Indra Ganesan
COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC

IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 3

RESEARCH, INNOVATIONS AND EXTENSION

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL
INDRA GANESAN COLLEGE OF ENGINEERING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the total number of Research papers published per faculty in the journals notified on UGC care list during last five years is listed below.

Academic Year	2022-23	2021-22	2020-21	2019-20	2018-19
Number of Research paper in journals	12	7	3	3	4
Total number of Research papers in journals	29				

Principal
Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

Title of paper	Name of the author/s	Department of the faculty	Name of journal	Year of publication	ISSN number	Page No.
Assessment of under ground Water Quality And Water Quality Intex Across the Noyyal Rever Basin Of Thiruppur District In South India	Dr.M.Anusuya	Physics	Urban Climate	2022-2023	2212-0955	6
Mechanical and Machining Behaviour Of Betel Nut Fiber / Lether / Shitin / Toughend Epoxy Hybrid Composite	V.S Thangarasu	Mechanical	Biomass Conversion & Biorefinery	2022-2023	2190-6815	7
Taguchi Analysis in invetigation of feed post , cuting post and thrust force while matching aluminium metal matrix Composite	V.S Thangarasu	Mechanical	JCPR	2022-2023	1229-9162	8
Synthesis , Structure , Hirsh Feld Surface Analysis and Computational Studies of 2 - Amino - 5 - Nitropyridine - 2,4-Dinitrophenol Corcy	Mr. Shanmugam Sivaraman	Chemmistry	Springer Link	2022-2023	0967-0912	9
Experimental Investigation And Machinability Behaviour on Sysnthesis Titanium Composite	V.S Thangarasu	Mechanical	Journal of Ceramic Processing	2022-2023	1229-9162	10
Thermal - magneto - Mechanical Stability Analysis of Single Walled Carbon Nano Tube Conveying Pulsating Viscous fluid	Mr.Mahaveer Sri Jeyan	Mathematics	Coupled system Mechanics	2022-2023	22342184	11
An Effective Deep Learning Based Recommender System With User And Item Embedding	Mrs.A.Ramya	AIDS	Knowledge Discovery In Computer Engineering	2022-2023	1384-5810	12
Contrast Based Background and Foreground Channel Prior For Single Image Dehazing	Dr.N.Kavitha	IT	The Imaging Science Journal	2022-2023	13682199	13
Biomolecules and Micro waves Directed Fabrication Of Ag / CeO2 Nano Composite : A Versatile Candidate For The Degratation Of Textile Dye Mixtures And Anti Bacterial Studies	Dr.M.Anusuya	Physics	Sprinker Link	2022-2023	0967-0912	15
Preaparation and Non Linear Optical Characterization Flourine - Doped Cadmium Oxide Thin Flims	Dr.M.Anusuya	Physics	Applied Surface Science Advances	2022-2023	2666-5239	17
Vibration Analysis Of Non Linear Magneto Flexo Electric Mass Sensor Carbon Nano Tube Resting on Elastic Substract	Mr.Mahaveer Sri Jeyan	Mathematics	Technische Mechank	2022-2023	2323869	18
Hydrogen -Bonded Structure And Optical Non Linear Non Linearities In The Proton - Tranfer Complex Of 8-Hydroxy - 5 - Nitroquinoline With p- Toluenesulfonic acid	S.Sivaraman	Chemistry	Structural Chemistry	2022- 2023	15729001	19

