI in several elements of the supply chain, such as risk management, supplier selection, inventory management, and demand forecasting. The paper also discusses the benefits and challenges associated with implementing AI in

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The Impact of Sustainable Supply Chain Practices on the Environmental Performance of SMEs in Himalayan Region: Evidences from Uttarakhand

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Abstract: The primary goal of this research is to identify the critical success factors for sustainable supply chains among small and medium-sized enterprises in Uttarakhand's hills and plains. The Covid-19 pandemic in India had a significant impact on the SMEs sector. The Covid-19 outbreak demonstrates how pandemics can disrupt supply chains all over the world. Therefore, more research needs to be done in this area so that we can handle worsening situations in future. This article discusses the key success criteria in terms of management strategies and critical management practices that are critical for a sustainable supply chain. Secondary research was used to generate data on the success of SMEs in Uttarakhand, which was then examined for the contribution of management practices and their impact on SMEs' performance. 150 SMEs employees were evaluated using a systematic questionnaire. The questionnaire analyzed managerial personnel's commitment to and desire to implement long-standing business practices in light of management principles, as well as their impact on the performance of SMEs. Statistical methods were used to analyze the final results. It was established that managerial practices were critical for the development and expansion of SMEs in Uttarakhand's hilly regions. Employee recruitment and selection have a substantial impact on the growth of SME's. The study has immediate implications for academics researching how management practices affect the performance, growth, and development of SMEs, as well as for government officials who must take the necessary steps to properly train entrepreneurs and encourage them to incorporate these practices in their businesses located in Uttarakhand's hills and plains.

Keywords: Sustainable Strategic Operation • Supply Chain Management Practices • Sustainability • Small and Medium enterprises

Introduction

Today, sustainability is a key component for enterprises looking to maintain their organization for a longer time. Although, it is not solely a discipline of the company, sustainability now includes all operations within its supply network (Halldorsson et al., 2009). Sustainability has a vital role in Supply Chain Management (SCM). Therefore, in the contemporary time these two are used together and termed as Sustainable-Supply Chain Management (S-SCM).

However, the Sustainable-Supply Chain Management practices cannot be static. Globalization and technological advancement have concurrently increased the complexity and dynamicity which impose additional challenges to modern-day SCM and necessitate the requirement of higher order SC

(Supply Chain) capabilities which are dynamic in nature. In the contemporary world it is important to explores the impact of SSCMP on two dimensions i.e., environment and society. SMEs working in the hill districts of Uttarakhand are also facing the challenges of sustainable supply chain management as these small and medium enterprises are not much aware of the sustainable management practices which lead to an adverse impact on environment and society. The State Infrastructure & Industrial Development Corporation of Uttarakhand Limited (SIDCUL), located in Udhampur Singh Nagar and Haridwar districts promote the industrial development in the state but they are also lacking in sustainable supply chain management practices.

Influence of High Amplitude Mould Vibration on the Morphology of Silicon in the Al-Si Alloy (A308)

Original Paper Published: 14 July 2022

Volume 15, pages 229–241, (2023) Cite this article



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Siddharth Yadav , Santosh Kumar, Satya Prakash Tewari, Subhash Chandra & Jayant Kumar Singh

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Subhash Chandra Ram

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Abstract

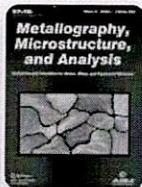
Today's casting industries strive to produce high-quality cast components in an efficient, cost-effective, eco-friendly, and sustainable way. To achieve this, with an indigenously developed, well-controlled digital vibratory setup, this study examines the effect of high amplitude vibration on the density, silicon morphology, and mechanical properties of A308 alloy. The metallurgical alterations were evaluated by optical microscopy, x-ray diffraction analysis, scanning electron microscopy, and energy dispersive spectroscopy. The size of α -Al grains, SDAS, length, width, and aspect ratio of eutectic Si particles decreased by 53%, 63%, 71%, 18%, and 62%, respectively. In comparison, the shape factor and density increased by 39% and 2.5%, respectively. Consequently, yield strength, ultimate tensile strength, % elongation, and microhardness increased by 16%, 25%, 17%, and 42%, respectively, at 2.5 mm amplitude and 10 Hz frequency compared with the conventional casting method. Refinement in eutectic silicon particle size (length, width and aspect ratio) and shape (plate to fibrous), dendrite fragmentation, structural uniformity, decreased porosities, and subsequent increase in density contributed to this improvement in mechanical properties. The SEM fractographs of tensile test samples showed a transgranular brittle fracture. At 10 Hz frequency, the fracture surfaces exhibit brittle fracture mode with partial ductility.

