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AY 2019-20: Collaborative quality initiatives with other institution(s)

The following are the list of publications and MoU's for Qualitative Assurance Initiatives of the Institutions during the academic year 2019-20:

S. No.	Details	No of Publications /MoU's
1	Publications	36
2	MoU's	07

le
28/1/22

(Prof.Dr.V.Rajendran)
Principal



Prof. Dr. V. RAJENDRAN
 M.Sc., M.Phil., M.Tech., (Nanotech), Ph.D. (Inst. Pg. London)
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Publications


S. No.	Publication Details	Collaborative Institute	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISBN/ ISSN number
1	A Study on Problems faced by customers in Online reservation with reference to Madurai	Sri Ramalinga Sowdambigai College of Science and Commerce Onapalayam, Coimbatore	Dr. S. Renugadevi	B. Com. (BPS)	Infokara Research	2019-2020	1021-9056
2	An Interval Valued Linear Programming Problem With Trapezoidal Z Fuzzy Number	Nirmala college for women	Dr. M. Revathy	B. Com. (BPS)	Indian Journal of Research	2019-2020	2250-1991
3	A Hybrid Detection Model for Epilepsy Seizure using FCM with MPSO and Decision Tree	PPG College of Arts and Science, Coimbatore,	Dr. D. Deviaruna	Computer Applications	International Journal of Recent Technology and Engineering (IJRTE)	2019-2020	: 2277-3878,
4	A STUDY ON SATISFACTION OF PASSENGERS TOWARDS AMENITIES PROVIDED BY COIMBATORE JUNCTION	Kovai Kalaimagal College of Arts and Science, Coimbatore	Dr.B.Maheswari	Department of Commerce (Business Analytics)	CIKITUSI JOURNAL FOR MULTIDISCIPLINARY RESEARCH	2019-2020	0975-6876
5	Procreation and Quality Analysis of Cow Curd by Using Starter Culture as Fermented Rice Rinsed Water	PSG Hospitals, Peelamedu, Coimbatore	D Sridevi D	Food and nutrition	Journal of Food J Processing & Technology	2019-2020	2157-7110

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6	Hydrothermal synthesis of ZnO–CdS nanocomposites: Structural, optical and electrical behavior	Paavai Engineering College, Namakkal, Womens Christian College, Chennai	P. Sakthivel	Physics	Ceramics International	2019-2020	0272-8842
7	A Study on Impact of Digital Marketing in Customer Purchase Decision in Coimbatore city	Hindustan college of Arts and Science College, Coimbatore	Mrs.P.Sathyapriya	Commerce Banking and Insurance	Journal of Emerging Technologies and Innovative Research	2019-2020	2349-5162
8	A STUDY ON ONLINE BUYING BEHAVIOUR OF PREGNANT LADIES	SNS College of Engineering, Coimbatore	Mrs.N.Kiruthika	Management Studies	Journal of Marketing Strategy (JMS)	2019-2020	2347-3770
9	Computation of eccentricity associated topological descriptors through Python for comb tree	Nirmala College for Women, Coimbatore, India	Mrs.S Manimekalai	Mathematics	Journal of Physics: Conference Series	2019-2020	1742-6588
10	MHD bioconvective flow of a thermally radiative nanoliquid in a stratified medium considering gyrotactic microorganisms	School of Engineering, Presidency University, Yelahanka, Bangalore, India King Abdulaziz University, Jeddah, Saudi Arabia	Dr.S.Eswaramoorthi	Mathematics	Journal of Physics: Conference Series	2019-2020	1742-6588
11	Enhanced ultrasensitive detection of ozone gas using reduced	Tamil Nadu Agricultural University, Coimbatore Instituto de	Dr.K.Girija	Physics	Journal of Materials Science: Materials in	2019-2020	0957-4522

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						Criterion VI Metric 6.5.3	

	graphene oxide-incorporated LaFeO ₃ nanospheres for environmental remediation process	Física de São Carlos (IFSC), University de São Paulo, Brazil			Electronics		
12	Insulinoma-associated protein 1 (INSM1): a potential biomarker and therapeutic target for neuroendocrine tumors	Duy Tan University, Vietnam, Asia University, Taichung, Taiwan, Ton Duc Thang University, Ho Chi Minh City, Vietnam	Dr.M.Shanmuga vadivu	Biotechnology	Cellular Oncology	2019-2020	2211-3428
13	Biomimetic TiO ₂ -chitosan/sodium alginate blended nanocomposite scaffolds for tissue engineering applications	K. S. Rangasamy College of Technology, Tiruchengode, University of Tübingen Hospital, Tübingen, Germany	Dr.V.Rajendran	Physics	Materials Science and Engineering: C	2019-2020	0928-4931
14	Wet chemical preparation of herbal nanocomposites from medicinal plant leaves for enhanced coating on textile fabrics with multifunctional properties	K. S. Rangasamy College of Technology, Tiruchengode, University of Tübingen Hospital, Tübingen, Germany	Dr.V.Rajendran	Physics	SN Applied Sciences	2019-2020	2523-3971
15	Gas sensing nature and characterization of Zr doped TiO ₂ films prepared by automated nebulizer spray	Government Arts College, Coimbatore	Dr. V. Gopala Krishnan	Physics	Optik-International Journal for Light and Electron Optics	2019-2020	0030-4026

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	pyrolysis technique						
16	Competency mapping conflicts and resolutions for industrial engineering	Bharathiar University	Dr. V. Abirami,	BBM	AIP Conference Proceedings	2019-2020	0094-243X
17	Dual property of chitosan blended copolymer membranes: Antidiabetic drug release profile and antimicrobial assay	Coimbatore Institute of Technology, Coimbatore National Institute of Technology, Karnataka	Mrs.M.E. Pavithra	Microbiology	International Journal of Biological Macromolecules	2019-2020	0141-8130
18	High dimension multi class algorithms (Hdmca) for classification and prediction: An analysis of different algorithms, performance measures and datasets.	Chikkanna Government Arts College, Tirupur	Prof.V.Shobana	Computer Science	International journal of scientific & technology research	2019-2020	2277-8616
19	Adaptive fuzzy chaotic genetic clustering based continuous Keystroke authentication	Hindusthan College of Arts and Science, Coimbatore University Teknologi MARA, Selangor, Malaysia	Dr.M. Rathi	Computer Technology	International journal of scientific & technology research	2019-2020	2277-8616
20	A Contemporary Approach on Neutrosophic Nano Topological Spaces	PSGR Krishnammal College for Women, Coimbatore	Prof.K.C. Radhamani	Mathematics	Neutrosophic Sets and Systems	2019-2020	2331-6055
21	Optical character recognition	CMS College of Science &	Prof. L.Pavithra	Computer Science	The Imaging	Sep 2020	1368-2199

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	based on local invariant features	Commerce, Coimbatore			Science Journal		
22	Analytical and numerical study on cross diffusion effects on magneto-convection of a chemically reacting fluid with suction/injection and convective boundary condition	Kongunadu Polytechnic College, Dindigul, Stellenbosch University, South Africa, King Abdulaziz University, Saudi Arabia	Dr.S. Eswaramoorthi	Mathematics	Computational Analysis of Heat Transfer in Fluids and Solids II	2019-2020	1662-9507
23	In vitro antiviral activity of banlec against herpes simplex viruses type 1 and 2	JSS College of Pharmacy, Ooty	Dr.S.Gowri	Biochemistry	A Journal of the Bangladesh Pharmacological Society	2019-2020	1991-0088
24	Extremely-randomized-tree-based prediction of N6-methyladenosine sites in saccharomyces cerevisiae	Research and Development Center, In-silicogen Inc., Yongin-si, Republic of Korea, Ajou University School of Medicine, Suwon, Republic of Korea	Dr.S.Sathiyamoorthy	Biotechnology	Current Genomics	2019-2020	1875-5488
25	Molecular geometry, NLO, MEP, HOMO-LUMO and mulliken charges of substituted piperidine phenyl hydrazines by using density functional theory	Government Arts College (Autonomous), Coimbatore	Dr.M.Dinesh Kumar	Chemistry	Asian Journal of Chemistry	2019-2020	0970-7077

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26	Till 2018: a survey of biomolecular sequences in genus Panax	College of Life Sciences, Kyung Hee University, Republic of Korea, Research and Development Center, Insilicogen Inc., Yongin, Republic of Korea	Dr.S.Sathiyamoorthy	Biotechnology	Journal of Ginseng Research	2019-2020	1226-8453
27	Structural, morphological and magnetic properties of algae/CoFe ₂ O ₄ and algae/Ag-Fe-O nanocomposites and their biomedical applications	SriGuru Institute of Technology, Coimbatore, Shri Nehru Maha Vidyalaya College of Arts and Science, Coimbatore, Sasi Institute of Technology & Engineering, Andhra Pradesh, Government College of Technology, Coimbatore	Dr.S.Sathiyaraj	Chemistry	Inorganic Chemistry Communications	2019-2020	1387-7003
28	Hydrothermal synthesis of ZnO–CdS nanocomposites: Structural, optical and electrical behavior	Paavai Engineering College, Namakkal, Womens Christian College, Chennai, Paavendhar College of Arts & Science, Salem,	Dr.P.Sakthivel	Physics	Ceramics International	2019-2020	0272-8842

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		Centurion University of Technology and Management, Bhubaneswar					
29	Functional and antimicrobial properties of herbal nanocomposites from Piper betle plant leaves for enhanced cotton fabrics	K.S. Rangasamy College of Technology, Tiruchengode, Clermont-Ferrand University, France	Dr.V.Rajendran	Physics	Journal of Coatings Technology and Research	2019-2020	1363–1375
30	Euler Movement Firefly Algorithm and Fuzzy Kernel Support Vector Machine Classifier for Keystroke Authentication	Hindusthan college of Arts and Science, Coimbatore.	Dr.M.Rathi	Computer Technology	International Journal of Innovative Technology and Exploring Engineering		2278-3075
31	Multilabel Classification with PSO based synthetic minority over sampling techniques (PSOSMOTE) For Imbalanced Samples	CIMAT, Coimbatore.	Prof. M.Priyadharsini	Computer Technology	International Journal of Recent Technology and Engineering		2277-3878
32	Computation of eccentricity associated topological	Nirmala College for Women, Coimbatore.	Ms.S.Manimekalai	Mathematics	Journal of Physics; Conference series		1742-6588

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	descriptors through python for comb tree						
33	Fuzzy Clustering Based Image Denoising and improved support vector machine (ISVM) based nearest target for Retina Images	Tirupur Kumaran College for Women, Tirupur	Ms. B. Sivaranjani	Computer science	International Journal of Recent Technology and Engineering		2277-3878
34	A Study on Rural Self Help Groups Women with Special Reference to Micro Credit in Salem District	Kongunadu Arts and Science College (Autonomous), Coimbatore	Dr.C.Kandasamy	Commerce Finance	The international journal of analytical and experimental modal analysis		0886-9367
35	Arithmetic Operations on Pythagorean Z Numbers	Nirmala college for women, Coimbatore	Ms.M.Revathy	Mathematics	Journal of applied science and computations		1076-5131
36	Drug Suggestion Concerned Automated Drug Knowledge Ontology Construction Framework	PSGR Kirshnammal College for Women, Coimbatore.	Dr.B.Rosline Jeetha	Computer Science	Journal of international pharmaceutical research		1674-0440

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INFOKARA RESEARCH

ISSN NO: 1021-9056

A Study on Problems Faced by Customers in Online Reservation With reference to Madurai City

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Onapalayam, Coimbatore

Abstract

The world has seen a great technological boom in the last fifty years, with innovations in every field making it possible for human life to be easier and comfortable. Tickets are documents that confirm the purchase and guarantee a seat on a chosen journey, hotel or for a show. Tickets are required as proof to get a boarding pass which is essential. Traditional tickets of earlier days were made of paper and were to be collected from the travel agencies or office for purchasing. Along with globalization and the development of the aviation industry, the process of ticket purchasing has also changed. Since the rapid growth and use of the internet since the 2000s, reservation has been possible online.

Introduction

The new era of information technology has brought multiple advantages to mankind. The world has seen a great technological boom in the last fifty years, with innovations in every field making it possible for human life to be more easier and comfortable. Tickets are documents that confirm the purchase and guarantee a seat on a chosen journey, hotel or for a show. Tickets are



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PARIPEX - INDIAN JOURNAL OF RESEARCH

Volume-8 | Issue-1 | January-2019 | PRINT ISSN - 2250-1991



ORIGINAL RESEARCH PAPER

AN INTERVAL VALUED LINEAR PROGRAMMING PROBLEM WITH TRAPEZOIDAL Z FUZZY NUMBER

Mathematics

KEY WORDS: Z number, interval valued Z fuzzy number (IVZFN), Z fuzzy linear programming problem (ZFLPP), interval valued Z fuzzy linear programming problem (IVZFLPP)

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Assistant Professor, Department of Mathematics, Nirmala college for women, Coimbatore-18. *Corresponding Author

ABSTRACT

This paper gives the modified interval valued Z fuzzy numbers (IVZFN) for solving interval valued Z fuzzy linear programming problem (IVZFLPP) with trapezoidal Z fuzzy numbers by assuming different cut values. An illustrative numerical example is presented in order to clarify the proposed approach.

1.INTRODUCTION:

The belief of fuzzy sets was introduced by Zadeh [9] and it was indiscriminate to trapezoidal fuzzy sets by Atanassov [2,3]. Zadeh have also anticipated a belief, namely Z-number, which is an order pair of fuzzy numbers (\tilde{A}, \tilde{R}) . The first component \tilde{A} , plays the role of a fuzzy restriction. And the second component \tilde{R} is a reliability of the first component [10]. This manuscript focuses on trapezoidal Z fuzzy numbers (TZFNs) and interval valued Z fuzzy numbers by presumptuous various cut values from them. When we judge the interval valued Z fuzzy numbers (IVZFNs), the arithmetic operations defined on them are of great authority. In the literature, Interval Arithmetic was first suggested by Dwyer [5] in 1951. The same was developed by Moore [6], Ganesan.K. and Veeramani.P[6] and Nagor Gani. A and Irene Hepzibah. R[8]. Here in this work, we used the same operations to interval valued Z fuzzy numbers (IVIFNs) to get the preferred conclusion. Many researchers have applied the fuzzy set theory to the field of decision making. Bellman and Zadeh [4] proposed the concept of decision making in fuzzy environment. Zimmermann[11] proposed the first formation of fuzzy linear programming problem. The paper is organized as follows: Section 2 introduces the preliminaries of fuzzy set, trapezoidal fuzzy number, Z fuzzy number, interval valued Z fuzzy numbers. Section 3 deals with the formulation of Z fuzzy linear programming problem (ZFLPP), interval valued ZFLPP and ranking function. Section 4 discusses the algorithm for solving IVZFLPP. In section 5, an application of these are discussed by a numerical illustration and some concluding remarks are given in Section 6.

II. PRELIMINARIES:

A. DEFINITION 1: [9]

Let X be a nonempty set. A fuzzy set \tilde{A} of X is defined as $\tilde{A} = \{(x, \mu_{\tilde{A}}(x)) : x \in X\}$ where $\mu_{\tilde{A}}(x)$ is called the membership function which maps each element of X to a value between 0 and 1

B. DEFINITION 2: [9]

A fuzzy number is a generalization of a regular real number and which does not refer to a single value but rather to a connected set of possible values, where each possible value has its weight between 0 and 1. This weight is called the membership function.