3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

Title of paper	Name of the author/s	Department of the faculty	Name of journal	Year of publication	ISSN number	Page No.
Retraction Note To : Brain Tumer Classification Using Saliency Driven Non Linear Diffusion And Deep Learning With Convolutional	Dr.K.Uthra Devi	IT	Journal Of Ambient Intelligent And Humanaized Computing	2021-2022	1868-5145	21
Investigation Of Duel - Pass Incliend Oscillating Bed Solar Dryer For Drying Of Non - Parpoiled Paddy Grains	Mr. P.Ganapathy	Mechanical	Sustainability	2021-2022	2071-1050	22
Study Of Machanical Performance of BN Grafted Graphene Oxide Hybrid Aerogel For Polypropylene Composite	Mr.Mahaveer Sri Jeyan	Mathematics	Nanometerial	2021-2022	2079-4991	23
The Impact of boron nitride (BN) on Tripological Behaviour of AZ 84 magnisium Matrix Composite	Mr.Mahaveer Sri Jeyan	Mathematics	Proceeding	2021-2022	2504-3900	24
Improved Priority Aware Mechanism For Enhancing QoS in MANET	Mr.Mohan Prabhu	Mechanical	Wireless Personal Communication	2021-2022	1994-2022	25
GNP - Copper Hexacyanoferrate modified Electro rode for Voltammetric Characterization and Behaviour in the Presence of Butylated Hydroxyanisole	Mr. S.Boopalan	Chemistry	RJC	2021-2022	0974-1496	26
An Improved DFA Based Kernel Ensemble Learning Machune Using Local Futher Representation For face Recognition	Dr.N.Kavitha	IT	Journal Of Intelligent And Fuzzy System	2021-2022	1875-8967	27
HybridZation of Mean Shift Clustering and Deep Packet Inspected Classification For Network Traffic Analysis	Mr.M.Vijaya Sarathy	ECE	Sprinker Link	2020-2021	0967-0912	28
A DCNN Based Real-Time Authentication System Using Facial Emotions	Mr.A.Praveen	ECE	Springer Link	2020-2021	0967-0912	29
Analysing and Uncertainity in Cardiogram Data For The Prediction Of Fetel Risk Based On Machine Learning Techniques Using Rough Set	Mr.M.Vijaya Sarathy	ECE	Journal Ambiend Intelligence and Humanized Computing	2020-2021	18685145	31
Thermal Image - Based Object Classification For Guiding The Visually Impaired	Dr.G. Bala Krishnan	CSE	Computer Journal	2019-2020	14602067	32
Brain Tumer Classification Using Saliency Driven Non Linear Diffusion And Deep Learning With Convolutional Neural Networks (CNN)	Mrs.K.Uthra Devi	IT	Journal Of Ambient Intelligent And Humanaized Computing	2019-2020	1868-5145	33
Feature Extarction Based on Empirical Mode Decomposistion For Automatic Mass Classification Of Mamo Gram Images	Mrs. N. Vaijayanthi	ECE	Springer Link	2019-2020		34

3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

Title of paper	Name of the author/s	Department of the faculty	Name of journal	Year of publication	ISSN number	Page No.
Speech to speech interaction system using multimedia tools and Partially Obserable Markov Decision Process for Visually Impaired Students	Mrs. B.Kanisha	IT	Multined Tools APPL	2018-2019	13807501	35
Multi Model Mitigation Approach For Network Threads or Clusters Based Linear Chain routine Protocol In Wireless Sensor Networks at QoS Development	Mr.R.Raja Mohamed	CSE	Wireless Personal Communication	2018-2019	09296212	36
Design Of X Band Parellel Coupled Line BPF By Analytical Approach	Mr.V.G. Gopal	ECE	Analog Integrated Circuit And Signal Processing	2018-2019	0925-1030	37
A Comprehensive Age Extimation on Face Images Using Hybrid Filter Based Future Extraction	Dr.G. Bala Krishnan	CSE	Biomedical Research	2018-2019	0970-938X	38

Assessment of underground water quality and water quality index across the Noyyal River basin of Tirupur District in South India

N. Krishnamoorthy [a], R. Thirumalai [b], M. Lenin Sundar [c], M. Anusuya [d], P. Manoj Kumar [e] 👤 ✉ , E. Hemalatha [f], M. Mohan Prasad [g], Neha Munjal [h]

[a] Department of Physics, Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu 641202, India
[b] Department of Mechanical Engineering, Jai Shriram Engineering College, Tirupur 638660, Tamil Nadu, India
[c] Department of Civil Engineering, AAA College of Engineering and Technology, Amathur, Sivakasi, Tamil Nadu 626005, India
[d] Department of Physics, Indra Ganesan College of Engineering, Trichy, Tamil Nadu 620012, India
[e] Department of Mechanical Engineering, KPR Institute of Engineering and Technology, Coimbatore 641407, Tamil Nadu, India
[f] Department of Physics, K.Ramakrishnan College of Engineering, Trichy, Tamil Nadu 621112, India
[g] Department of Mechanical Engineering, M.Kumarasamy College of Engineering, Karur, Tamil Nadu 639113, India
[h] Department of Physics, Lovely Professional University, Phagwara, Punjab 144411, India

(?) What do these dates mean?

🛡 Check for updates

Show less ⌃

⚹ Share   𝟿𝟿 Cite

Highlights

- The underground water quality along the Noyyal River basin has been assessed in Tirupur, south India.

- The quality of the underground water has been significantly affected by the infiltration of contaminated river water.

- The Underground Water Quality Index (UWQI) was calculated for the collected water samples.

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

6

Biomass Conversion and Biorefinery

28-06-2022 | Original Article

Mechanical and machining behavior of betel nut fiber/leather/chitin-toughened epoxy hybrid composite

Authors: N. S. Sivakumar, V. S. Thangarasu, R. Soundararajan, V. Jayaseelan

Log in

Introducing the latest innovation: AI-assisted Search!
Highlight text sections to discover more relevant content with AI-assisted Search.
powered by

Activate our intelligent search to find suitable subject content or patents.