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Studies on Tensile Fracture and Two Body Wear Behavior of Al/Si₃N₄–Al₂O₃ Nanocomposites Prepared by Powder Metallurgical Route

Peer-Reviewed Paper Published: 03 August 2022

Volume 11, pages 580–594, (2022) Cite this article

Metallography,
Microstructure,
and Analysis
Aims and Scope
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Abstract

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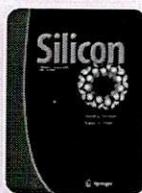
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The tensile fracture and two body wear behavior of [Al/Si₃N₄/Al₂O₃]_P nanocomposites were examined in the present investigation. The nanocomposites were prepared by using aluminum powder as matrix and Al₂O₃, Si₃N₄, and mixed composition of Al₂O₃ and Si₃N₄ reinforcing particles with varying compositions of 1%, 2%, and 3% each through powder metallurgical (PM) technique. Tensile characteristics and two body wear behavior of pure and fabricated samples were examined by performing tensile and dry sliding tests, and their results were correlated with microstructure, fracture, and worn surface morphology using scanning electron microscopy. Results revealed the improved tensile strength (203.38 MPa), hardness (56.6 HV), and lowest wear rate ($1.14 \times 10^{-6} \text{ mm}^3/(\text{N} \cdot \text{m} \cdot \text{at} 5 \text{ N})$) at Dehradun.

High Temperature Dry Sliding Reciprocating Wear Behavior of Centrifugally Cast A356-Mg₂Si In-Situ F

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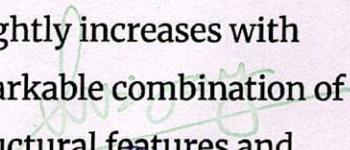
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Abstract

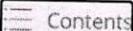
In this study, the Al-Mg₂Si FG-composites were developed by in-situ centrifugal casting route with varied Mg contents (2.5, 5.0, 7.5, and 10.0 wt.% Mg). Cast FG-composites subjected to T6 heat treatment processes to achieve the high specific wear resistance and mechanical properties. High temperature linear reciprocating wear and friction properties of in-situ centrifugally cast A356-Mg₂Si FG-composites has been studied. The wear resistance properties of Al-Mg₂Si FG-composites were characterized by difference of initial and final weight measurement after sliding wear test. As a result, the mass loss decreases steadily as the %Mg increases from 2.5% to 7.5% and slightly increases with 10% Mg. The FG-composites containing 7.5%Mg exhibits the remarkable combination of wear resistance characteristics and coefficient of friction. Microstructural features and


Director
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A literature review on Al-Si alloy matrix based in situ Al-Mg₂Si FG-composites: Synthesis, microstructure features, and mechanical characteristics

Subhash Chandra Ram , Kausik Chattopadhyay, and Awani Bhushan [View all authors and affiliations](#)

Volume 237, Issue 4 <https://doi.org/10.1177/09544062221124064>

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 Metrics and citations

Abstract

The current study examined a comprehensive review of the literature on functionally graded composites, particularly Al-Mg₂Si in situ metal matrix composites. Functionally graded Al-Si-Mg₂Si in situ metal matrix composites are potential materials for meeting a variety of property demands in various components of automotive engines. The in situ formed intermetallic compound Mg₂Si in Al-Si matrix exhibits a high melting temperature, low density, high hardness, a low thermal expansion coefficient, and a reasonably high elastic modulus. Due to all of aforementioned characteristics, Mg₂Si is an attractive form of reinforcement that can be created in situ using a simple melt reaction approach. However, the coarse size of primary Mg₂Si reinforcement in cast composites is a demerit which reduces the strength and ductility of the ultimate composite. Hence several researches have been attempted to refine the primary Mg₂Si particles as well as to change the morphology of the eutectic structure. Apart from the monolithic in situ cast composites, attempts have been made to develop functionally graded (FG) composites in which the volume% of segregation of reinforcements are intentionally varied from one surface to another. These types of FG composites are economically developed by centrifugal casting technique in which Mg₂Si reinforcements are segregated to inner the surface due to lower relative density with respect to the molten Al matrix. This type

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Cfd Investigation of Heat Transfer Characteristics of Solar Air Heater with Benzene Shaped Roughness

¹Abhishek Singh, ²Mr. Ankit Jain

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Abstract

In this paper study of benzene shape solar air heater in rectangular solar system is consists of absorber plate. Geometry for the benzene shaped rectangular channel has completed collection of the parameters. The rate of heat transfer is maintained by values of benzene shaped roughness in different positions of gaps between the arm of benzene shape roughness ($g = 2, 3.8, \text{ and } 5.6$) and constant gap between each benzene $G = 45 \text{ mm}$, and relative gap position $G/e = 10.7$ where $e = 4.2 \text{ mm}$ is height of benzene type roughness. These are the parameters of roughness which worked on hydraulic diameter of rectangular ($D_h = 46.15 \text{ mm}$) under Reynolds number in range of 4000, 7000, 10000, 13000, 16000, 19000, and 22000 and The maximum efficiency of solar model $\eta_{\max} = 1.515072$ examined for $g = 3.8 \text{ mm}$, $P/e = 14$, $P = 58.8 \text{ mm}$ and $Re = 22,000$.

Keywords:benzene shaped ribs, CFD, Turbulent flow, Heat transfer enhancement.

1.0 Introduction

In the present day of manufacturing, where alternate source of energy is mainfocus of the researchers. In this context, solar energy is emerging as a prime source of alternate energy with several areas of applications like solar water heating, cooking, e-rickshaws, solar heating building etc as reported by various researchers(1)(2)(3).Main objective of the solar energy is to reduce or minimize theuse of commercial energy for making a good balance of global warming on earth environment(4). Solar thermal energy is emerging area of research for the researchers. In order to enhance thermal efficiency of renewable energy various research have been done in past few decays.