A fuzzy number \tilde{A} is a convex normalized fuzzy set on the real line R such that:

- There exist at least one $x \in R$ with $\mu_{\tilde{A}}(x) = 1$
- $\mu_{\tilde{A}}(x)$ is piecewise continuous

C. DEFINITION 3: [1]

A trapezoidal fuzzy number A can be expressed as $[a_1, a_2, a_3, a_4]$ and its membership function is defined as

$$\tilde{a} = \begin{cases} \frac{x-a_1}{a_2-a_1}, & \text{for } x \in [a_1, a_2] \\ 1 & \text{for } x \in [a_2, a_3] \\ \frac{a_4-x}{a_4-a_3}, & \text{for } x \in [a_3, a_4] \\ 0 & \text{otherwise} \end{cases}$$

D. DEFINITION 4: [1]

If $\tilde{A} = [a_1, a_2, a_3, a_4]$ is a trapezoidal fuzzy number, we will let $\tilde{A}_\alpha = [A_\alpha^-, A_\alpha^+]$ where $[A_\alpha^-, A_\alpha^+] = (\alpha(a_2-a_1)+a_1, \alpha(a_4-a_3)+a_3)$ be the closed interval which is α -cut for \tilde{A} $0 \leq \alpha \leq 1$.

E. DEFINITION 5: [10]

A Z-number is an ordered pair of fuzzy numbers denoted as $Z = (\tilde{A}, \tilde{R})$. The first component \tilde{A} a restriction on the values, is a real-valued uncertain variable X . The second component \tilde{R} is a measure of reliability for the first component.

III FORMULATION OF PROBLEM:

A. FORMULATION OF Z FUZZY LINEAR PROGRAMMING PROBLEM (ZFLPP):

The general form of optimization problem with Z-fuzzy objective function Z and m Z-fuzzy constraints is given by

$$\max z_k(\tilde{A}, \tilde{R}) = \sum_{j=1}^n c_j^k \tilde{R}_j^k \tilde{x}_j,$$

Where $k = 1, 2, 3, \dots, K$

$$\text{Subject to } \sum_{i=1}^m \tilde{a}_{ij} \tilde{R}_j \tilde{x}_j \leq \tilde{b}_i \tilde{R}_i,$$

$$i = 1, 2, 3, \dots, m; \quad j = 1, 2, 3, \dots, n$$

$$\tilde{x}_j \geq 0, \quad j = 1, 2, 3, \dots, n$$

B. Formulation of Interval Valued Z Fuzzy Linear Programming Problem (IVZFLPP):

By assuming the prescribed value of α the problem can be restated as

$$\max z_k(\tilde{A}, \tilde{R})_\alpha = \sum_{j=1}^n (c_j^k)_\alpha (\tilde{R}_j^k)_\alpha (\tilde{x}_j)_\alpha$$

Where $k = 1, 2, 3, \dots, K$

$$\text{Subject to } \sum_{i=1}^m (\tilde{a}_{ij})_\alpha (\tilde{R}_j)_\alpha (\tilde{x}_j)_\alpha \leq (\tilde{b}_i)_\alpha (\tilde{R}_i)_\alpha,$$

$$i = 1, 2, 3, \dots, m; \quad j = 1, 2, 3, \dots, n$$

$$(\tilde{x}_j)_\alpha \geq 0, \quad j = 1, 2, 3, \dots, n$$





A Hybrid Detection Model for Epilepsy Seizure using FCM with MPSO and Decision Tree

C. V. Banupriya, D. Deviaruna

Abstract: An Electroencephalogram (EEG) plays momentous role in appraising tolerant with irregular motion in their brain, EEG soundtrack of the tolerant occupied to scrutinize irregularity and categorize type of confusion there in the brain activity. An Electroencephalogram is a bioelectrical signal that records the brain's electrical activity versus time. The illumination of EEG indication is a function of outline detection. The future system engaged DWT change for factor withdrawal and got measure EEG signals recurrence range identifying with seizure, partition them into five diverse space, for example, α -alpha, β -Beta, γ -Gamma, δ -Delta and θ -Theta wave forms are identified with the summative range, and arrange of repetition circulation through DWT of EEG symbols to think about the dissimilarity amongst seizure and normal focus and Clustering the data with FCM with MPSO is used for optimize the data with decision tree classifier is utilized for the order to classify seizure and non-seizure conditions from traced EEG indication then estimation the Predictor Importance of the dataset. The outcome illustrates that the proposed working model would be supportive in EEG normal and epilepsy seizure classification. The recital of the classifiers are examined and observed that FCM with MPSO and decision tree engaged a smaller amount of time to make depiction and away carry out in estimate the predictor importance.

Keywords: Fuzzy C-means, EEG, Seizures, MPSO, Clustering, Classification, Decision Tree, Epilepsy.

I. INTRODUCTION

Epilepsy is invariable disorders of the nervous system or brain with the aim of distresses further or fewer 60 millions of individuals worldwide. Harmony in the direction of the World Health Organization (WHO), epilepsy seizure is natures by regular attacks, which are intention responses towards sudden, frequently succinct, in large amounts of electrical exonerates in a cluster of mind chambers [1]. Clinically an epileptic seizure is a discontinuous, normally meaningless, conventional, disorder of awareness, behaviour, feeling, motor function or consciousness that is behind consequence of cortical neuronal release [2]. Anything that aggravates the emblematic model of cerebrum cells (neuron) faction from sickness to cerebrum harm to irregular mental health - can prompt seizures. Encompassing a seizure does not as a matter of pathway entail that a person has Epilepsy. Presently when people have two or more seizures, he or she considered to encompass epilepsy. Patient experience distinctive sorts of manifestation through the phase of

seizures, it's relies on the measurement and expansion of the exaggerated brain hankie.

In neurological disorders are the standard blueprint of neuron movement grow to be distressed, reasoning weird opinions, feelings, and actions, or occasionally tremors, influence shudders and also defeat of perception [3]. Convenient are combinations of realizable sources of nervous system. Incredible to facilitate alerts of the standard illustration of mind system movement collecting from illness to intellect smash up to irregular mind improvement is able to conduct to attacks [4].

The categorization of seizure has been institutionalized by the International League against Epilepsy (ILAE). Epilepsy is primarily classified into two types Namely, Partial Epilepsy and Generalized Epilepsy. Partial seizures persuade little part of the brain and generalized seizures persuades all parts of the brain [5].

Epileptic Seizure are scrutinized by EEG signals, Electroencephalography (EEG) is the footage of electrical feat beside the inside of the head. EEG instruments energy differences coming out commencing ionic in progress streams in the inside part of the brains activities.

In neurology, the sketch indicative use of electroencephalograms are on description of nervous system, as irregular action be capable of make obvious variations from the regular on a standard EEG study [6]. EEG is premeditated with 10-20 electrode system as revealed in Fig 1.

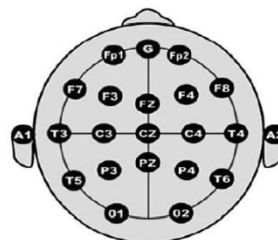


Fig 1. 10-20 Electrode placement system

Electroencephalography is the largest component helpful and outpouring successful methodology for the analysis of epilepsy. The recognition of these dissimilarities from the norm by the illustration examination of EEG signs is intelligence boggling and time consuming system and it necessitates profoundly talented specialists. In the enormous majority of the cases, epilepsy is controlled by the best feasible remedial action. For that motive, the reasonable and prior determination of epilepsy is required.

Revised Manuscript Received on March 11, 2020.

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Retrieval Number: F8097038620/2020/CBEIESP
DOI:10.35940/ijrte.F8097.038620

2670

Published By:
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CIKITUSI JOURNAL FOR MULTIDISCIPLINARY RESEARCH

ISSN NO: 0975-6876

A STUDY ON SATISFACTION OF PASSENGERS TOWARDS AMENITIES PROVIDED BY COIMBATORE JUNCTION

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ABSTRACT

The Servqual approach is the most common method for measuring service quality. It was formulated on the tenet the passengers entertain expectations of performance on the service dimensions, observe performance and later performance perceptions transform in to satisfaction degree. The main objective of the study is to analyse the level of satisfaction of passengers in Coimbatore junction based on service quality provided. For this, a sample of 250 was collected each from Coimbatore junction were percentage analysis, Descriptive statistics and Kruskal-Wallis test were used as tools to analyse the data. The conclusion is that the level of satisfaction of passengers booking clerk competency & behaviour, unauthorized vendors & passengers, cleanliness of platforms, safety, linen/bedroll cleanliness is higher with Coimbatore junction.

Keywords: Servqual, level of satisfaction and Performance.

INTRODUCTION TO THE STUDY

Public transportation systems provide the most efficient means for moving large number of people, especially in density populated rural and urban centers in a vast country like India. For this reason, providing services characterized by high levels of quality is very important in order to customize the users of the services and attract new users. Key literature review on the passengers' experiences and their satisfaction towards railway services offered in Indian railways. Service quality may be defined as passenger perception of how well a service meets or exceeds their expectations. Satisfaction from service quality is usually evaluated in terms of technical quality and functional quality. This paper is an attempt to put forth the role of service quality in affecting passenger satisfaction in the train, with special reference to South Indian Railways. The study is to compare the satisfaction of passengers in Coimbatore junction in



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Journal of Food
Processing & Technology

Shilpa and Sridevi, J Food Process Technol 2018, 9:12
DOI: 10.4172/2157-7110.1000767

Research Article

Open Access

Procreation and Quality Analysis of Cow Curd by Using Starter Culture as Fermented Rice Rinsed Water

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Abstract

Lactic acid bacteria are a diverse group of bacteria that produce lactic acid as their major fermentation product. The LAB is widespread in nature and is beneficial probiotics in our digestive systems. Cow's milk offers a rich source of calcium for bone development. The protein in cow's milk is 20% whey protein and 80% casein protein.

The production of cow curd by fermentation of cow's milk with *Lactobacillus planetarium* which is isolated from rice rinsed water was studied. The efficacy of using rice rinsed water of 10%, 15%, 20%, 25% of prepared LAB solution is added to cow's milk (C1, C2, C3 and C4) as a starter culture. Fermentation of cow milk was done by using 20% of LAB solution which is noted as imparted beneficial effects of sensory, physicochemical, nutrient and microbial properties of curd. The overall acceptability was greatest for cow curd C3. crude protein content (2.6 g), fat (5.0 g), calcium of 100 mg and lactose (5.2 g) were recorded from cow curd of 20%. So this type of curd is recommended for weight watcher and ortho persons.

Keywords: Lactic acid bacteria; Cow's milk; Fermentation; Starter culture

Introduction

The LAB is used as natural or selected starters in food fermentations in which they perform acidification due to the production of lactic and acetic acids flavor. Protection of food from spoilage and pathogenic microorganisms by the LAB is through production of organic acids, hydrogen peroxide, and diacetyl, antifungal compounds such as fatty acids or phenylacetic acid and/or bacteriocins [1]. Probiotics are defined as "Living organisms which upon ingestion in certain number exert health benefits beyond inherent basic nutrition". LAB are useful for human being and animals in many aspects these include, prevention of diarrhoea, effects in lactose intolerance, treating ulcer, stimulation of immunity both at intestinal and systemic level, food preservation effects, antifungal activity, role in infectious diseases prevention, role in allergy, effects on the incidences of colon cancer and slow the progression of cancer, and produce many valuable dairy products [2]. Yogurt is considered as healthy food due to its high digestibility and bioavailability of nutrients and also can be recommended to the people with lactose intolerance, gastrointestinal disorders such as inflammatory bowel disease and irritable bowel disease, and aids in immune function and weight control. Because of these health benefits associated with yogurt consumption, there is an increasing trend for yogurt and is the fastest growing dairy category in the market, in particular, standard yogurt and yogurt drinks [3]. Global interest in rice and its fermented product is increasing due to their caloric value, unique quality, and high acceptability. Rice is a good source of carbohydrates (77-89 percentage) and energy (1460-1560 KJ). It also provides a moderate amount of protein (6.3-7.1 percentage), though it is devoid of lysine. There are many popular rice fermentation procedures used to make it more nutritious (i.e., enrichment with essential amino acids and removal of phytic acid, a major anti-nutrient in rice), easily digestible (as microbial enzymes predigest it), and acquire therapeutic properties (antimicrobial peptides, antioxidants, etc.) and symbiotic properties [4].

Materials and Methods

Preparation of rice water

Take 150 gm of rice and 400 ml of drinking water in a vessel. Soak

the rice in this measured quantity of the water in a bowl. Kept it for half an hour. After half an hour filter the rice rinsed with water and rice water separately. Make sure that there is no rice in this collected rinsed water.

Preparation of lab solution

Fill a clean glass jar about two by third full with rice rinsed water. Cover the mouth of the jar with breathable cloth (such as muslin) or paper (not plastic) and secure with rubber bands or ties to keep out pests. Store at room temperature away from direct light. Be careful not to shake or move the jar while it ferments. After 5 days, LAB will multiply and give off a slightly sour odor. There will be a mat of semi-solid material floating on the top of the cloudy liquid in the jar. Collect only the cloudy liquid (fermented rinse-water) by pouring off and discarding the mat layer. Measure one part of fermented rinse-water and add 10 parts of milk to fill your jar 2/3 full. As in the next step, cover the mouth of the jar with cloth or paper and secure with rubber bands or ties to keep out pests. Store at room temperature away from direct light. Be careful not to shake or move the jar while it ferments. After 2 to 3 days, the contents of the jar will separate into a floating solid fraction and a yellow liquid fraction. It may take longer in cooler climates. The yellow liquid is the LAB culture. Pour off the liquid fraction, being careful not to mix any solids back into the LAB culture. The preparation of LAB solution procedure was presented in Figure 1.

Preparation of fermented cow's milk

Pure cow's milk is selected for the preparation curd. Cow's milk is boiled at the 100°C. After that kept in room temperature till it reaches 40°C. Add four different quantity of LAB solution (fermented rice rinsed water) as the starter culture in C1, C2, C3, and C4 variations of cow's

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Received September 12, 2018; Accepted November 12, 2018; Published November 15, 2018

Citation: Shilpa J, Sridevi D (2018) Procreation and Quality Analysis of Cow Curd by Using Starter Culture as Fermented Rice Rinsed Water. J Food Process Technol 9: 767. doi: 10.4172/2157-7110.1000767

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Ceramics International 46 (2020) 391–402



Contents lists available at ScienceDirect

Ceramics International

journal homepage: www.elsevier.com/locate/ceramint



Hydrothermal synthesis of ZnO–CdS nanocomposites: Structural, optical and electrical behavior



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ARTICLE INFO

Keywords:

ZnO–CdS nanocomposites
Band gap
Flake-like morphology
Dielectric properties
Photoconductivity

ABSTRACT

ZnO–CdS nanocomposites with three different molar ratios of 25:75, 50:50 and 75:25 were synthesized by simple hydrothermal technique. Powder X-ray diffraction patterns confirmed the phase formation of ZnO and CdS in ZnO–CdS nanocomposites. The calculated crystallite size was found in the range of 33–38 nm and 15–21 nm for ZnO and CdS respectively. HRSEM images revealed flake-like morphology for all samples. Energy dispersive X-ray spectra confirmed the presence of all the elements. The estimated optical bandgap was found in the range of 3.71–3.35 eV. IR spectra confirmed the formation of stretching vibration in ZnO and CdS. Dielectric analysis was performed in order to study AC conductivity, dielectric constant and dielectric loss. Photoconductivity studies revealed that ZnO–CdS nanocomposites material exhibited sound photo-response characteristics.