AI-assisted search

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Abstract

The present research was based on a hybrid epoxy composite, which was made using betel nut fiber and goat leather with chitin biopolymer toughener (CBP). This research primarily investigated the effect of high-damping-waste goat leather addition along with betel nut fiber in CBP-toughened epoxy resin and its mechanical, machining, and fatigue

JCPR

 Articles

Taguchi analysis in investigation of feed force, cutting force and thrust force while machining aluminium metal matrix composite

R. Santhanakrishnan[a, *], V.S. Thangarasu[b], R. Arravind[c] and V. Ramachandiran[d]

[a]Department of Mechanical Engineering, CMR University, Bengaluru, India
[b]Department of Mechanical Engineering, Indra Ganesan College of Engineering, Trichy, India
[c]Department of Aeronautical Engineering, Paavai Engineering College, Namakkal, India
[d]Department of Aeronautical Engineering, Hindusthan College of Engineering and Technology, Coimbatore, India

Abstract

Metal matrix composite finds several applications in automotive and aerospace sectors because of its excellent mechanical properties and ease of manufacturing characteristics. Taguchi analysis is used to investigate the cutting force, feed force and the thrust force while machining aluminium metal matrix composite. The analysis of variance (ANOVA) is used to investigate the experimental results and the parameters influencing the cutting force, feed force and thrust force in turning of aluminium metal matrix composite. Taguchi analysis is used and the response table for the feed force, cutting force and Thrust force is calculated and it is found the forces are highly influence by the steam pressure

Keywords: Feed force, Cutting force, Thrust force, Metal matrix composite, ANOVA, Taguchi technique.

Introduction

Cutting force is the maximum force in machining operations and it is tangential to the rotating direction. The dynamometers are embedded between the tool and turret head and it is mounted in the tool turret used with an adaptor. The measurement of cutting force is helpful in analysis of chip formation, identification of wear processes, understanding materials behavior, identification of optimum process parameters and machine abnormalities. Ultrasonic assisted turning aluminium metal matrix composite is demonstrated and it is concluded that the reduction in cutting force will improve the surface finish of the turning process [1]. The machinability studies of the aluminium metal matrix composites are investigated for its usage in several engineering industries due to its increase mechanical properties [2]. Response surface methodology is used to assess the cutting forces in turning aluminium metal matrix composite. Desirability function analysis is employed to determine the optimal machining parameters that influence better surface finish and tool wear [3]. The machining of metal matrix composite with

 Correspondence to

R. Santhanakrishnan

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

8

SPRINGER LINK

Home   Structural Chemistry   Article

Synthesis, structure, Hirshfeld surface analysis, and computational studies of 2-amino-5-nitropyridine-2,4-dinitrophenol cocrystal

Shanmugam Sivaraman, Chellakarungu Balakrishnan, Palusamy Suppuraj & Subbiah Meenakshisundaram ✉

Abstract

A supramolecular cocrystal of 2-ammino-5-nitropyridine (ANP) with 2,4-dinitrophenol (DNP) has been successfully grown by the slow evaporation solution growth technique. The crystal structure of 2-amino-5-nitropyridine-2,4-dinitrophenol (ANDP) was elucidated by the single-crystal X-ray diffraction analysis, and it belongs to a monoclinic system with centrosymmetric space group $P2_1/n$. The bulk phase purity and homogeneity of the material were confirmed by powder X-ray diffraction analysis. The functional groups present in the molecule are identified by FT-IR analysis, and the band gap energy was estimated using diffuse reflectance data by the application of the Kubelka–Munk algorithm. The thermal stability of the compound was investigated by carrying out TG–DTA analysis. Theoretical calculations were performed using the density functional theory method to derive the dipole moment and hyperpolarizability. The high value of first-order molecular hyperpolarizability (β) suggests that it is a potential microlevel NLO candidate.