To improve the thermal efficiency, several research has been done in order to develop the technology.Solar air heater (SAH) is one of the important technology that collects energy from sun and also reduces global warming developed through fuels and other toxics sources of energy(5). The most of the solar air heaters are design and planted for several area of applications like thermal industries, energy power systems, heating applications parts, air and solar energy system etc(1)(3)(4). Many researchers used passive methods to obtain maximum thermal performance of solar air heater. J.L. Bhagoria et al. developed an experiment setup of rectangular solar air heater. In his research work higher thermal transfer for Reynolds number 3000 – 18,000, wedge type rib roughness, angle of attack $\phi = 8^\circ, 10^\circ, 12^\circ, \text{ and } 15^\circ$, $e/D = 0.015 - 0.033$, maximum heat transfer at 10° was observed(6). The results reveals that in

“CFD investigation of Heat transfer characteristics of heat exchanger tube with different shape inserts”

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Abstract

In the present study, the transfer of heat is an order of thermal engineering and an important phenomena of heat exchanger system. The Phenomena of heat transfer changed many times into various procedure such as thermal phase changes. The phase changes are classified into thermal convection, thermal conduction and radiation. In this paper thermal conduction and convection phase changes to improve thermal performance and its capacity of flow of heat from circulation flow zone of cooling and heating area of design model.. The length of the cutting cone is denoted by $l = 18$ mm. The thickness of the cutting cone $t = 2$ mm, pitch variation of the cutting cone $P = 40 - 120$ mm. The height of the object is measured in millimeters as cutting cone vortex = 52, and the variation in the Reynolds number $Re = 4000 - 16,000$. All the results have been investigated by CFD software program which is used maximally for fluid related problems. The maximum thermal efficiency is observed $\eta_{max} = 2.012881$ at $P = 80$ mm, $P/D_h = 1.33$, $N = 2$, $Re = 16,000$, and $l = 18$ mm.

Keywords

Heat Exchanger Tube, Twisted Tape Insert, PCC Tube, Reynolds Numbers.

1.0 Introduction

The phenomena of transfer of heat from one physical body to another body are known as heat exchange system and tube body system is known as heat exchanger tube. The heat exchanger system is employed in many application as compact heat exchanger power plants, processing of foods plants, refrigeration circular system, as in process industries, Hydraulic power plants etc. The main motive of heat exchanger system is to maintain the phenomena of heat transfer with all points of views. Thejaraju R. Et al. [1] Angle plate inserts (API) oriented in transverse direction was used to investigate the thermal efficiency of a curved channel. Within the range of 1.34-1.63, the value of the performance factor is reduced. Jafar et al. [2] The impacts of a whirling producer on the thermal efficiency of a heat - transfer pipe were investigated. A spirally twisting tube with something like a five-lobe pass was employed as the swirl generator. Shekholeslam M. Et al. [3] Perforated tabulators were used to analyze the heat transfer enhancements with a double pipe converter. The highest value of the thermo physical properties factor was 1.59, which was found for $Re = 6000$, $PR = 1.06$, and $= .07$. S. Vgneshetal. [4] wrinkled tube heat exchangers were used to investigate the tubular heat converter at varied flow rates. Because as hydraulic fluid, liquid was employed. In addition,



Optimization of sandwiched armour plate conversion principle via dynamic analysis

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Abstract

Defence can play a paramount role in military organization thus designing lighter target from lethal damage is important. While the traditional armour plated us development of advanced ceramics with low density and high strength properties possibilities in the field. The presented paper brings out a study regarding prototyped sandwiched panel with metal matrix interface and honeycomb structures against projectiles. The authors have developed a composite armour plate with non-ricochet properties, using ceramics Honey-comb structure tile glued together encased v experimental data, geometry of the experimental setup, modelling (meshing and analysis) has been done on different metals, ceramics and polymers and the best sequence of the selected materials is developed using crashworthy design concepts. The sandwiched panel are provided and superposed sandwiched panel responses v honeycomb structures are assessed.

Introduction

In latest trend the armour protection technology is shifted towards the high functionality [1], [2]. For the development of this technology, the advanced ceramic material strength and toughness material etc. are used [3], [4]. Nowadays the weight of the armour plate impacts the mobility of wearer. In this context, a study regarding protective panel with metal matrix interface and honeycomb structures against ballistic impact is presented.

Defence plays a very important role in determining the strength of a military or defence mechanism. The components of any defence mechanism is armour. Traditionally, the armour plates are made of high density and high hardness steel, restricting mobility due to their weight and size. The demand for lighter and more effective armour plates prompted researchers to look for alternative materials, non-metallic materials like ceramics. Ceramics with their low density and high strength properties have been used widely, in the past. Ceramic plates have non-ricochet characteristics i.e. the projectile is shattered into smaller fragments and the energy is absorbed by the load is spread over a larger area delaying the initiation of tensile failure and causing less damage to the target.

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