1. Introduction

Inorganic composite materials at nano scale region exhibit unique electrical and optical properties which make them suitable for versatile applications [1–7]. Zinc oxide is a well-known wide band gap semiconductor (II–VI) compound and it exhibits high exciton binding energy (60 meV) at ambient temperature. Taking aid of such attractive behavior zinc oxide is widely used to fabricate electronics devices such as photonic and optical modulators, waveguides, phosphor material in Cathode Ray Tube (CRT) screens and ultra-violet laser diodes [8–15].

In particular, quantum confinement effects and surface to volume ratio of nano-sized ZnO modify the photosensitive, magnetic and electronic properties compared to the properties of their bulk counterparts. Cadmium sulphide with wide band gap (~2.42 eV) is also a known semiconductor (II–VI) compound and exhibits 28 MeV of exciton binding energy [16]. This notable property of CdS used in different applications like photoresistors, solar cells, X-ray detectors and optoelectronic devices [17–23]. Further the materials such as CdO, CdS, ZnS and ZnO at nano scale region are successfully utilized in applications such as nanolasers, transistors and light emitting diodes (LEDs) [17,18,21–24].

It is found that the performance of ZnO–CdS nanocomposite is enhanced due to the combination of cadmium sulphide and zinc oxide [25]. ZnO nanowires [26,27] and CdS nanoribbons [28,29] were investigated for their photoconductivity properties and it is found that these nanomaterials possess higher photoresponse with strong polarization dependence [30–32]. Photoconductivity is a well-known tool to obtain detail information about the nature of the photo-excitations. The photoconductive behavior of the inorganic nanomaterials has been investigated successfully in the last decade [33]. Recently, ZnO nanoparticles enhanced with ultrathin coatings of other metal oxides to develop new electrode for getting electrons in photovoltaic devices [34]. In addition, it revealed that the physical behavior of ZnO could be adequately altered by surface modification with certain biological, inorganic and organic materials leading to a pronounced improvement in photoelectronic, mechanical and electronic behavior. The techniques viz. co-precipitation [35], spray pyrolysis [36], sol-gel [37], chemical vapor deposition [38] and hydrothermal route [39] are widely employed to synthesize ZnO and CdS nanoparticles. Among these, the hydrothermal method was chosen owing to some advantage like ease of synthesis and low cost when compared with other synthesis route.

In this paper, ZnO–CdS nanocomposites with three different molar

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<https://doi.org/10.1016/j.ceramint.2019.08.274>

Received 4 July 2019; Received in revised form 12 August 2019; Accepted 28 August 2019

Available online 29 August 2019

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© 2020 JETIR September 2020, Volume 7, Issue 9

www.jetir.org (ISSN-2349-5162)

A Study on Impact of Digital Marketing in Customer Purchase Decision in Coimbatore city

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Abstract

This study shows the impact of digital marketing on behavioral prospect of consumers. Modern day marketing has been going through a radical change. Fast moving marketing trends based on the growth and innovation of new technologies as well as portable communication devices influencing the customer behavior significantly. The study is carried out through survey from 50 respondents. The results of the survey are analyzed using chi square test. The findings revealed that customers are aware of digital marketing and they prefer to buy electronic and shopping goods through digital channels in their purchase behavior.

Keywords: Customer Purchase Behavior, Digital Channels, Digital Marketing.

Introduction:

Digital marketing encompasses all marketing efforts that use an electronic device or the internet. Businesses leverage digital channels such as search engines, social media, email, and other websites to connect with current and prospective customers. At a high level, digital marketing refers to advertising delivered through digital channels such as search engines, websites, social media, email, and mobile apps. Using these online media channels, digital marketing is the method by which companies endorse goods, services, and brands. Consumers heavily rely on digital means to research products.

While modern day digital marketing is an enormous system of channels to which marketers simply must onboard their brands, advertising online is much more complex than the channels alone. In order to achieve the true potential of digital marketing, marketers have to dig deep into today's vast and intricate cross-channel world to discover strategies that make an impact through engagement marketing. Engagement marketing is the method of forming meaningful interactions with potential and returning customers based on the data you collect over time. By engaging customers in a digital landscape, you build brand awareness, set yourself as an industry thought leader, and place your business at the forefront when the customer is ready to buy.

By implementing an Omni channel digital marketing strategy, marketers can collect valuable insights into target audience behaviours while opening the door to new methods of customer engagement. Additionally, companies can expect to see an increase in retention. According to a report by Invest, companies with strong Omni channel customer engagement strategies retain an average of 89% of their customers compared to companies with weak omni channel programs that have a retention rate of just 33%.

JETIR2009005 | Journal of Emerging Technologies and Innovative Research (JETIR) www.jetir.org

| 47





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Journal of Marketing Strategy (JMS)

Vol. 7 Issue 2, August 2019,

ISSN: 2347-3770 | Impact Factor: 4.905

Journal Homepage: <http://www.jmspublication.com>, Email: publicationjms@gmail.com

Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory @, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A



A STUDY ON ONLINE BUYING BEHAVIOUR OF PREGNANT

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Abstract: This study aims to explain the implementation of methodologies used for promoting product and services through the web for healthy gestation welfares. As the use of digital media for health promotion has become more and more common, descriptive studies exploring current and innovative promoting methods will enhance the understanding of effective strategies and best practices. This study supports the employment of digital promoting as a very important avenue for delivering health messages and directive internet users to credible sources of data. The chance to achieve massive, nevertheless targeted audiences, together with the flexibility to watch and value metrics to optimize activities throughout a campaign could be a powerful advantage over ancient promoting techniques. Health organizations will use the results and insights of this study to assist inform the look and implementation of comparable Web-based activities.

Key words: Online Marketing, Pregnant women, Impact, Website

Journal of Marketing Strategy (JMS)
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ICNTMMA-2019

IOP Publishing

Journal of Physics: Conference Series

1597 (2020) 012019 doi:10.1088/1742-6596/1597/1/012019

Computation of eccentricity associated topological descriptors through Python for comb tree

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Abstract. Topological manifestation of a graph G is a numerical value which reveals its topological properties. The eccentricity of one node $u \in V(G)$ (that is $e_G(u)$), is the greatest distance between u and also any other vertex of G . The degree of a G In this paper, we are using Python program to compute eccentricity related Topological indices for Comb tree with any number of vertices, relation between descriptors and the bounds for indices also.

Keywords: Comb tree; eccentricity; Python; topological index;

1. Introduction

An chemical compound's molecular structure can be represented by a graph in which we represent atoms of molecule as vertex of that graph and bonds between atoms as edges of the graph. This type of graph is called molecular graph or chemical graph. In Recent days inter discipline research is has high impact, especially mathematical chemistry is highly influencing in drug manufacturing, medicinal chemistry and bio chemistry etc.

We present bounds and comparison of various greatest distance based index of widely used chemical structures which often appear in mathematical chemistry.

Using Python we can compute all topological descriptors in minimum ravage of all resources. Python is dynamic language. Now a days python is highly influencing language in all fields. Readers who are having significance can test out the program in the net repl.it

<https://repl.it/@Manimekalai/eccentricity-based-index>

<https://repl.it/@Manimekalai/Total-Eccentricity-index>

Various indices was introduced in various periods of time for a graph A ,

Eccentric connectivity descriptor $[4,8,9,10]$, $\xi(A) = \sum_{v \in V} d(v)e(v)$

Total eccentricity descriptor $[3]$, $\zeta(A) = \sum_{v \in V} e(v)$

Average eccentricity $[2]$ $avec(A) = \frac{1}{n} \sum_{v \in V} e(v)$

Alternate form of Eccentric connectivity $[10]$ index $\zeta^*(A) = \sum_{uv \in E(A)} (e(u) + e(v))$

Ghorbani et al. $[5,6]$, First Zagreb eccentric descriptor $M_1^*(A)$ or $E_1(A) = \sum_{v \in V} e(v)^2$

Second Zagreb eccentric index $M_2^*(A)$ or $E_2(A) = \sum_{uv \in E(A)} (e(u).e(v))$



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1





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ICNTMMA-2019

IOP Publishing

Journal of Physics: Conference Series

1597 (2020) 012001 doi:10.1088/1742-6596/1597/1/012001

MHD bioconvective flow of a thermally radiative nanoliquid in a stratified medium considering gyrotactic microorganisms

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Abstract.

The impact of gyrotactic microorganisms of a stratified flow of a thermally radiative NL with heat absorption is highlighted. In addition, magneto NL with an inclined magnetic field is included. Suitable transformations are adopted to convert the governing PDEs into an nonlinear ODEs. Homotopy analysis method (HAM) is employed to solve these ODEs analytically. The impact of sundry parameters on VP, TP, NPVFP, MMDP, SFC, LNN and LDMM are graphically explained. We compare our results to available results in literature survey.

Keywords: Nanoliquid, Heat generation/absorption, Gyrotactic microorganisms, Radiation, Stratification.

1. Introduction

Most of the engineering and industrial processes, the HT phenomenon is essential. The ordinary fluids, like, ethylene, oil, water, glycol, toluene are poor HT properties, since they have poor thermal conductivity. Many scientists tried in several ways to raise the thermal conductivity. One of the simplest method is to suspend nano-sized particles, such as gold, titanium, aluminum, copper, iron or their oxides in the ordinary liquids to enhance its thermal properties. These liquids are used in microchips, fuel cells, microelectronics, solid state lightening, bio-medicine, etc. The NL flow over a stretching tube was analyzed by Ahmed et al.[1]. Kasmani et al.[2] found the analytical and numerical solutions of viscous NL flow past a moving wedge. Chemically reactive NL flow over a wedge with suction and heat absorption was analyzed by Kasmani et al.[3]. They found that the HT coefficient enhances with raising the values of chemical reaction parameter. Some useful studies in this directions are ([4]-[6]). Bioconvection is the microscopic convection of liquid which is created by density gradient when swimming of motile microorganisms. It is used in bio-fuel, promising renewable power source, bio-diesel and hydrogen gas. The stability of bioconvection in a porous medium was examined by Kuznetsov and Avramenko[7]. Nguyen-Quang et al.[8] analyzed the stability of gravitactic micro-organisms in a porous medium. The impact of bioconvective NL with gyrotactic microorganisms was

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1





Enhanced ultrasensitive detection of ozone gas using reduced graphene oxide-incorporated LaFeO₃ nanospheres for environmental remediation process

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Received: 10 February 2020 / Accepted: 15 April 2020
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Abstract

An efficient and facile benign approach to develop reduced graphene oxide (rGO) incorporated into perovskite LaFeO₃ nanostructure with excellent surface area to detect ultrasensitive Ozone (O₃) gas for environmental remediation has been demonstrated. The prepared rGO/LaFeO₃ nanocomposites have diameter in the range ~ 1 μm constituting nanospheres with average size ~ 50 nm. Phase purity and chemical composition of rGO/LaFeO₃ nanocomposites were revealed through XRD and XPS analysis. The ozone gas sensing performance of rGO/LaFeO₃ nanocomposites was investigated and found to exhibit excellent sensitivity, high selectivity, good response (20 and 31 s) and recovery time (39 and 31 s) for 80 ppb at 100 °C when compared to pure LaFeO₃ nanostructures. These results indicate that the composites of rGO not only enhanced the ozone gas sensing response at low ppb concentration, but also a decrease in the working temperature. From these perspectives, rGO/LaFeO₃ nanocomposites based ozone gas sensor can be regarded as a promising candidate for environmental remediation process in near future.

1 Introduction

Detection of toxic gases play a critical role in environment remediation process, because fast development in industries and passionate use of automobile have caused severe air pollution. The monitoring of toxic gases such as carbon monoxide (CO), nitrogen dioxide (NO₂), ammonia (NH₃) and ozone (O₃) etc., have attracted huge attention [1–3]. In particular, O₃ is the most common air pollutant produced and powerful oxidizing reagent, having continuing demand for its efficient detection not only for industrial safety concerns but also environment remediation [4, 5]. Those exposed to O₃ below 100 ppb for 3 h will sustain a 20% loss of breathing capacity and 1 ppm of O₃ for 6 h will suffer an attack of bronchitis. It was observed that a mouse exposed to 10

ppm of O₃ for 10 h did not survive as reported by World Health Organization, WHO [6]. Thus, the sensitivity and selectivity measurement of O₃ has dynamic importance for a pollutant-free ecosystem [7]. In this regard, intensive attention to develop new ozone gas sensor reliable at ppb level detection with fast response, recovery time and low operating temperature is required.

To meet these requirements, shape-dependent perovskite (ABO₃)/graphene oxide (GO) nanocomposite based toxic gas sensors have considerable interest, because it significantly enhances the catalytic properties. Reduced GO (rGO), an attractive carbon family member and allotrope of carbon have two-dimensional single atomic layers. It has unique structure with sp² hybridized carbon atoms. It shows remarkable properties such as good electrical conductivity, large surface area and fast charge carrier density. rGO plays an important role in adsorbing catalytic molecules, because rGO sheets desire to aggregate irreversibly, due to the stack of strong π - π interactions [8–10]. In addition, p-type semiconductors have distinct surface reactivity and oxygen adsorption capacity, which benefits the enhancement of gas sensing performance when incorporated with other components especially GO [8–10]. LaFeO₃, a p-type material with majority hole carriers have good oxidation–reduction characteristics at wide temperature due to its

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Criterion VI
Metric 6.5.3

Cellular Oncology
<https://doi.org/10.1007/s13402-020-00505-9>

REVIEW



Insulinoma-associated protein 1 (INSM1): a potential biomarker and therapeutic target for neuroendocrine tumors

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Bharath Kumar Velmurugan⁵

Accepted: 16 March 2020
© International Society for Cellular Oncology 2020

Abstract

Background Insulinoma-associated protein 1 (INSM1), a transcriptional regulator with a zinc-finger DNA-binding domain, has been validated as a cytoplasmic marker for neuroendocrine differentiation of tumor cells. Next to its abundant expression in the fetal pancreas, it is expressed in brain tumors, pheochromocytomas, medullary thyroid carcinomas, insulinomas and pituitary and small-cell lung carcinomas. INSM1 is not expressed in normal adult tissues and/or most non-neuroendocrine tumors. It regulates various downstream signaling pathways, including the Sonic Hedgehog, PI3K/AKT, MEK/ERK1/2, ADK, p53, Wnt, histone acetylation, LSD1, cyclin D1, Ascl1 and N-Myc pathways. Although INSM1 appears to be a subtle and specific biomarker for neuroendocrine tumors, its role in tumor development has remained unclear.

Conclusions Here, we highlight INSM1 expression, as well as its diagnostic significance and use as a therapeutic target in various neuroendocrine tumors. Targeting signaling pathways or gene expression alterations associated with INSM1 expression may be instrumental for the design of novel therapeutic strategies for neuroendocrine tumors.