9

Journal Information   Instructions for Authors   Current Issue   All Issues   e-Submission

O Articles

Experimental investigation and machinability behavior on synthesized titanium composite

R. Vinothkumar[a,*], J. Maniraj[b] and V.S. Thangarasu[c]

[a]Department of Mechanical Engineering, Nehru Institute of Engineering and Technology, Coimbatore, Tamilnadu 641105, India

[b]Department of Mechanical Engineering, Kalaignar Karunanidhi Institute of Technology, Coimbatore, Tamilnadu 641402, India

[c]Department of Mechanical Engineering, Indra Ganesan College of Engineering, Tiruchirappalli, Tamilnadu 620012, India

O Services

Abstract
Introduction
Experimental Method And Material
Result And Discussion
Micro Structure Analysis
Conclusion
Ethics Approval and Consent to Participate
Human and Animal Rights
Funding
Conflict of Interest
Author Contributions
Acknowledgements
References
Pdf

Shared

Citation
Favorite
Twitter
Facebook
LinkedIn
Email

Abstract

The current study aims to describe the experimental examination and ultrasonic machinability behavior of the titanium composite, which is synthesized by a casting technique. Tungsten carbide (WC) works as reinforcing particles and adds 6% of the titanium alloy's weight. Material properties, characterization, and alloy composition are examined by mechanical testing, scanning electron microscopy (SEM), and energy dispersive x-ray analysis (EDAX), respectively. Rate of metal removal (RMR) and surface finish (SF) are evaluated by the variation of ultrasonic machining (USM) input constraints such as power rating, slurry concentration, and grit size. Ultrasonic machining parameters and desired responses are optimized using the Taguchi technique. The ultrasonically machined surface and its microstructural analysis are investigated using atomic force microscopy (AFM). The desirable RMR was attained at a power rating of 450 W, a 20% slurry concentration, and a grit size of 400. Surface finish was reached at a power rating of 150 W, 15% slurry concentration, and grit size of 400

Keywords: Titanium composite, Tungsten carbide, Rate of metal removal, Ultrasonic machining, Atomic force microscopy

O Correspondence to

R. Vinothkumar

Department of Mechanical Engineering, Nehru Institute of Engineering and Technology, Coimbatore, Tamilnadu 641105, India
Tel : +919944121507
E-mail : a...oth...ech@gmail.com

Introduction

Titanium alloy has excellent material properties such as formability, corrosion resistance, and high impact toughness. It is utilized in automobile components, aircraft structural, medical, and marine sectors. Metal removal processes rely on the amplitude of vibration and abrasive concentration. The USM input limitations have enhanced the machining quality characteristics [1]. Controlling the cutting force using ultrasonic vibrations improved the rate of metal removal and surface quality of the machined surface [2, 3]. The rate of metal removal and surface roughness were significantly impacted by vibration and tool feed. Microscopic examination was

TECHNO Press

Thermal-magneto-mechanical stability analysis of singlewalled carbon nanotube conveying pulsating viscous fluid

R. Selvamani, M. Mahaveer Sree Jayan and Marin Marin

Abstract

In this study, the vibration problem of thermo elastic carbon nanotubes conveying pulsating viscous nano fluid subjected to a longitudinal magnetic field is investigated via Euler-Bernoulli beam model. The controlling partial differential equation of motion is arrived by adopting Eringen's non local theory. The instability domain and pulsation frequency of the CNT is obtained through the Galerkin's method. The numerical evaluation of this study is devised by Haar wavelet method (HWM). Then, the proposed model is validated by analyzing the critical buckling load computed in present study with the literature. Finally, the numerical calculation of system parameters are shown as dispersion graphs and tables over non local parameter, magnetic flux, temperature difference, Knudsen number and viscous parameter.

Key Words

dynamic stability; Haar wavelet method; Knudsen number; nonlocal parameter; pulsating nano flow; viscous fluid

Address

R. Selvamani: Department of Mathematics, Karunya University, Coimbatore, 641 114, Tamil Nadu, India
M. Mahaveer Sree Jayan: Department of Mathematics, Indra Ganesan College of Engineering, Tiruchirappalli, 620012, Tamilnadu, India
Marin Marin: Department of Mathematics and Computer Science, Transilvania University of Brasov, Romania

PRINCIPAL
Indra Ganesan College of Engine
IG Valley, Madurai Main R
Manikandam, Trichy-620

All ▼

Q
ADVANCED SEARCH

Conferences > 2023 International Conference... ❓

An Effective Deep Learning based Recommender System with user and item embedding

Publisher: IEEE | Cite This | 📄 PDF

R. Nareshkumar ; K. Agalya ; A. Arunpandiyan ; M. Vijayalakshmi ; V. Ranjani ; A. Ramya   All Authors •••
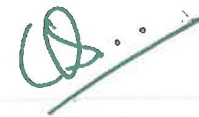
5
Cites in
Papers

78
Full
Text Views

Alerts

Manage Content Alerts
Add to Citation Alerts

Abstract

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

PDF

Abstract: The success of deep learning in a variety of fields has spurred a rush of desire to develop new novel recommender systems. As a result, our research introduces new RecDNN... **View more**

▶ **Metadata**

Abstract:

The success of deep learning in a variety of fields has spurred a rush of desire to develop new novel recommender systems. As a result, our research introduces new RecDNNing, a ground-breaking technique that combines integrated people and products with a deep learning model. There are two phases to the suggested suggestion method. We begin by constructing a unique mathematical version for each human and item, which we refer to as user and item embedding. The embeddings of the goods and users then are aggregated, concatenated, and sent into the deep learning model. In the second phase, the spliced people and items implants are utilised as sources, and the ratings scores are forecasted using the forward propagation technique. The suggested new RecDNNing algorithm outperforms state-of-the-art techniques on MovieLens, according to the results.