Keywords Neuroendocrine tumor · Insulinoma-associated protein 1 · Tumor marker · Chromogranin A · Synaptophysin 1

1 Introduction

Neuroendocrine tumors (NETs) are epithelial neoplasms exhibiting neuroendocrine differentiation characteristics. Immunohistochemical markers are used to diagnostically evaluate these tumors [1]. As such, the transcription factor

insulinoma-associated protein 1 (INSM1) is of relevance. Previously, Goto et al. constructed a human insulinoma cDNA library (ISL-153) and, by screening this library, identified a novel insulinoma-associated cDNA, i.e., insulin-associated antigen-1 (IA-1), which is now known as insulin-associated protein 1 (INSM1) [2]. The *INSM1* gene encodes a 58 kDa protein encompassing five zinc-finger DNA-binding motifs and dibasic amino acid pro-hormone conversion sites [2, 3]. Its N-terminus exhibits repressor activity [4]. The *INSM1* gene is located on chromosome 20p11.2 (Fig. 1a). An amino acid region between positions 167 and 262 at the N-terminus is responsible for its transcriptional activity [5–9]. Reactivation of INSM1 has been observed in tumors of neuroendocrine origin, including insulinomas, pituitary tumors, pheochromocytomas, medullary thyroid carcinomas, small-cell lung carcinomas, medulloblastomas, neuroblastomas and retinoblastomas.

Different regulatory elements upstream of the *INSM1* gene have been found to act in different NETs [10]. The 5'-upstream region (2,090 bp) of *INSM1* contains several tissue-specific regulatory elements that appear to account for its unique tumor-associated expression pattern [11]. Since INSM1 is highly expressed in tumors of neuroendocrine

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Published online: 26 March 2020

Springer





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Criterion VI
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Materials Science & Engineering C 110 (2020) 110710



Contents lists available at ScienceDirect

Materials Science & Engineering C

journal homepage: www.elsevier.com/locate/msec



Biomimetic TiO₂-chitosan/sodium alginate blended nanocomposite scaffolds for tissue engineering applications

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ARTICLE INFO

Keywords:

Nano titania
hydrothermal
Biomimetic
Chitosan
Sodium alginate
Scaffolds

ABSTRACT

The study is aimed to synthesize potent metal oxide based biomimetic nanocomposites to overcome the risk associated with artificial bone tissue engineering. High purity TiO₂ nanoparticles are synthesized via hydrothermal route. A biomimetic nanocomposite scaffolds containing chitosan-sodium alginate (4: 4) blended with three different (0.5, 1, and 1.5 wt%) concentrations of hydrothermally synthesized TiO₂ nanoparticles are obtained by solvent casting technique. The physico-chemical and thermal degradation properties of as-synthesized TiO₂ nanoparticles and their nanocomposite scaffolds are analyzed. *In-vitro* cytotoxicity and biocompatibility of the prepared TiO₂ nanoparticles and nanocomposites are tested against human bladder tumor (UO6) and osteosarcoma (MG-63) cell lines. Antibacterial property is tested against *Escherichia coli* and *Staphylococcus aureus*. These studies reveal that TiO₂ nanoparticles and polymeric nanocomposites contain good physico-chemical and mechanical properties for enhanced *in-vitro* biocompatibility suitable for biomedical applications. Biomimetically prepared chitosan-sodium alginate scaffold containing TiO₂ nanoparticles (1 wt%) is found to exhibit superior biocompatibility for bone tissue engineering applications.

1. Introduction

At present scenario, nanocomposites provide novel and trade prospect in entire industrial sectors and eco-friendly in nature. Polymers are extensively used in industries due to their easy manufacturing, low weight and flexibility [1]. In the field of bioinspired material science, experimental studies are successfully carried out with biopolymers [2]. Specifically, scaffolds are prepared from naturally existing degradable polymers such as collagen, hyaluronan, chitosan, alginate and gelatin [3,4]. Biopolymers overcome the limitations of synthetic polymers in view of their hydrophobicity, comparatively slow degradability, and acidic environment of the degradation compounds, neutral charge sharing, inadequate mechanical properties and non-existence of cell-recognition sites [5]. Among the biopolymers, chitosan and sodium alginate are extensively used in biomedical, pharmaceutical applications due their good biocompatibility, biodegradability, non-toxic nature, hydrophilicity, mucoadhesive, and non-immunogenic properties [6–13].

Chitosan, a deacetylated imitative of chitin, contains β-(1,4)-2-

amine-2-deoxy-*D*-glucopyranose units and little quantity of *N*-acetyl-*D*-glucosamine residues. Sodium alginate is derived from brown seaweed. It is a linear polysaccharide copolymer that contains of two sterically different repeating units of (1,4)-β-*D*-mannuronic acid and α-*L*-guluronic acid in varying concentrations [14]. Chitosan is mechanically fragile and prone to swelling; cells don't attach directly to alginate, as well as rejection protein adsorption occurred in negatively charged alginate [15]. A physico-chemical modification of biopolymers leads to formation of novel properties as well as defeat the drawbacks of mechanical rigidity, transparency, and thermal steadiness [16,17]. Hence, cationic chitosan and anionic alginate are combined and build a polyelectrolyte complex through ionic contact between amines of chitosan and carboxyl groups of alginate [15]. The polyelectrolyte complex shields the encapsulated compound more efficiently than alginate or chitosan alone. Also benefit of this deliverance method is non-toxic to allow the continuous administration of therapeutics [7].

In addition to enhance the mechanical performance of biopolymer, composites are made using inorganic metal oxide nanoparticles as fillers to make nanobiocomposite and also furnish bioactivity to an inert

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<https://doi.org/10.1016/j.msec.2020.110710>

Received 12 August 2019; Received in revised form 29 January 2020; Accepted 29 January 2020

Available online 31 January 2020

0928-4931/ © 2020 Published by Elsevier B.V.



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Research Article

Wet chemical preparation of herbal nanocomposites from medicinal plant leaves for enhanced coating on textile fabrics with multifunctional properties



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Received: 7 October 2019 / Accepted: 9 March 2020
© Springer Nature Switzerland AG 2020

Abstract

The present study is aimed at the synthesis of different herbal nanoparticles from *Acalypha indica*, *Azadirachta indica*, *Piper betle*, *Tridax procumbens* and *Aloe vera* plant leaves through wet processing method i.e., solution based synthesis for the development of a biocompatible nanomaterials with excellent medicinal properties. The efficiency of herbal nanoparticles are determined by subjecting a comparative assessment among the various herbal nanoparticles in virtue of their physico-chemical as well as their functional properties when coated on cotton fabrics. The prepared five different herbal nanoparticles show amorphous nature having an average particle size distribution ranges from 21 to 27 nm. *Tridax procumbens* nanoparticles exhibit higher antioxidant activity (98.17%) while tested against DPPH assessment. Nevertheless, the herbal nanocomposites prepared from *Aloe vera* with chitosan polymer shows higher protection (UPF=62.3) than the fabric coated with other herbal nanoparticles. The superhydrophobic properties (154.5°) and higher antibacterial properties against *Escherichia coli* (33.13 mm) and *Staphylococcus aureus* (35.62 mm) for the *Azadirachta indica* nanocomposite coated cotton fabrics shows comparably more effectiveness than that of the other counterpart. The present study helps to identify the appropriate processing methods as well as herbal nanoparticles for enhanced the self-cleaning, UV-protection, antibacterial and antioxidant activity in biomedical textiles.

Keywords Herbal nanoparticles · Cotton fabrics · Antimicrobial activity · UV-protection · Antioxidant activity · Hydrophobicity

1 Introduction

Nanotechnology, the study of the technological aspects of nanoparticles is playing a major role in terms of textile due to the ease of surface modification of these materials [1] and its higher surface to volume ratio [2]. The growing public awareness of contagious pathogens facilitates

the need of new surface modification of cotton fabrics, because of its large surface area and moisture retainment ability resulting in an excellent medium for microbial growth [3, 4]. The development of new cotton fabrics based nanocomposites to wide spectrum applications in different fields such as antimicrobial [5], wound healing [6], water repellence [7, 8], hygienic application [9]

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SN Applied Sciences

(2020) 2:700

| <https://doi.org/10.1007/s42452-020-2459-z>

Published online: 18 March 2020

SN Applied Sciences
A SPRINGER NATURE journal





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Optik - International Journal for Light and Electron Optics 206 (2020) 164347



Contents lists available at ScienceDirect

Optik

journal homepage: www.elsevier.com/locate/ijleo



Original research article

Gas sensing nature and characterization of Zr doped TiO₂ films prepared by automated nebulizer spray pyrolysis technique

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ARTICLE INFO

Keywords:

Automated nebulizer spray pyrolysis method
Structural study
Optical study and gas sensing behavior

ABSTRACT

This paper investigates the Zr doped TiO₂ films deposited by automated nebulizer spray pyrolysis (ANSP) technique at 500 °C as coating temperature. The manipulation of Ti/Zr ratio on XRD study shows the stabilized anatase tetragonal crystal structure in all deposited films, and the XPS study shows C 1s, Ti 2p, Zr 3d and O 1s are spin orbits of the relative elements. The surface morphological study of FESEM shows the compact granular spherical structure for all the Zr doped TiO₂ films. The optical study reveals the blue-shift of band gap energy $E_g = 3.20$ eV to 3.64 eV with respect to dopant (Zr). Gas sensitivity response of all films exhibits the better response to NH₃ reducing gas among the other gas (C₂H₆O, C₃H₈O, CH₄O, C₃H₈O) with a function of constant temperature (°C) and gas concentration (ppm).

1. Introduction

The gas sensor materials of metal oxide holds an enormous of unpleasant properties; such as long-range signal drift, humidity sensitivity, slow sensor response and high cross sensitivity. In order to improve sensor performance, a progression of different metal-oxide semiconductors has been tested. The n-type metal oxide of TiO₂ semiconductors have been gained more attention due to their low cost, non-toxicity, long term stability, high and quick response with relatively simplicity of their uses; and ability to detect a maximum number of gases. Especially, the doping component is used to modify and improve the progression of oxides for the new and advanced performance of various electronic devices, thus modifying the electrical, structural, optical and morphological properties of parent metal oxides (TiO₂). The recent survey report says that the introduction of few amount of Zr could drastically improve the thermal stability of anatase phase and surface properties of the coated films [1]. The elements IV B of Ti and Zr have the same valence state (+4) and the same diameters Ti: 2 Å, Zr: 2.16 Å. Both oxides are in n-type semiconductors with similar physicochemical properties. Therefore, it is possible that Zr enters the TiO₂ lattice, changes and increases the length of the bond to form anatase crystallites of Zr doped TiO₂ [2–7].

The Zr doped TiO₂ have been prepared by various methods, such as electro spinning [1], spray pyrolysis [2], APCVS [3] sol-gel [5,8,9], co-precipitation [10] complexation of citric acid [11,12], screen printing [13,14], RF magnetron sputtering [15], mechanical ball milling [16] and immersion coating [17]. Despite the fact that the Zr-doped TiO₂ film has been synthesized by various methods, to our knowledge, no study of anatase-stabilized gas sensors has been identified using existing methods on Zr doped TiO₂. ANSP is a simple deposit method that allows you to mix the precursor solution at the level of the molecule before deposition and effectively dope high quality films on different substrates. It can be extended to large-scale commercialization processes [18,19]. The main

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<https://doi.org/10.1016/j.ijleo.2020.164347>

Received 4 July 2019; Received in revised form 18 January 2020; Accepted 1 February 2020
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Competency Mapping Conflicts and Resolutions for Industrial Engineering

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Abstract. Competency Mapping in an exceedingly structure language could be a method of characteristic key competencies for a corporation or employment, including the incorporation of the skills in the entire assorted stages i.e. job analysis, training and recruitment in the company. Businesses applied for profit or not, face amendment like ne'er before. Competency is nothing but the ability to do something successfully or efficiently where the key factors and destination is kept in mind with the determinate motive. In competency there are many changes that are to be monitored. All the involved driving factors to enhance transformation include globalization to outside markets, boosting competition, indiscrimination from the consumers, technology availability and new inventions in the market. This research paper clearly explains the key competencies and the various aspects that lead to the Conflicts of Competency Mapping which finally results in searching for its Resolutions for solving problems that arises in an Organization.

INTRODUCTION

This paper analyzes the condition of a Company's Competency Mapping, which represents the culture that permits marketing analysts to effectively execute their work, with the effective methods such as job evaluating and training methods [1]. This paper is an exemplification of the performance appraisal and project training methods and techniques for the effective use of the organization. The organization has realized research and innovations in transforming into an intelligent organization. Finally the paper comes to an end with some suggested strategies to develop Competency mapping strategy in the future.

Definition: The ability mapping represents the weaknesses and strengths of an individual. The main purpose of this is to change an individual to consider himself/herself to determining if career objectives have to be constrained and directed.

Description: The skill square determinant obtained from specific job families in a company and the square determinant is normally categorized into various groups such as innovation, relationship, leadership, decision-making, risk-taking and emotional intelligence among others [2].

SUMMARY

Presently, due to the advancements evident in mapping, the initial process starts from job evaluation, where the organization is expected to outline all the relevant skill necessities regarding the job. The next process is meant to enhance the development skill scale related to the job parameters, which is antecedently confirmed. The major mapping of employees shall be individually-done activities, or the ones executed by supervisors. As such, can also be regarded by the mistreatments of the 360 degree methods, whereby the customers, reports and workers' conjoint rates are considered [3]. The system of civilization is not the place where these competencies can be improved based on some logical procedures. The individuals concerned with software developments, even if they realized this or not, they consider skill progression to focus on career development. In that case, skill mapping focusses on the development done based on a number of procedures.

1st International Conference on Sustainable Manufacturing, Materials and Technologies
AIP Conf. Proc. 2207, 040010-1–040010-8; <https://doi.org/10.1063/5.0000346>
Published by AIP Publishing: 978-0-7354-1958-2/\$30.00

040010-1



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Metric 6.5.3

Journal Pre-proof

Dual property of chitosan blended copolymer membranes: Antidiabetic drug release profile and antimicrobial assay

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Abstract

Copolymer membranes fabricated from thiourea, phenylhydrazine and formaldehyde was blended with chitosan to study the metformin drug release profile and its kinetics. The membranes were characterized with elemental, scanning electron microscopy, FTIR and ¹H NMR spectroscopy to identify the empirical formula & weight, surface morphology and functional group changes occurred during the incorporation of chitosan to the copolymer. The swelling behaviour, drug loading efficiency and drug release profile of the membranes were studied using UV-visible spectroscopy. The mechanical properties and *in vitro* degradation studies were also performed. The reactive sites, better porosity and larger surface area provided by chitosan to the copolymer led to higher drug loading efficiency and controlled drug release profile. Kinetic study revealed swelling and diffusion controlled mechanism for the membranes, which obtained from Ritger-Peppas and Higuchi model. The chitosan and its copolymer membranes were tested for antimicrobial assay using selective gram-positive and gram-negative bacterial and fungal strains. The CS-TPF-drug membranes showed an acceptable control of the growth of all the microbial species compared to CS, CS-drug and the standard metformin drug.

Keywords: membrane; drug delivery; antimicrobial assay

1. Introduction

Chitosan based membranes attracted the researchers in the field of biomedical and pharmaceutical industries that exhibits biodegradable, biocompatible, hydrophilic, low-toxic, and bio-adhesive properties [1,2]. Chitosan is a polysaccharide natural polymer derived from chitin



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INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 9, ISSUE 02, FEBRUARY 2020 ISSN 2277-8616

High Dimension Multi Class Algorithms (HDMCA) For Classification And Prediction: An Analysis Of Different Algorithms, Performance Measures And Datasets.

V.Shobana, Dr. K.Nandhini

Abstract: The dissection of a particular disorder is a needy one in the modern environment of our living. Our modern living which is not of much physical activity prone to many disorders in our body. Healthcare is a paramount part where so many research designs and proposals are made. Most of the algorithms entangled in healthcare, lets in for a number of results each of which was finer in their own way. The line of work carried out in this research is of applying a dataset for most leading algorithms and the best one is chosen for the next stage. The work is administered through the big data tool R and the results are compared across different metrics. From the results the top two sustaining algorithms are chosen for the forthcoming part.

Keywords: multiclass classification, random forest, SVM, LDA, kNN, CART, big data, HDMCA

1 INTRODUCTION

Algorithms based on data mining are very much useful in the field of healthcare for prediction of disorders. Classification and prediction are the two forms of data analysis. Of the entire classification algorithms decision tree takes a predominant position in predicting the target variable. Decision tree induction or decision tree is a flowchart like tree structure used to predict and classify data more precisely. Many researchers have formulated so many hypothesis using decision trees and they all have shown good results. The dataset taken in this research is thyroid data. The thyroid disorder is one of the most common endocrine disorders which is common worldwide especially in women. Most of the women around the globe suffer from this particular disorder and if they are not treated on time, it will result in serious issues. For predicting thyroid disorders various researches has been done worldwide. The main objective of this research is to compare some of the well known decision tree algorithms such as LDA, CART, kNN, SVM and random forest. These algorithms are performed on the data set using big data open source tools. The performance metrics such as ACC, MAE, PRE, REC, FME and kappa statistic are used to measure the performance of the algorithms.. These algorithms are compared with the above mentioned performance metrics. Each algorithm performs in their own way and the results are compared for the best one.

II. LITERATURE REVIEW

Comparison of algorithms forms an important part in the field of machine learning research (Kibler and Langley '1998).

The thyroid dataset analysis started in the year 1984 by Breiman et.al[1984], followed by Cestnik et.al in 1987, Quinana in 1988 and 1989. In the year 1992, Wray Buntine et al. [1] compared the decision tree for several datasets such as breast cancer, hypothyroid, iris etc., the decision tree implementation applied in his work was proposed originally by David Harper, Chris Carter, and other students at the University of Sydney from 1984 to 1988. Bruntine then proposed new splitting rules for decision tree induction. In his article [2] he used CART and ID3 algorithms and compared their performance. J. Huang et al. [3] compared NaiveBayes, SVM and decision trees with AUC and accuracy as performance metrics. The performance metric AUC (Area under Curve of ROC) exhibits several desirable properties compared to other metrics. In 2008, Keles. A et al. [4] formulated an expert system which was based on Neuro-Fuzzy classification for thyroid disorders, with an accuracy of 95.33%. Yuwei Hao et al [5] generated as MsaDtd (Decision Tree based on MS-Apriori) approach that follows association rule mining and turns out with an accuracy of 87.21%. Maysanjaya et al. [6] used Multilayer Perceptron method to identify the type of thyroid (normal, hypothyroid, hyperthyroid) using WEKA tool. The accuracy of the prediction was 96.74%. A. Tyagi et al. [7] proposed a analysis of thyroid dataset using kNN, SVM, ANN and Decision Trees. The result shows SVM as the best predictor with 99.63%. Many researchers have so many findings with thyroid data set in their own way. Our work is to focus on the decision tree algorithms such as LDA, SVM, CART, kNN and Random Forest. These algorithms are implemented using the open source framework R studio and the results are compared. The framework for comparison of the decision tree algorithms goes in this way. The proposed methodology is shown in Figure.1.

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INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 9, ISSUE 02, FEBRUARY 2020

ISSN 2277-8616

Adaptive Fuzzy Chaotic Genetic Clustering Based Continuous Keystroke Authentication

M. Rathi, A. V. Senthil Kumar, Ismail Musirin

Abstract: Exponential growth in technology, has increased the security breaches day today. This is because the system which is standalone or connected with networks, are handled by different users for various purposes. The security of individuals is preserved using identification and authentication to prevent from intruders. The authentication of an individual is done either by using behavioral or physiological characteristics of the concern user. This paper aims to develop an optimized approach based on ballistic nature of typing behavior based authentication system. This system is used to identify an individual by their typing rhythm to confirm their genuineness. Determining authenticated persons by keystroke dynamics is very difficult in presence of uncertainty in their typing rhythm. This proposed model devised a fuzzy inference model with gene clustering to discover the pattern of the user as genuine or an intruder. There is no proper proof of handling indeterminacy in impersonate users as authenticated or not by discovering the keystroke pattern. Hence, this proposed work handles the indeterminacy of user keystroke recondition by applying membership degree with the obtained features involved in behavioral keystroke typing rhythm based authentication model

Index Terms: continuous keystroke dynamic, behavioral, typing rhythm, indeterminacy, Fuzzy inference model, Gene clustering, Buffalo Dataset

1. INTRODUCTION

DUE to rapid increase in demand of strong security mechanism, conventional methods fail to face the challenges due to tokens and passwords are too many to evoke. One of the important issues in a restricted access of using computer system in remote is user authentication. Continuous spread of internet usage makes effectual remote authentication a key issue providing additional difficulties. Many biometric authentication models need dedicated hardware which was unhandy for remote applications [1]. Related with other biometrics, one of the emerging and attractive user-friendly biometric mechanisms is keystroke authentication. The dynamic data of keystroke can be gathered without disturbing the activities of the corresponding user. The keystroke dynamics is mainly used for recognition of an authenticated user by their typing rhythm. While a keystroke pattern sequence successfully matches a user input, then it spots the user as an authenticated person or if it is mismatched the user is treated as an intruder. An approach which uses rhythm of typing as a pattern of biometric authentication is referred as continuous keystroke authentication. This kind of authentication not only checks the value of the password but also the typing rhythm. In addition, after the successful initial log, the system does not assume that the user changes during a session, when a user fails to log out after completing his work, or leave away for short or long period of time. This situation easily allows the impostor to access the documents, delete the content or send mail as a genuine user. To overcome this kind of problem the necessity of continuous authentication is considered as a primary authentication tool in

the field of security mechanism. The major difference between the static keystroke dynamics and the continuous keystroke dynamics is that in the former static method, the typed information used for authentication is fixed, while in latter the information is never fixed [2]. The main requirement of the continuous authentication is as follows:

- During continuous authentication the user is not interrupted in their daily activities
- The system utilizes each single keystroke to discover the genuineness of the user

This paper introduced the concept of uncertainty in determining the continuous keystroke pattern when there is a high degree of similarity in typing rhythm among the normal user and the impostor. This paper introduces genetic clustering based continuous keystroke pattern recognition in an optimized way.

2 RELATED WORK

This section discusses about some of the existing works related to keystroke dynamics and the authentication process. Dowland et al. [3] developed a digraph, word latency and tri graph as features and for classification they used distance-based classifier for dynamic keystroke authentication over 35 users. Gunetti et al. [4] in their work, to perform keystroke dynamic authentication they used the digraph latency for extraction of features and they also used distance-based classifier to classify the users as legitimate users or impostor among 205 users. Stewart et al. [5] devised a burst authentication. Their main motive is to use the technique of burst authentication to decrease the frequency of sovereign checks of authentication. This model owns the merit of decreasing false alarm rate, evades capturing of huge volume of irrelevant data and unnecessary usage of resources to process the selected input, whilst it offers sufficient for continual biometric authentication training. The feature extraction is done on stylometry and keystroke time information along with KNN classifier and the nearest neighbours are discovered using Euclidean distance. Messerman et al. [6] developed a non-intrusive authentication

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Neutrosophic Sets and Systems, Vol. 32, 2020
University of New Mexico



A Contemporary Approach on Neutrosophic Nano Topological Spaces

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Abstract: In this article, we implement a new notion of sets namely neutrosophic nano j-closed set, neutrosophic nano generalized closed set, neutrosophic nano generalized j-closed set and neutrosophic nano generalized j*-closed set in neutrosophic nano topological spaces. We also provide some appropriate examples to study the properties of these sets. The existing relations between some of these sets in neutrosophic nano topological space have been investigated.

Keywords: Neutrosophic nano j-closed set, neutrosophic nano generalized closed set, neutrosophic nano generalized j-closed set, neutrosophic nano generalized j*-closed set.

I. Introduction

In recent years, Topology plays a vast role in research area. In particular, the concept of neutrosophy is a trending tool in topology. We use fuzzy concept where we consider only the membership value. The intuitionistic fuzzy concept is used where the membership and the non-membership values are considered. But, more real life problems deal with indeterminacy. The suitable concept for the situation where the indeterminacy occurs is neutrosophy which is represented by the degree of membership (truth value), the degree of non-membership (falsity value) and the degree of indeterminacy.

The fuzzy concept was initially proposed by Zadeh [22] in 1965 and Chang [7] introduced Fuzzy topological spaces in 1968. Atanasov [6] defined intuitionistic fuzzy set and Coker [8] developed intuitionistic fuzzy topology. In 2005, Smarandache [17] introduced neutrosophic set and many researchers used this concept in engineering, medicine and many fields where the situation of indeterminacy arises. Abdel-Basset et.al, [1 - 5] working with many practical problems by using neutrosophy concept in the recent days. Salama et.al, [14] introduced the generalization of neutrosophic sets, neutrosophic closed sets and neutrosophic crisp sets in neutrosophic topological spaces.

The nano topology which has the maximum of five elements was introduced by Lellis Thivagar [9]. He applied nano topology for nutrition modelling [11] and medical diagnosis [12]. Zhang et.al [23], worked on neutrosophic rough sets over two universes. Lellis Thivagar initiated [10] neutrosophic nano topology and some closed sets on neutrosophic nano topological spaces were derived by recent researchers.

D. Sasikala and K.C. Radhamani, A Contemporary Approach on Neutrosophic Nano Topological Spaces





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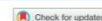
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THE IMAGING SCIENCE JOURNAL
<https://doi.org/10.1080/13682199.2020.1827814>



RESEARCH ARTICLE



Optical character recognition based on local invariant features

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ABSTRACT

The Optical Character Reader (OCR) process means the transition from scanned manual or written images to a machine-determined document. The American Standard Code for Information Interchange (ASCII) in cognitive processing uses OCR. The challenge is two primary folds: word segmentation by letters and character recognition. Implement a new approach to include the two functions by Scale-Invariant Transforming Feature (SIFT) descriptors. To compare SIFT descriptors (RootSIFT), devise a new procedure, that offers outstanding results without increasing computation or storage requirements. In order to identify English characters, Artificial Bee Colony (ABC) method suggests that the back propagation neural network for classification of character be utilized. Conducted experiments with more than 10 measures intended for every character and tested the accuracy for numerical numbers, chart letters, small letters and alphanumeric characters. The performance analysis of ABC optimized neural network algorithm has achieved a maximum accuracy of 97.3077% compared with precision recall and F-measure.

ARTICLE HISTORY

Received 21 January 2020
Accepted 18 September 2020

KEYWORDS

Optical character reader (OCR); American Standard Code for Information Interchange (ASCII); scale-invariant transforming feature (SIFT); RootSIFT; Artificial Bee Colony (ABC); back propagation neural network (BPNN); neural network (NN); positive predictive values (PPV)

Introduction

The recognition of character [1,2] has become one of the main research fields in Patterns [3–5]. It transforms the scanned text file into a readable form for the user. Records may be scanned by printer or written documents manually. The writing of the hands may be limited or restricted. Probably depends on the document aspect, scanning, segmentation and recognized technologies, the efficiency of an Optical Character Reader (OCR) system varies significantly. This relies on paper content, printer form and printer age. Fonts provide a significant influence on the final production of font size and variability.

The identification of character is the single major fields of pattern recognition of the analysis. This is the way the scanned text file is transformed into a type of machine that is readable. Reports can be typed or hand-written texts on a tablet. The handwriting can be regulated or without constraint. There are numerous changes to the output of an OCR system based on the types of the documents. It is based on paper content, category and printing age. The font size and fonts variations have a lot of flexibility at the last production.

The first electronic OCR mechanisms were not just automatic machines cognizant, but incredibly frustrating and with lower precision [6,7], of identifying characters. In order to use OCR in the Chinese Character Recognition [8–10], descriptors of SIFT have been

introduced recently and used in [11] damaged manuscripts written in Latin. In Ahmad et al. [12] shown use of the SIFT descriptor; the performance of the terms of strategy attribute type PCA [13] is greater than that of a cursive text recognition. The keypoints [9] are used as locations of the SIFT descriptors. The fonts of the printed Arabic text were also differentiated by this descriptor [14].

In the latest work [15], a newly optimized back propagation method for English alphanumeric characters was introduced by an Artificial Bee Colony. Nevertheless, because of the analysis of noise, the neural network has led to an increase in misclassification. In this article, an integrated descriptor for images is built to extract local features designed for abstraction and classification of objects. Transform root scale invariant functions [16–18]; are cohesively derived from [rootSIFT] descriptors. The attributes derived are amalgamated and diminished to a lower-dimensional descriptor to discriminate between the intrinsic information fluctuations. The approach to identification of English characteristics by the neural back propagation network for the character classification is suggested subsequently for Artificial Bee Colony (ABC) [19–23].

The flow of the article comprises the following: Second section presents various works related to optical character recognition based on local invariant features. Third section explains the proposed methodology on preprocessing, data extraction and

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Metric 6.5.3

Defect and Diffusion Forum
ISSN: 1662-9507, Vol. 401, pp 63-78
doi:10.4028/www.scientific.net/DDF.401.63
© 2020 Trans Tech Publications Ltd, Switzerland

Submitted: 2019-03-11
Accepted: 2020-04-15
Online: 2020-05-28

Analytical and Numerical Study on Cross Diffusion Effects on Magneto-Convection of a Chemically Reacting Fluid with Suction/Injection and Convective Boundary Condition

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Keywords: MHD; Soret/Dufour effects, heat generation, suction/injection, chemical reaction, convective boundary condition

Abstract: The purpose of this paper is to investigate the Soret and Dufour effects on unsteady mixed convective boundary layer flow of a viscous fluid over a stretching surface in a porous medium in the presence of magnetic field with heat generation/absorption, chemical reaction, suction/injection and convective boundary condition. The governing time-dependent partial differential equations are transformed into non-linear ordinary differential equations using similarity transformations. These equations subject to the appropriate boundary conditions are solved analytically by homotopy analysis method (HAM) and numerically by Runge-Kutta fourth order method and shooting technique. The numerical solution is compared with analytical solution. The influence of the different parameters on velocity, temperature and concentration profiles are discussed in graphical as well as in tabular form. It is observed that the fluid velocity and temperature increase on increasing the buoyancy ratio parameter and heat generation/absorption parameter. Also found that the surface heat and mass transfer rates increase on increasing the suction/injection and heat generation/absorption parameters.