Read this article

Contrast based background and foreground channel prior for single image dehazing

N. Kavitha & S. Anand ✉

26 Feb   Published onl   11 44   2023

ABSTRACT

To reduce haze in an image, a contrast-based background and foreground channel prior (BFCP) is proposed in this work. The haze will affect both colour and contrast, and the majority of haze reduction techniques rely on the dark channel prior (DCP) as well as the dark and bright channel priors (DBCP). Even though the DCP and DBCP produced accurate results, they provide a less precise estimate of the haze depth because they do not take into account the local contrast and spikes in the haze image histogram. The goal of this BFCP is to improve the estimation of the transmission map and to correct the spikes in the histogram of the hazed image. By utilizing contrast differences in the background and foreground, BFCP improves transmission map estimates. This method is tested on images of (i) indoor haze, (ii) outdoor haze, (iii) dense haze, (iv) night haze, and (v) fog

13

Read this article

No potential conflict of interest was reported by the author(s).

Additional information

Notes on contributors

N. Kavitha

N. Kavitha graduated B.E (IT) from Bharathidasan University in the year 2004 and M.E (CSE) from Anna University, Chennai in the year 2006 and PhD degree from Anna University, Chennai, India. She is currently working at Indra Ganesan College of Engineering, Trichy, Tamil Nadu, India as a Professor and has 15 years of teaching experience in various subjects in the field of Computer Science. She has published more than 11 research articles in various reputed journals and conferences.

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

14

Biomolecules and microwaves directed fabrication of Ag/CeO$_2$ nanocomposite: a versatile candidate for the degradation of textile dye mixtures and antibacterial studies

M. K. Valsakumari[1] · N. K. Anushkannan[2] · M. Anusuya[3] · Santhosh Kumar Chinnaiyan[4] · Barun Haldar[5] · M. Jayapriya[6] · Krithikadevi Ramachandran[6,7]

Abstract

In this work, Ag/CeO$_2$ nanocomposite was prepared by facile process. Microwave assistance was utilized in accordance with green synthesis to tailor the morphology of the synthesized nanocomposite. *Oryza sativa* L. indica rice extract is elected as bio reductant for the formation of CeO$_2$ nanorods and CeO$_2$/Ag nanocomposite. The adopted synthesis yielded 1D nanorods like structure for CeO$_2$ as well as spherical shaped Ag nanoparticles surmounted the CeO$_2$ nanorods with nanocomposite fabrication. The existence of AgNPs within CeO$_2$ nanorods was confirmed with analytical techniques. The fabricated Ag/CeO$_2$ nanocomposite was applied for its utilization in dyes degradation for water treatment. Individual dye solutions of MB, MO were treated with the Ag/CeO$_2$ nanocomposite eases higher degradation efficiency of 94.84% within 7 min, 88% within 5 min, respectively. The fabricated nanocomposite is well suited for real time dye water treatment discharge from industries, for the reason that its efficacy in degradation with dye mixtures (MO + RhB) was evaluated within 12 min. Bactericidal properties were also elucidated with human pathogens of *B. subtilis*, *V.cholerae* exhibited superficial inhibition values of 25 mm as well 17 mm for the elected microorganisms, again proves the fabricated nanocomposite as potential candidate for environmental applications.

Keywords Green · Microwave · *Oryza sativa* L. indica · AgNPs · Cerium oxide · Dye mixture

✉ M. Jayapriya
priyamanthai54@gmail.com

Krithikadevi Ramachandran
drkrithika.pradeep@gmail.com

Extended author information on the last page of the article

🍂 Springer

Introduction

Degradation of industrial effluents containing the mixture of basic–basic or basic–acidic dyes from the environment is a crucial problem. Aqueous degradation of mixed dyes notably basic and acidic is not reported yet. This may presumptively owe to incompetence control of catalytic reaction at electron basic dyes and hole-acidic dye simultaneously. The efficient reduction of dye molecules can be achieved by (1) lowest unoccupied molecular orbital (LUMO) of basic dyes at the Fermi level of n-type based semiconductors, (2) highest occupied molecular orbital (HOMO) of acidic dyes at the Fermi level of p-type based semiconductors (3) the redox potential of reactive oxygen species (ROS) at the Fermi level of semiconductors [1–3]. Hence, the redox and ROS potentials of dye molecules can be very well matched with the redox potentials of semiconductor nanomaterials using well-derived empirical methodology when the band gap of the material is predicted. However, the semiconductor-based metal oxide nanocatalyst alone is said to be not sufficient for the complete mineralization of azo-dyes and inorganic pollutants [4–7]. Herein, the design and the development of

15

M. K. Valsakumari et al.

50. N.J. Kim, J.Y. Lee, S.M. Yoon, C.B. Kim, B.K. Hur, J Ind Eng Chem 6(412–418), 412–418 (2000)
51. K. Mohajershojaci, N.M. Mahmoodi, A. Khosravi, Biotechnol. Bioprocess Eng. 20(1), 109–116 (2015).
52. N.M. Mahmoodi, Water Air Soil Poll. 224(7), 1–8 (2013).
53. N. Nasrollahi, S. Aber, V. Vatanpour, N.M. Mahmoodi, Compos. B Eng. 154, 388–409 (2018).
54. N.M. Mahmoodi, Environ. Monit. Assess 186(9), 5595–5604 (2014)
55. M. Ovcisi, M.A. Asli, N.M. Mahmoodi, Inorganica Chim. Acta 487, 169–176 (2019).
56. N.M. Mahmoodi, B. Hayati, H. Bahrami, M. Arami, J. Appl. Polym. Sci. 122(3), 1489–1499 (2011).
57. N.M. Mahmoodi, A. Taghizadeh, M. Taghizadeh, M.A.S. Baglou, J. Environ. Chem. Eng. 7(4), 103243 (2019).

Authors and Affiliations

M. K. Valsakumari[1] · N. K. Anushkannan[2] · M. Anusuya[3] ·
Santhosh Kumar Chinnaiyan[4] · Barun Haldar[5] · M. Jayapriya[6] ·
Krithikadevi Ramachandran[6,7]

[1] Department of Chemistry, Mookambigai College of Engineering, Pudukkottai, Tamilnadu 622502, India

    Department of Electronics and Communication Engineering, Kathir College of Engineering, Coimbatore, Tamilnadu 641062, India

    Department of Physics, Indra Ganesan College of Engineering, Trichy, Tamilnadu 620012, India

[4] Department of Pharmaceutics, SriKrupa Institute of Pharmaceutical Sciences, Velikatta, Siddipet, Telangana 502277, India

[5] Department of Mechanical and Industrial Engineering, Imam Mohammad Ibn Saud Islamic University, PO Box: 5701, Riyadh 11432, Kingdom of Saudi Arabia

[6] Department of Petrochemical Technology, University College of Engineering, BIT Campus, Tiruchirappalli, Tamilnadu, India

    Center for Advanced Materials Research, University of Sharjah, Sharjah, United Arab Emirates

PRINCIPAL
Indra Ganesan College of Engineer
IG Valley, Madurai Main Roa
Manikandam, Trichy-620 012

The addition of the   earth   oxide

dispersion stability of Ag nanoparticles [10][11][12][13][14]. The synthesic methods of combining silver with ceria composites have been widely explored, including impregnation, coprecipitation, green synthesis, laser ablation, wet

Preparation and nonlinear optical characterization of Flourine-doped cadmium oxide thin films

V. Saravanan[b], M. Anusuya, Agnes C. Nkele[c], Krithikadevi Ramachandran, A V K Shanthi[e], M.K. Valsakumari, Fabian I. Ezema[g]

[a] Sri MeenatshiVidiyal Arts and Science college, Valanadu, Trichy, Tamilnadu, India
[b] Indra Ganesan College of Engineering, Trichy, Tamilnadu, India 620012
[c] Department of Physics and Astronomy, University of Nigeria, Nsukka, 410001, Enugu State, Nigeria
[d] Centre for advanced materials research laboratory, University of sharjah, UAE
[e] Sri Meenakishi Vidiyal Arts and science college, Trichy, Tamilnadu, India
[f] Mookambikai College of Engineering, Kalamavur, Pudukottai, Tamilnadu, India
[g] Africa Centre of Excellence for Sustainable Power and Energy Development (ACE-SPED), University of Nigeria, Nsukka