Nomenclature

a, b, c positive constants	h_f, h_θ, h_ϕ non-zero auxiliary parameters
A unsteady parameter	j_w surface mass flux
B_0 magnetic strength	k_1 permeability of the porous medium
Bi Biot number	k_2 coefficient of chemical reaction
C concentration of the fluid	k_m mass transfer coefficient
C_f local skin friction coefficient	k_T thermal diffusion ratio
C_i , ($i = 1$ to 7) arbitrary constants	L_f, L_θ, L_ϕ linear operators
c_p specific heat	N buoyancy ratio parameter
Cr chemical reaction parameter	N_f, N_θ, N_ϕ non-linear operators
c_s concentration susceptibility	Nu local Nusselt number
D_e mass diffusivity	Pr Prandtl number
f_w suction (> 0) or injection (< 0) parameter	p embedding parameter
Df Dufour number	Q heat generation (> 0) or absorption (< 0)
g acceleration due to gravity	q_r radiative heat flux
Gr local Grashof number	q_w surface heat flux
Ha Hartmann number	Re local Reynolds number

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A Journal of the Bangladesh Pharmacological Society (BDPS)
Journal homepage: www.banglajol.info
Abstracted/indexed in Academic Search Complete, Agroforestry Abstracts, Asia Journals Online, Bangladesh Journals Online, Biological Abstracts, BIOSIS Previews, CAB Abstracts, Current Abstracts, Directory of Open Access Journals, EMBASE/Excerpta Medica, Global Health, Google Scholar, HINARI (WHO), International Pharmaceutical Abstracts, Open J-gate, Science Citation Index Expanded, SCOPUS and Social Sciences Citation Index
ISSN: 1991-0088

Bangladesh J Pharmacol 2020; 15: 11-18

In vitro antiviral activity of BanLec against herpes simplex viruses type 1 and 2

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Article Info

Received: 21 July 2019
Accepted: 10 February 2020
Available Online: 8 March 2020
DOI: 10.3329/bjpp.v15i1.42320

Cite this article:

Batcha ATM, Wadhwani A, Subramaniam G. *In vitro* antiviral activity of BanLec against herpes simplex viruses type 1 and 2. Bangladesh J Pharmacol. 2020; 15: 11-18.

Abstract

The present study evaluates the antiviral activity of banana lectin (BanLec) against herpes simplex virus type 1 and 2 (HSV-1 and HSV-2). Lectin was isolated from the ripen pulp of bananas (*Musa paradisiaca*). The study showed that lectin exhibited hemagglutination activity towards human erythrocytes A, B, AB and O group. The molecular weight of BanLec using SDS gel-electrophoresis was found to be 14,000-30,000 Da. Cytotoxicity of BanLec on the Vero cell lines showed an inhibitory concentration of 172.7 µg/mL. BanLec was virucidal and showed no cytotoxicity at the concentration tested. The lectin showed a dose-dependent antiviral activities, inhibiting HSV-1 by 16.0 µg/mL with selectivity index 10.8 and HSV-2 inhibition by 67.7 µg/mL with selectivity index 2.6. These results corroborate that BanLec could be a rich source of potential antiviral compound for HSV-1 when compared to HSV-2.

Introduction

Lectins are a unique and heterologous class of proteins with the ability to recognize and reversibly bind a variety of sugar structures present on the cell surface (Santos et al., 2014). They are found in a wide range of organisms, from viruses and bacteria to animals, plants, and humans (Mitchell et al., 2017). They have important biological functions in the organisms, including cell-cell interaction, protection from pathogens, cell adhesion, and intracellular translocation of glycoproteins, and they also act as storage proteins (Yamashita et al., 1999; Jiang et al., 2006; Wang et al., 2007). At present, they are being widely used in studies of biochemistry, cell biology, immunology, glycobiology and have widespread applications in biomedical researches (Sharon and Lis, 1989). Due to its fine specificity, most plant lectins have been employed for various applications including cancer therapy and virus research.

Banana lectin (BanLec) was first isolated from *Musa paradisiaca* (Koshte et al., 1990). It is a homodimeric protein that binds mannose and mannose-containing oligosaccharides and functions as a potent T-cell mitogen (Meagher et al., 2005; Koshte et al., 1992).

Herpes simplex virus (HSV) is a DNA-containing enveloped virus, which brings commonly viral infections in humans causing a variety of diseases. HSV-1 and HSV-2 can be distinguished based on clinical manifestations, biochemical and serological characteristics. However, in patients with an immature or weak immune system, such infections can be serious and even life-threatening (Naesens and De Clercq 2001; Whitley and Roizman 2001). The current investigation was undertaken to test the BanLec for their antiviral activity against HSV-1 and HSV-2. The lectin was found to possess various *in vitro* activity towards HSV strains and potent anti-viral response against HSV-1 at low concentration far below the cytotoxicity threshold.



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Current Genomics, 2020, 21, 26-33

RESEARCH ARTICLE

Extremely-randomized-tree-based Prediction of N⁶-Methyladenosine Sites in *Saccharomyces cerevisiae*

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ARTICLE HISTORY

Received: November 01, 2019

Revised: December 28, 2019

Accepted: January 34, 2020

DOI:

10.2174/1389202921666200219125625

Abstract: Introduction: N⁶-methyladenosine (m6A) is one of the most common post-transcriptional modifications in RNA, which has been related to several biological processes. The accurate prediction of m6A sites from RNA sequences is one of the challenging tasks in computational biology. Several computational methods utilizing machine-learning algorithms have been proposed that accelerate *in silico* screening of m6A sites, thereby drastically reducing the experimental time and labor costs involved.

Methodology: In this study, we proposed a novel computational predictor termed ERT-m6Apred, for the accurate prediction of m6A sites. To identify the feature encodings with more discriminative capability, we applied a two-step feature selection technique on seven different feature encodings and identified the corresponding optimal feature set.

Results: Subsequently, performance comparison of the corresponding optimal feature set-based extremely randomized tree model revealed that Pseudo k-tuple composition encoding, which includes 14 physicochemical properties significantly outperformed other encodings. Moreover, ERT-m6Apred achieved an accuracy of 78.84% during cross-validation analysis, which is comparatively better than recently reported predictors.

Conclusion: In summary, ERT-m6Apred predicts *Saccharomyces cerevisiae* m6A sites with higher accuracy, thus facilitating biological hypothesis generation and experimental validations.

Keywords: Extremely randomized tree, feature optimization, N⁶-methyladenosine sites, cross-validation, RNA sequences, *Saccharomyces cerevisiae*.

1. INTRODUCTION

Post-transcriptional modifications in RNA are the variations that occur on a newly transcribed primary RNA transcript. To date, approximately 150 kinds of RNA modifications have been determined [1, 2]. The most abundant RNA modification is N⁶-methyladenosine (m6A), which is prevalent among viruses, plants, insects, mammals, and eukaryotes such as yeast [3-7]. m6A denotes the methylation at N-6 position of adenosine nucleotide catalyzed by a methyltransferase complex and this reaction is reversible by demethylases (ALKBH5 and FTO). m6A modification has been involved in a series of biological processes, such as mRNA exporting, nascent mRNA synthesis, splicing events, nuclear translation, and translocation [8-10]. Importantly, unusual modifications of m6A have been associated with several diseases, including prostate cancer, thyroid tumor, leukemia, etc. [11-13]. Therefore, accurate identification of m6A modification sites would be of great benefit for cell biologists to better understand the disease mechanism.

Several experimental approaches, including high performance liquid chromatography [14], next-generation sequencing technologies [15, 16], and two-dimensional thin layer chromatography [17] have been widely applied in the identification of m6A sites. Particularly, next-generation sequencing is not available for large-scale genomic sequences' m6A identification. Overall, these experimental approaches are time-consuming and cost-ineffective, when applied on large-scale genome analysis. Therefore, the development of an accurate and efficient computational method for m6A identification is necessary to complement experimental approaches.

Previous decade has witnessed tremendous growth in the development of various machine-learning (ML)-based methods to predict m6A sites from RNA sequences in different species, such as *Homo sapiens*, *Saccharomyces cerevisiae*, *Mus musculus*, and *Arabidopsis thaliana*. In this study, we focused on *S. cerevisiae* because it has been widely recognized as an attractive model organism. To date, 14 prediction models have been developed for this species to predict m6A sites. Chen *et al.*, [18] proposed the first predictor, where they constructed a reliable benchmark dataset of 1307 positive samples (m6A sites) and an equal number of negative samples (non-m6A sites) for *S. cerevisiae* based on the experimental data [19]. They developed a predictor called

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Molecular Geometry, NLO, MEP, HOMO-LUMO and Mulliken Charges of Substituted Piperidine Phenyl Hydrazines by Using Density Functional Theory

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Received: 13 September 2019;

Accepted: 29 October 2019;

Published online: 30 December 2019;

AJC-19734

The quantum chemical calculations of organic compounds viz. (*E*)-1-(2,6-bis(4-chlorophenyl)-3-ethylpiperidine-4-ylidene)-2-phenylhydrazine (3ECI), (*E*)-1-(2,6-bis(4-chlorophenyl)-3-methylpiperidine-4-ylidene)-2-phenylhydrazine (3MCI) and (*E*)-1-(2,6-bis(4-chlorophenyl)-3,5-dimethylpiperidine-4-ylidene)-2-phenylhydrazine (3,5-DMCI) have been performed by density functional theory (DFT) using B3LYP method with 6-311G (d,p) basis set. The electronic properties such as Frontier orbital and band gap energies have been calculated using DFT. Global reactivity descriptor has been computed to predict chemical stability and reactivity of the molecule. The chemical reactivity sites of compounds were predicted by mapping molecular electrostatic potential (MEP) surface over optimized geometries and comparing these with MEP map generated over crystal structures. The charge distribution of molecules predict by using Mulliken atomic charges. The non-linear optical property was predicted and interpreted the dipole moment (μ), polarizability (α) and hyperpolarizability (β) by using density functional theory.

Keywords: Mulliken charges, Molecular electrostatic potential, Non-linear optical property, Molecular geometry, Piperidin-4-ones.

INTRODUCTION

To analyze the biological activity of a molecule is a risk task today. Every molecule possesses some hidden properties based upon their electronic interactions with neighboring atoms and their biological activities are based on these interactions. Molecular docking is such type of a technique gives a basic idea of binding potency of a ligand with different selective proteins in a 3D arrangement [1]. It is an attractive platform to prospect rational drug design and discovery [2]. Another important emerging technique is computational quantum mechanical modeling [3]. *ab initio* DFT calculations are the most important method to determine the behaviour of a molecule on the basis of quantum chemical considerations [4]. From these calculations, several bond parameters like bond angle, bond length, and torsion angle can be calculated and also able to explore the activities of the selected molecules. Once we got an idea about the molecule then there is no hesitation to explain the nature of binding aspects.

Advances in organic chemistry were generally measured by the availability of simple and highly functionalized building blocks. It could be used in synthesizing larger molecules with tuning properties and its applications. Piperidine ring system plays a wide role in innumerable natural compounds and drugs. This variety of compounds manifests countless pharmacological properties [5]. Generally, substituted 4-piperidones are the modules of a many alkaloids which holds broad-ranging of biological activity [6]. Piperidine-4-one compound has been attained much attention in recent years due to their biological activities and their molecular structures in various drugs [5]. Piperidones are a class of organic compounds consist of piperidine skeleton, that mimic the naturally occurring alkaloids and steroids which have been synthesized in order to study their biological activity and compare with naturally occurring compounds. It has been reported as antimicrobial, antiviral, analgesic, antioxidant and anticancer activities [6-10].

Previously, we reported the bond topological and electrostatic properties of piperidine-4-one compounds by using DFT

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JGR456_proof ■ 6 July 2019 ■ 1/10

J Ginseng Res xxx (xxxx) xxx



Contents lists available at ScienceDirect

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journal homepage: <http://www.ginsengres.org>



Review Article

Till 2018: a survey of biomolecule sequences in genus *Panax*

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ARTICLE INFO

Article history:

Received 7 February 2019

Received in Revised form

7 June 2019

Accepted 12 June 2019

Available online xxx

Keywords:

EST

genome

next-generation sequencing

Panax species

transcriptome

ABSTRACT

Ginseng is popularly known to be the king of ancient medicines and is used widely in most of the traditional medicinal compositions because of its various pharmaceutical properties. Numerous studies are being focused on this plant's remedial/curative effects to discover their potential health benefits in most human diseases, including cancer—the most life-threatening disease worldwide. Modern pharmacological research has focused mainly on ginsenosides, the major bioactive compounds of ginseng, because of their multiple therapeutic applications. Various issues on ginseng plant development, physiological processes, and agricultural issues have also been studied widely through state-of-the-art, high-throughput sequencing technologies. Since the beginning of the 21st century, the number of publications on ginseng has rapidly increased, with a recent count of more than 6,000 articles and reviews focusing notably on ginseng. Owing to the implementation of various technologies and continuous efforts, the ginseng plant genomes have been decoded effectively in recent years. Therefore/consequently, this review focuses mainly on the cellular biomolecular sequences in ginseng plants from the perspective of the central molecular dogma, with an emphasis on genomes, transcriptomes, and proteomes, together with a few other related studies.

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1. Introduction

Decoding the genetics of medicinal plants is significant in understanding their phytochemical constituents with the trace of known/characterized enzymes in their genome, and the knowledge acquired from each plant is greatly benefiting the pharmaceutical industries in standardizing the development of natural drugs. So far, the knowledge obtained from the history of traditional medicine has taught the importance of medicinal plants and how they are useful in protecting the health of humans from various disorders [1]. Additionally, the current science is continuously acknowledging the benefits of those derived knowledge and impelling the researchers/scientists toward evidence-based science from a pseudoscience through empirical search. By these prominently emerging empirical searches, the term “phytochemical genomics” has originated, a discipline that systematically integrates multiple “omics” studies including genomics, transcriptomics, proteomics, and metabolomics [2,3]. This systematic integration

helps researchers to discern the biosynthesis mechanisms of plant-specific phytochemicals. For example, the “gene-to-metabolite” concepts have been successfully applied in *Arabidopsis thaliana* to characterize its flavonoids and also in other plants to characterize their secondary metabolites [4,5]. This field of study is becoming extensively acceptable as a proof-of-concept to annotate the array of novel phytochemicals and their biosynthesis mechanisms through derived and multitested hypotheses [5]. The “gene-to-metabolite” concept is more familiar among model plants, as they consist of enormous data sets in comparison to nonmodel plants, such as crops and medicinal plants. To produce similar data structure in nonmodel plants, a theoretical framework that was used to generate a testable hypothesis in model plants was implemented in nonmodel plants using high-throughput technologies—namely, next-generation sequencing technologies and LC/GC-MS/MS—based metabolomics. Advantageously, those high-throughput sequencing technologies are made more accessible to the general plant communities with an affordable cost for implementing the

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<https://doi.org/10.1016/j.jgr.2019.06.004>

p1226-8453 e2093-4947/\$ – see front matter © 2019 The Korean Society of Ginseng. Published by Elsevier Korea LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article as: Boopathi V et al., Till 2018: a survey of biomolecule sequences in genus *Panax*, Journal of Ginseng Research, <https://doi.org/10.1016/j.jgr.2019.06.004>





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NAAC
3rd Cycle

Criterion VI
Metric 6.5.3

Journal Pre-proof

Structural, morphological and magnetic properties of Algae/CoFe₂O₄ and Algae/Ag-Fe-O nanocomposites and their biomedical applications

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Abstract

Algae-assisted auto-combustion method was adopted to prepare Algae/CoFe₂O₄ and Algae/Ag-Fe-O nanoparticles (NPs). Structural properties of the samples were investigated using XRD (X-ray Diffraction) FTIR (Fourier Transform Infra-red Spectroscopy), SEM (Scanning Electron Microscopy), and EDX (Energy Dispersive X-ray Analysis) and magnetic properties using VSM (Vibrating Sample Magnetometer). EDX spectra revealed the presence of expected stoichiometry in Algae/CoFe₂O₄ system but not in Algae/Ag-Fe-O. XRD patterns indicate the cubic phases of nanoparticles en-capsulated in the algae matrix. The sizes of the particles are found to be in the range of 15-21 nm. The room-temperature magnetic behaviour of the composites depends on the nature of dopant as Algae/CoFe₂O₄ NPs show ferromagnetic nature with significant coercivity whereas Algae/Ag-Fe-O NPs are super-paramagnetic. In-vitro anti-proliferative effect of Co-NPs and Ag-NPs at different concentrations (10, 25, 50, 75, 100µg/ml) was evaluated against IMR 32 cell-line after 24h incubation. The result of MTT assay affirmed that the cell-line deteriorates showing higher toxicity caused by Ag-NPs as compared to the results observed with the Co-NPs.