ABSTRACT

Undoped CdO films and three different molarities of cadmium oxide (CdO) films were doped with fluorine on glass slides via a chemical spray pyrolysis method. The samples were analyzed using X-ray diffractometry (XRD), scanning electron microscopy (SEM), UV–VIS-NIR spectroscopy, electrical measurements, and Z-scan measurements. XRD measurement revealed better crystallinity with preferred orientation at [111] plane. Nanospheres of varying sizes were obtained from the surface micrographs. The direct band gap energy decreased as the fluorine concentration increased. The film resistivity recorded a decline with increased carrier mobility as the flourine concentration increased. The nonlinear optical absorption coefficient (β) gotten for 0.0003 M, 0.0004 M, and 0.0005 M at 632.8 nm wavelength are 3.83×10^{-3} m/W, 5.7×10^{-3} m/W and 5.48×10^{-3} m/W respectively. The deposited films find potential application in solar cell and optoelectronic devices.

1. Introduction

Transparent Conductive Oxides (TCO) have high optical transmissions, elongated wavelength, and electrically conductive [1, 2]. They include simple binary to complex compounds. Their long range of wavelength is useful in energy-saving low emissive windows to photovoltaics [3, 4]. They find useful applications in touch screens, flat panels, solar cells, and liquid crystals, sensing devices, etc. [5,6]. Cadmium oxide is an efficient TCO material characterized by direct band gap and n-type conductivity. It acquires high value of electrical conductivity and optical transparency in the visible region. Due to the simple cubic rock-salt crystal structure, metallic conductivities, and exceptional carrier concentrations, CdO is getting more attention recently. Cadmium oxide, CdO is an inorganic compound that crystallizes in cubic rock-salt lattice with octahedral cation and anion centers [7]. CdO has highly mobile charge carriers and carrier density that can be tuned [8]. It is usefully applied in optoelectronic devices, electrodes for storage batteries, solar cells, ceramic glazes, etc.

Different methods of preparing cadmium oxide films include sol-gel [9], ion beam sputtering [10], magnetic sputtering [11], chemical vapor technique [12], successive ionic layer adsorption and reaction [13], spray pyrolysis [14], amongst others. Spray pyrolysis is an easy method of depositing thin film materials owing to its simplicity, cheap nature, low cost, and capability of large area deposition [15]. Cadmium oxide has been reported to be doped with several elements like tin [16], indium [17], zirconium [18], and flourine [19]. To reduce the resistivity of n-type semiconductors, doping with non-metals are more effective than doping with metals. Flourine is a preferred dopant because it comprises seven electrons in the outermost orbit that enhance electron conductivity. Doping with flourine enhances the mobile electrons in cadmium oxide, thereby increasing n-type conductivity, good transparency, and reduced electrical resistivity [20]. Improvements in the structural, electrical, and optical properties of CdO upon introduction of fluorine have necessitated this flourine addition. This research studies molarity effect on the structure, optical, morphology, nonlinear optical, and electrical characteristics of undoped an fluorine-doped cadmium

---

* Corresponding authors.
E-mail addresses: (V. Saravanan), (A.C. Nkele).

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

Vibration Analysis of Nonlinear Magneto Flexoelectric Mass Sensor Carbon Nanotube Resting on Elastic Substrate

R. Selvamani[1]*, M. Mahaveer Sree Jayan[2], J. Nicholas George[3] and Farzad Ebrahimi[4]

[1] Department of Mathematics, Karunya Institute of Technology and Sciences, Coimbatore - 641 114, Tamilnadu, India
[2] Department of Mathematics, Indra Ganesan College of Engineering, Tiruchirappalli - 620 012, Tamilnadu, India
[3] Department of Mathematics, Indira Gandhi College of Special Education, Coimbatore - 641 108, Tamilnadu, India
[4] Department of Mechanical Engineering, University of Tehran, North Karegar Ave. Tehran, Iran

Abstract: The present paper is dedicated to study the nonlinear ultrasonic waves in a magneto-flexo-thermo elastic armchair single-walled carbon nanotube with mass sensors resting on polymer matrix. Here the small-scale effect is captured by Eringen's nonlocal elasticity theory. After developing the formal solution of the mathematical model consisting of partial differential equations, the frequency equations have been analyzed numerically by using the nonlinear foundations supported by Winkler-Pasternak model. The solution is obtained by ultrasonic wave dispersion relations. Parametric work is carried out to scrutinize the influence of the nonlocal scaling, magneto-flexoelectric mechanical loadings, foundation parameters, attached mass, various boundary condition and length on the dimensionless frequency of nanotube. It is noticed that the boundary conditions, nonlocal parameter, attached mass and tube geometrical parameters have significant effects on dimensionless frequency of nanotubes.

Keywords: Nonlocal elasticity; Flexoelectric; Armchair; Mass sensor; CNT; Euler-beam theory; NEMS.