Key words: *Nanoparticles; Structural analysis; FE-SEM; Biomedical applications*

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ARTICLE IN PRESS

Ceramics International xxx (xxxx) xxx–xxx



Contents lists available at ScienceDirect

Ceramics International

journal homepage: www.elsevier.com/locate/ceramint



Hydrothermal synthesis of ZnO–CdS nanocomposites: Structural, optical and electrical behavior

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ARTICLE INFO

Keywords:

ZnO–CdS nanocomposites
Band gap
Flake-like morphology
Dielectric properties
Photoconductivity

ABSTRACT

ZnO–CdS nanocomposites with three different molar ratios of 25:75, 50:50 and 75:25 were synthesized by simple hydrothermal technique. Powder X-ray diffraction patterns confirmed the phase formation of ZnO and CdS in ZnO–CdS nanocomposites. The calculated crystallite size was found in the range of 33–38 nm and 15–21 nm for ZnO and CdS respectively. HRSEM images revealed flake-like morphology for all samples. Energy dispersive X-ray spectra confirmed the presence of all the elements. The estimated optical bandgap was found in the range of 3.71–3.35 eV. IR spectra confirmed the formation of stretching vibration in ZnO and CdS. Dielectric analysis was performed in order to study AC conductivity, dielectric constant and dielectric loss. Photoconductivity studies revealed that ZnO–CdS nanocomposites material exhibited sound photo-response characteristics.

1. Introduction

Inorganic composite materials at nano scale region exhibit unique electrical and optical properties which make them suitable for versatile applications [1–7]. Zinc oxide is a well-known wide band gap semiconductor (II–VI) compound and it exhibits high exciton binding energy (60 meV) at ambient temperature. Taking aid of such attractive behavior zinc oxide is widely used to fabricate electronics devices such as photonic and optical modulators, waveguides, phosphor material in Cathode Ray Tube (CRT) screens and ultra-violet laser diodes [8–15].

In particular, quantum confinement effects and surface to volume ratio of nano-sized ZnO modify the photosensitive, magnetic and electronic properties compared to the properties of their bulk counterparts. Cadmium sulphide with wide band gap (~2.42 eV) is also a known semiconductor (II–VI) compound and exhibits 28 MeV of exciton binding energy [16]. This notable property of CdS used in different applications like photoresistors, solar cells, X-ray detectors and optoelectronic devices [17–23]. Further the materials such as CdO, CdS, ZnS and ZnO at nano scale region are successfully utilized in applications such as nanolasers, transistors and light emitting diodes (LEDs) [17,18,21–24].

It is found that the performance of ZnO–CdS nanocomposite is enhanced due to the combination of cadmium sulphide and zinc oxide [25]. ZnO nanowires [26,27] and CdS nanoribbons [28,29] were investigated for their photoconductivity properties and it is found that these nanomaterials possess higher photoresponse with strong polarization dependence [30–32]. Photoconductivity is a well-known tool to obtain detail information about the nature of the photo-excitations. The photoconductive behavior of the inorganic nanomaterials has been investigated successfully in the last decade [33]. Recently, ZnO nanoparticles enhanced with ultrathin coatings of other metal oxides to develop new electrode for getting electrons in photovoltaic devices [34]. In addition, it revealed that the physical behavior of ZnO could be adequately altered by surface modification with certain biological, inorganic and organic materials leading to a pronounced improvement in photoelectronic, mechanical and electronic behavior. The techniques viz. co-precipitation [35], spray pyrolysis [36], sol-gel [37], chemical vapor deposition [38] and hydrothermal route [39] are widely employed to synthesize ZnO and CdS nanoparticles. Among these, the hydrothermal method was chosen owing to some advantage like ease of synthesis and low cost when compared with other synthesis route.

In this paper, ZnO–CdS nanocomposites with three different molar

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<https://doi.org/10.1016/j.ceramint.2019.08.274>

Received 4 July 2019; Received in revised form 12 August 2019; Accepted 28 August 2019
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Please cite this article as: S. Yuvaraj, et al., Ceramics International, <https://doi.org/10.1016/j.ceramint.2019.08.274>





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Criterion VI
Metric 6.5.3

J. Coat. Technol. Res.
<https://doi.org/10.1007/s11998-020-00357-w>



Functional and antimicrobial properties of herbal nanocomposites from *Piper betle* plant leaves for enhanced cotton fabrics

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Abstract In the current times, the application of nanoparticles in the textile industry has become increasingly high due to the possibility of having anticipated properties, such as captivating colors, superior stability, antibacterial activity, and high-end UV-protection to the fabrics. In this study, natural herbal nanoparticles of different sizes were prepared from shade-dried leaves of *Piper betle* employing ball milling technique. Going forward, structural, morphological, UV-protective, and antibacterial properties of herbal nanocomposites coated on fabrics were thoroughly analyzed and interrelated with uncoated fabrics. Herbal nanoparticles were amalgamated with chitosan to make nanocomposites and are coated on cotton fabrics with the help of the pad-dry cure method. The analysis done to study physical properties of the coated fabrics, such as air permeability, crease recovery angle, tensile strength, tearing strength, thickness, and bursting strength, explicitly showed that

coated fabrics have better functional properties as compared to uncoated fabrics. Along the same lines, herbal nanoparticles reflected good antibacterial and UV-absorption properties as compared to uncoated and chitosan-coated fabrics. Comprehension of functional properties revealed that herbal nanoparticle-coated fabrics highlights the potential applications of *Piper betle* nanoparticles in protective clothing.

Keywords *Piper betle*, Herbal nanoparticles, Nanocomposite, UV-protection, Chitosan, Antibacterial activity

Introduction

Nanoparticles play a critical yet unique role in an array of fields due to their unmatched properties and applications.¹ A textile is an impeccable growth medium for microbial growth as it is rich in organic compounds that are appropriate for biofilm formation and sweat absorption. This, in turn, is responsible for providing moisture conditions and causing infections to humans.²⁻⁴ Commonly, *Staphylococcus aureus* (*S. aureus*) and *Staphylococcus epidermidis* (*S. epidermidis*) lead to skin infections like boils, impetigo and cellulitis, and furuncle.^{5,6} In a textile, microorganisms bring about negative effects such as dreadful odor, discoloration and reduced texture efficiency.⁷ The aforementioned issue is conventionally combated by using an antibacterial finishing process with the help of aldehydes, halogens, quaternary ammonium compounds, and amines.⁸

Chemical antibacterial finishing results in the best control of microbial growth, but it also accompanies some drawbacks as well, such as being toxic, nonbiodegradable, not eco-friendly, and cost-effective. Hence, it is indispensable to change reliable, nontoxic, nonallergic, eco-friendly materials for textiles with antibacterial finishing. The

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Published online: 27 May 2020





Euler Movement Firefly Algorithm and Fuzzy Kernel Support Vector Machine Classifier for Keystroke Authentication

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Abstract: User authentication can be successfully employed using keyboard typing patterns which is a form of behavioral biometrics. This modern method is highly analyzed for static authentication which refers to typing of fixed texts like "password" and "pin numbers". Most of the methods with respect to keystroke dynamics are restricted to the study of user's activity involving fixed text. The formulated work concentrates on the investigation of the log of the user activity focused on the keyboard usage within the computer system through free text which refers to typing of texts throughout the login session. The Buffalo dataset is used in User Profiling Similarity Measurement (UPSM) stage and to recognize the time slice of the users, Euler Movement Firefly Algorithm (EMFA) is utilized. The typing behaviour is formulated in the form of time series in User Profiling Continuous Keystroke Authentication (UPCKA). Moreover the progression is made to user's Continuous Authentication so as to predict unauthorized users with the consideration of the classifier called Novel Fuzzy Kernel Support Vector Machine (NFKSVM). The experimental results provide the enhanced performance by utilizing the formulated UPCKA in correlation with the NFKSVM classifier when compared with SVM and Iterative Keystroke Continuous Authentication (IKCA) techniques.

INDEX TERMS: Keystroke, Keystroke Time Series, Continuous Authentication, Buffalo dataset, User Profiling Similarity Measurement (UPSM) and User Profiling Continuous Keystroke Authentication (UPCKA).

I. INTRODUCTION

The greater diffusion of the digital recognitions has led to the development of security issues due to data transmissions [1]. Nowadays, the perspective of the large diffusion involving in the various activities transmitted over the internet through events like online transactions in banking, transaction involving E-commerce, communication through e-mail tends to suffer security attacks [2]. Due to this, the theft regarding the identity of the person has become predominant and it has gained new momentum. The illegal use of personal information of someone else and pretending to be the actual person is generally termed as identity theft [3]. Under this situation, a variety of modern techniques have been developed for the purpose of user authentication. The process of confirming the users' identity is called Authentication. For instance, within workstations, initial authentication takes place, which is the system initialization. Moreover highly secured authentication techniques do not even render complete safety security mechanisms,

As the computers may be subjected to unauthorized users whenever the user is left from the workstation without ending the session. Similarly the unauthorized users could handle the system pretending like a legitimate person, which leads to theft of identity [3]. Out of several methods one such technique to solve the issue caused by the intrusion is that the use of detection mechanisms that focus on workstation (host-based).

Keystroke dynamics [4-5] (typing patterns) are considered to be the challenging tasks for the persistent authentication. To authenticate the typing patterns of an individual, the initial task was subjected to the text that remains static. For instance, static authentication related to that of typing pattern, the rhythm, recognize only when the users enter their credential data (username and password, or pin number) [6-7]. Keystroke dynamics is considered to be significantly precise to the choice of authentication due to its degree of transparency it produces. The most obvious way to take advantage of it is to gather timing information on data that users have already typed to login into the system—that is, username and password. Keystroke Static Authentication (KSA) has been subjected by considering the applications including username, password and pin number authentication [6-7]. KSA remains unsuitable for the applications that are in need of regular authentication like the context of the online assessments applied in e-learning environments. Hence, Keystroke Continuous Authentication (KCA) is required. When compared to KSA, KCA is considered to be more promising as the process focuses on discovering patterns from the text which is set free (not as to that of KSA planning for a fixed pattern which remains single). The working strategy of KCA till date has focused on feature vector based binary classification where the statistical features like the average hold time (duration of a key press) and digraph latency (duration between the start or end of pairs of common consecutive key presses) have been considered to be important [8-9]. These mechanisms function regularly by evaluating the similarity among the learnt user having a statistical profile and unseen data previously presented in the data stream.

The authors are motivated behind the time series approach as it can be easily used to detect the suspicious behaviour during sequence of keystrokes. The idea presented in this work is to conceptualise the keystroke process in terms of time series from which the KCA have been identified without utilizing the feature vector based classification. More specifically the idea is to view keystrokes in terms of press-and-release temporal events such that a series of successive events can be recorded. In addition, Novel Fuzzy Kernel Support Vector Machine (NFKSVM) classifier need to be built for each user and this in turn improves the efficiency of the application

Revised Manuscript Received on September 05, 2019

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Retrieval Number: I20620801119/2019/ICJITEE
DOI: 10.35940/ijitee.I2062.081119

2267

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication





Multi-Label Classification with PSO based Synthetic Minority Over-Sampling Technique (Psosmote) for Imbalanced Samples

M.Priyadharshini, L.Pavithra,

Abstract: Recently, the learning from unbalanced data has emerged to be a pre-dominant problem in several applications and in that multi-label classification is an evolving data mining task. Learning from unbalanced multilabel data is being examined. However, the available algorithm-based SMOTE makes use of the same sampling rate for every instance of the minority class. This leads to sub-optimal performance. To deal with this problem, a new Particle Swarm Optimization based SMOTE (PSOSMOTE) algorithm is proposed. The PSOSMOTE algorithm employs diverse sampling rates for multiple minority class instances and gets the fusion of optimal sampling rates and to deal with classification of unbalanced dataset. Then, Bayesian technique is combined with Random forest for multi-label classification (BAEF-MLC) to address the inherent label dependencies among samples such as ML-FOREST classifier, Predictive Clustering Trees (PCT), Hierarchy of Multi Label Classifier (HOMER) by taking the different metrics including precision, recall, F-measure, Accuracy and Error Rate.

Keywords: multi-label classification, multi-class imbalance, PSO, SMOTE, Bayesian approach (DrNGPAC 2019-20 CB04)

I. INTRODUCTION

Several real-world applications, like text classification and sub cellular localization of protein sequences, deal with multi-label classification with unbalanced data. The classification of unbalanced data is a significant issue in machine learning and data mining [1]. In an unbalanced dataset, there are considerably fewer training instances of one class in comparison with another class. Accordingly, the former is called as the minority class, and the latter is known as the majority class. In [2], the imbalance problem for MLC is addressed and a novel scheme known as DEML is proposed. In [3] an algorithm ISBD (Block Sampling with choosing the Highest Degree nodes), an active learning based imbalanced networked multi-label classification algorithm is proposed.

In [4] a multi-label classification algorithm that depends on multi-rank neighbors is introduced. In [5] the random walk model is combined with multi-label learning to introduce a multi-label classification algorithm MLRW (Multi-Label Random Walk algorithm). In [6] the asymmetric stage-wise loss function is presented to move the positive class samples at some distance away from the classification boundary compared to the negative class samples by adjustment of the ramp in addition to the margin parameters. In [7] LEML algorithm is used, which is the low-rank property of the label matrix to develop a linear prediction model and then it helps in restoring the missing labels by reducing the kernel norms.

Revised Manuscript Received on December 08, 2019.

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Revised Number: 10.1177/2277387819886307
DOI:10.1177/2277387819886307

In [8] the low-rank hypothesis is combined with manifold hypothesis, and then the proximal gradient descent algorithm is used for recovering the missing labels. In [9] the existing correlation among labels is completely exploited, and a considerably good data subset is selected with the help of cross-validation technique, and its prediction results is used in the next subsequent iteration, and eventually all the missing labels are recovered. But, this technique presumes that the training set gets balanced between positive and negative categories. In [10] different mechanisms are introduced and they are compared for the generation of synthetic samples for balancing the data sets during the training of multi-label algorithms. In [11] the SCUT hybrid-sampling technique is brought into use and it is utilized for balancing the number of training examples in such a kind of multi-class environment.

In [12] the challenge occurring due to the multiclass imbalance problems is studied and the generalization capability of few ensemble solutions, including the recently introduced algorithm Adaboost is also investigated. In [13] the process of synthetic instance production for multilabel datasets (MLDs) and ML-SMOTE (Multilabel Synthetic Minority Over-sampling Technique), which is a novel algorithm targeted at the generation of synthetic instances for unbalanced MLDs, is presented.

In this research work, a new PSO based on SMOTE algorithm, called as PSOSMOTE is introduced for multi-label classification for unbalanced data to boost the performance of unbalanced data classification. The PSOSMOTE algorithm makes use of multiple sampling rates for various minority class instances and gets the combination of optimal sampling rates. Then, the newly introduced MLC is used on the dataset.

The remaining portion of this work is organized as below: Section 2 explains about the proposed technique. Section 3 discusses about the data sets, the experimental setup and experimental results. In the last section, the conclusions are discussed in Section 4.

II. PROPOSED METHODOLOGY

In this research work, PSOSMOTE is used for imbalanced dataset sampling. PSOSMOTE has combined both PSO and SMOTE process. Then, Bayesian scheme is merged with Random forest (BAEF-MLC) that will be used for revealing the inherent label dependencies. The overview of the proposed scheme is illustrated in figure 1.





Computation of eccentricity associated topological descriptors through Python for comb tree

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Abstract. Topological manifestation of a graph G is a numerical value which reveals its topological properties. The eccentricity of one node $u \in V(G)$ (that is $e_G(u)$), is the greatest distance between u and also any other vertex of G . The degree of a u in this paper, we are using Python program to compute eccentricity related Topological indices for Comb tree with any number of vertices, relation between descriptors and the bounds for indices also.

Keywords: Comb tree; eccentricity; Python; topological index;

1. Introduction

An chemical compound's molecular structure can be represented by a graph in which we represent atoms of molecule as vertex of that graph and bonds between atoms as edges of the graph. This type of graph is called molecular graph or chemical graph. In Recent days inter discipline research is has high impact, especially mathematical chemistry is highly influencing in drug manufacturing, medicinal chemistry and bio chemistry etc.

We present bounds and comparison of various greatest distance based index of widely used chemical structures which often appear in mathematical chemistry.

Using Python we can compute all topological descriptors in minimum ravage of all resources. Python is dynamic language. Now a days python is highly influencing language in all fields.

Readers who are having significance can test out the program in the net repl.it

<https://repl.it/@Manimekalai/eccentricity-based-index>

<https://repl.it/@Manimekalai/Total-Eccentricity-index>

Various indices was introduced in various periods of time for a graph A ,

Eccentric connectivity descriptor [4,8,9,10], $\xi(A) = \sum_{v \in V} d(v) \varepsilon(v)$

Total eccentricity descriptor [3], $\zeta(A) = \sum_{v \in V} \varepsilon(v)$

Average eccentricity [2] $\text{avec}(A) = \frac{1}{n} \sum_{v \in V} \varepsilon(v)$

Alternate form of Eccentric connectivity [10] index $\zeta(A) = \sum_{u,v \in V(A)} (\varepsilon(u) + \varepsilon(v))$

Ghoebani et al. [5,6], First Zagreb eccentric descriptor $M_1^*(A)$ or $E_1(A) = \sum_{v \in V} \varepsilon(v)^2$

Second Zagreb eccentric index $M_2^*(A)$ or $E_2(A) = \sum_{u,v \in V(A)} (\varepsilon(u) \varepsilon(v))$



Fuzzy Clustering Based Image Denoising and Improved Support Vector Machine (ISVM) Based Nearest Target for Retina Images

B. Sivaranjani, C. Kalaiselvi

Abstract: A developing automated retinal disease diagnostic system based on image analysis has now demonstrated the ability in clinical research. Though, the accuracy of these systems has been negotiated repeatedly, generally due to the basic effort in perceiving the abnormal structures as well as due to deficits in the image gaining that affects image quality. Use the fuzzy clustering; the noises contained in the samples are omitted from the above. Unless the noises will be taken away from the samples instead dimension reduction initializes the optimization of Mutual Information (MI) as just a coarse localization process that narrows the domain of optimization and tries to avoid local optimization. Furthermore, the suggested work closer to the retina picture being done using the Improved Support Vector Machine (ISVM) system used in the area-based registration, offering a reliable approach. It is the first matching template algorithm for retina images with tiny template images of unconstrained retinal areas to the best understanding.

Keywords: Retina image template matching, Noise removal, Fuzzy clustering, Improved Support Vector Machine, teleophthalmology, dimension reduction, mutual information, health monitoring.

1. INTRODUCTION

Teleophthalmology is becoming increasingly important as an efficient way to deliver eye care worldwide. Teleophthalmology is used in many developing countries to provide all the underprivileged urban population and the remote rural population with reliable eye care. Technological innovations have strengthened proof over the years, and teleophthalmology has developed from such a learning tool to a clinical device. Teleophthalmology provides the same optimal therapeutic outcome as traditional system. Remote portals empower clinicians should provide treatment across a larger area, thus improving quality of life outcomes and growing accessibility to a larger population of specialty care. Leading to increased accessibility and decreased commuting costs and time, a high level of satisfaction and acceptance is recorded in most studies. Given the documented increased quality of patient safety and patient satisfaction for all these programs in telemedicine, this analysis examines how teleophthalmology greatly improves health outcomes.

Teleophthalmology offers an easy and value-effective way to detect many retinal diseases and eventually to preserve the eyesight of a patient. In the retina, there has also been a trend toward more teleophthalmology.

Particularly in areas in which retinal specialists may not be easily available for diabetic retinopathy and premature retinopathy (ROP) screening. In this section, the difficult issue of matching and recording retinal images was discussed to allow for new applications for teleophthalmology. A new technique for locating optic discs in retinal images was suggested in [1].

The first phase of certain vessel segmentation, disease diagnosis, and retinal recognition algorithms would be to locate the optic disc and its core. In [2] the latest research on the essential characteristics and features of DR eye telehealth services was evaluated in the categories listed: image gradability, mydriasis, sensitivity and specificity, cost-effectiveness, long-term efficacy, patient comfort and satisfaction, and patient-related results change. In [3] analyzed recent trends in DR screening imaging and new technologies, showing potential for growth on existing approaches to screening.

In [4] the value-benefit analysis to use a digital retinal imaging assessment based on telemedicine was examined, compared to conventional diabetic retinopathy evaluation of diabetic patients. The economic impact of eye care telemedicine in a mountainous, rural health center in West Virginia over a period of seven years from 2003-2009 was evaluated in [5]. In [6] established if proliferative diabetic retinopathy (PDR) screening of tele-ophthalmology could be price-saving. In [7], it was proposed that primary care hospitals may use telemedicine to monitor for diabetic retinopathy and track for disease intensifying over a prolonged period of time. In [8], patient preference for diabetic retinopathy (DR) screening is evaluated with teleophthalmology or face-to-face ophthalmology in Nairobi, Kenya. In [9] the history about using telemedicine technology to assess ophthalmology in diabetic and hypertensive cases reporting to a community clinic in rural West Virginia was identified.

In [10], the ability to assess non-diabetic retinal observations in diabetes patients either using non-mydratic fundus photography (NMFP) or Ultra Wide Field Imaging (UWFI) into a known teleophthalmology program was compared using verified retinal imaging methods. In [11], a method was suggested to identify in retinal images of objects and to mask the affected areas in order to prevent them from being regarded for the automatic detection of retina diseases. In [12] the cost-effectiveness of a rural Southern India telemedicine diabetic retinopathy (DR) screening system conducting 1-off screening camps (i.e. screening provided once) in villages was assessed and the actual cost-effectiveness proportions of different screening intervals were assessed.

Revised Manuscript Received on January 18, 2020.

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Criterion VI
Metric 6.5.3

The International Journal of Analytical and Experimental Modal Analysis

ISSN NO: 0886-9367

A STUDY ON RURAL SELF HELP GROUPS WOMEN WITH SPECIAL REFERENCE TO MICRO CREDIT IN SALEM DISTRICT.

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Abstract

The Women constitute half the population of the world. But in many parts of the world, they seem to be underpowered. Compared to men, they are relegated to secondary position, be it in the household, society in general and in work place. It is this perceived gender inequality and the urge to remove it and to "empower" women who have constituted the motive force for the formation of Self Help Groups (SHGs). A Self Help Group can be defined as a 'voluntary association' of the poor with a common goal of social and economic empowerment. The purpose behind the formation of the Self Help Group may be to pool the resources of members to meet their needs. Group should be homogenous and democratically functioning. The habit of thrift and contributing to common funds mobilized to mitigate the urgent needs of the members and ensuring prompt recovery are required for better functioning of SHGs. Non-Government Organization (NGO) is a voluntary organization established to assist the undertaking of social intermediation, namely organizing the SHGs of micro entrepreneurs entrusting them to the interested banks. Some NGOs borrow funds from financial institutions for extending to SHGs and others for social intermediation. The financial assistance together with promotional and developmental activities by SIDBI has played a crucial role in the upliftment of small and tiny sector to a self-sustained path of growth. They have set up Micro Credit Scheme (MCS) in March 1994, and financial assistance has been provided to the rural poor, particularly women through NGOs for taking up income generation activities at micro level. NABARD has also introduced a scheme in the year 1992 for linking of SHGs with banks in order to strengthen the efforts of NGOs and improve the financial position of SHGs. The present study is on Self Help Groups with special reference to micro credit in Salem District.





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Criterion VI
Metric 6.5.3

JASC: Journal of Applied Science and Computations

ISSN NO: 1076-5131

Arithmetic operations on Pythagorean Z Numbers

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Abstract – This document gives the idea of Pythagorean Z numbers, operations on Pythagorean Z numbers which helps us to overcome the situation where the membership function and non-membership function is greater than one in uncertainty and reliability.

Keywords : Pythagorean fuzzy set (PFS), Pythagorean Z numbers (PZN), Arithmetic Operations, 0 – cut of PZN.

I INTRODUCTION

Pythagorean set theory is a documented technique to manage uncertainty in the optimization problem. The generalization of intuitionistic fuzzy set is a Pythagorean fuzzy set. Considering a situation where the sum of the membership function and non-membership function is greater than one. For example, suppose a person expresses his preferences towards the alternative in such a way that degree of their satisfaction is 0.6 and degree of rejection is 0.8. Obviously its sum is greater than one. To solve these types of problems, Yager (2013, 2014) [110, 111] introduced the concept of another set called Pythagorean fuzzy set. PFS proposed a new tool to deal with vagueness considering the membership and non membership grade satisfying its conditions. Garg [39] presented an improved score function for the ranking order of interval valued Pythagorean fuzzy sets. Other explorations of the theory of PFS can be found in [31, 35, 42, 45, 70, 75]. Perez – Dominguez L [72] who presented a multi-objective optimization on the basis of PFS. Zadeh [123] defined a Z number associated with an uncertain variable which represents an idea of certainty. Z number is used in the context where the simplest problem ends up with complex optimization problems. Computations with Z numbers are a topic which is both interesting and useful. In this chapter a new concept called Pythagorean Z numbers (PZN) is defined to manage uncertainty and reliability together. This methodology is considered as a generic decision making procedure, especially when PZNs are applied to real decision making problems.

II PRELIMINARIES

Here we have defined Pythagorean Z number (PZN) and various operations on the same are also defined.

A. Pythagorean Z number

Let X be the non empty set and I be the unit interval $[0,1]$. A Pythagorean Z number (PZN) is defined as $PZN = \{x, (\delta_{\mu}(x), \epsilon_{\mu}(x)) | (\delta_{\mu}(x), \epsilon_{\mu}(x)) : x \in X\}$ where $\delta_{\mu}(x) : X \rightarrow [0,1], \epsilon_{\mu}(x) : X \rightarrow [0,1], \delta_{\mu}(x) : X \rightarrow [0,1], \epsilon_{\mu}(x) : X \rightarrow [0,1]$ denote the degree of member ship and non member ship of uncertainty and reliability with $0 \leq (\delta_{\mu}(x))^2 + (\epsilon_{\mu}(x))^2 \leq 1$ and $0 \leq (\delta_{\mu}(x))^2 + (\epsilon_{\mu}(x))^2 \leq 1$

B. Logical Operations on Pythagorean Z numbers

Let the two PZNs be $PZN_1 = \{x, (\delta_{\mu_1}(x), \epsilon_{\mu_1}(x)) | (\delta_{\mu_1}(x), \epsilon_{\mu_1}(x)) : x \in X\}$ and $PZN_2 = \{x, (\delta_{\mu_2}(x), \epsilon_{\mu_2}(x)) | (\delta_{\mu_2}(x), \epsilon_{\mu_2}(x)) : x \in X\}$.

Where X is the non empty set and I be the unit interval $[0, 1]$, then





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Criterion VI
Metric 6.5.3

Journal of International Pharmaceutical Research, ISSN: 1674-0440

Drug suggestion concerned automated drug knowledge ontology construction framework

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Received: 08-04-2019, Revised: 12-05-2019, Accepted: 14-06-2019, Published online: 17-07-2019

How to cite this article: D. Krithika Renuka and Dr.B. Rosiline Jeetha (2016) Drug suggestion concerned automated drug knowledge ontology construction framework, Journal of International Pharmaceutical Research 46(4): 26-34

Abstract

Drug effect identification suggesting proper drug is the most critical task in the medical care environment which needs to be done with more concern. In our previous research work, drug effect identification is performed from the real world tweets gathered from the twitter website using Relevancy and Similarity Aware Drug Comment Classification Framework (RSDCCF). However this method doesn't focus on the faster response and proper drug suggestion based on side effects. This is focused in this research work by introducing the method namely Drug Suggestion Concerned Automated Drug Knowledge Ontology Construction Framework (DSCADKOCG). This research work can ensure the proper drug suggestion to the patients based on side effects. In this research work, automated ontology construction is performed based on drug tweets gathered from the social websites which can lead to construction of Drug Knowledge Source Ontology Construction. After ontology construction, drug learning is performed using the constructed ontology and the drug database using TSVM classifier. Based on this learned knowledge automated and fast drug suggestion is performed using Semantic query based drug suggestion approach. The overall evaluation of the research method is performed in the matlab simulation environment from which it can be proved that the proposed research technique can lead to provide the optimal outcome than the existing research techniques.

Keywords: Drug Effect, Side Reactions, Drug Suggestion, Ontology Construction, Semantic Query, Drug Tweets.

Introduction

Adverse drug reactions (ADRs) are unavoidable outcomes of pharmacotherapy [1]. It is notable that all medications convey the possibility to deliver both alluring and unwanted impacts. No medication is totally sheltered under all conditions of utilization or in all patients and ADRs may happen regardless of whether a medication is accurately chosen and dosed [2]. Drawback of not detailing may bring about injurious impacts of a restorative item not being detectable for quite a while or the affiliation turned







looked into and examined by space specialists. Shockingly, investigate recommends information gathered by SRS are restricted by lengthy time span inactivity, mistaken or deficient clinical data, underreporting and detailing predisposition [5]. Thusly, clinicians and specialists have likewise used existing human services information sources, for example, Electronic Health Records (EHRs) to endeavor to recognize already unreported ADRs.

However, these information are intrinsically loud as medications and potential reactions may co-happen in the EHR for some reasons [6]. What's more, the



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MoU's

S. No.	MoU Details	Activity on MoU	Supportive Documents Link
1	Tata Consultancy service	Course designing and curriculum development	
2	Consortium of colleges (Dr NGP ASC, GASC, Vellalar College for women)	To organize Workshop, conferences, to take up research and societal projects funded by government organizations etc.	
3	Annamali Capital Services Private Limited, 14, Arts College Road, Coimbatore - 641 018.	NCFM Exams, project works, recent development, competition exam preparation	
4	Vellalar College for women, Erode	Innovative courses, student and faculty exchange, training and research program, organizing seminar, workshop, outreach program in community	
5	Gobi Arts and Science College, Gobichettipalayam	Innovative courses, student and faculty exchange, training and research program, organizing seminar, workshop, outreach program in community	
6	Narayana Hrudayalaya Limited, No. 258/A, Bommasandra Industrial Area, Anekal Taluk, Bangalore, Karnataka - 560 099.	Internship to medical physics students	
7	Sri Ramakrishna college of Arts and Science, Coimbatore	Innovative courses, student and faculty exchange, training and research program, organizing seminar, workshop, outreach program in community	