1 Introduction

The advancement of nano structures has been enhanced through the coupling of magneto-flexo-thermo-elasticity in armchair single-walled carbon nanotube(SWCNT). Using MFT based nano materials in polymer matrix as surrounding medium to generate better efficiency of embedded nano structures has been attracting great research attention in recent years (Eb.....l..d O......e (20..)). Due to the arrival of nonlocal continuum theory, the nonlocal Euler-Bernoulli and Timoshenko beam models enable the assessment of scaling effect on a carbon nanotube's(CNT's) dispersion relations. .... (20...), ...c (20..), Eringer (20..), ...(19..) and Eringen (10..) elaborated the nonlocal continuum field theories and validated in different nano materials. ....g (2..) carried out the nonlocal continuum models to investigate the small scale effect on elastic buckling of CNTs and referred the impact of small scale effect on vibration modes. .. T...g (20..) has discussed the nonlinear free vibration of double walled CNTs based on the nonlocal elasticity theory. They found that the surrounding elastic medium plays an important role in the nonlinear propagation and the amplitude development. .. S....... (1...) investigated the nonlinear harmonic vibration of a piezoelectric-layered nanotube conveying fluid flow and concluded that the effects of small scale parameter is quite considerable in the frequency responses of the system in the presence of fluid environment. .. A.... (20..) presented the forced vibration of fluid conveying CNTs considering thermal effect and nonlinear foundations. .. .. (2...) read the forced vibration of fluid conveying CNTs considering thermal and nonlinear vibrational behaviour of homogenous nanobeams.

.. S.....y..i (20..) studied the vibrational behaviour of a CNT conveying magnetic fluid subjected to a longitudinal magnetic field. Y. Z...r (20..) verified the free vibration of viscoelastic nanotube under longitudinal magnetic field and indicated the fact that the first natural frequency increases slightly with the increase of the nonlocal parameter, while higher natural frequencies decrease significantly with the increase of the nonlocal parameter. .. ... (20..) explored the exact modes for post-buckling characteristics of nonlocal nanobeams in a longitudinal magnetic field. Eb....... and ...... (20..) investigated the propagation of waves in nonlocal porous multi-phase nano crystalline nanobeams via longitudinal magnetic field effect. They pointed out the concept that the wave frequencies and phase velocities may increase or decrease with the reduction in the inhomogeneity magnitudes. .. L. (20..) illustrated the wave propagation in viscoelastic SWCNTs with surface effect under magnetic field based on nonlocal strain gradient theory and concluded with the importance of damping coefficient. .. .. (20..) discussed the longitudinal magnetic field effect on wave propagation of fluid-conveyed SWCNT using Knudsen number and surface considerations. .. ....g (20..) studied the vibration analysis of horn-shaped SWCNTs embedded in viscoelastic medium via a longitudinal magnetic field. A two scale coefficient model is developed to study the propagation of longitudinal stress waves under a longitudinal magnetic field by ...... (20..) via a unified nonlocal elasticity theory. .. ...g (20..) validated the nonlocal elastic shell model for studying longitudinal waves in SWCNT and found that the microstructure and the coupling of the longitudinal wave and radial motion play a vital role in the dispersion of waves. .... (20..) explored the magneto-thermal primary frequency response analysis of CNT considering surface effect under different boundary conditions. They inferred that the increase in longitudinal magnetic field leads to shifting the backward jumping at higher excitation amplitude values for different

SPRINGER LINK

Log in

☰ Menu   🔍 Search   🛒 Cart

Hydrogen-bonded structure and optical nonlinearities in the proton–transfer complex of 8-hydroxy-5-nitroquinoline with p-toluenesulfonic acid

Structural Chemistry

Shanmugam Sivaraman, R. Markkandan, Kasinathan Pandiarajan & Subbiah Meenakshisundaram ✉

👁 121 Accesses   Explore all metrics →

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

Abstract

Single crystals of 8-hydroxy-5-nitroquinolinium p-toluene sulfonate (HNT) were grown by the slow evaporation solution growth technique. The structure was elucidated by single-crystal X-ray diffraction analysis, and the crystal belongs to the monoclinic system with the space group C2/c. The crystallinity of HNT was studied by powder X-ray diffraction analysis. The presence of functional groups was determined by FT–IR spectral analysis. The band gap energy is estimated by the application of the Kubelka–Munk algorithm. The charge transfer characteristic of the compound was studied by frontier molecular orbital (FMO) analysis. The first-order hyperpolarizability of the HNT

Author information

Authors and Affiliations

Department of Chemistry, Annamalai University, Tamil Nadu, Annamalainagar, 608002, India

Shanmugam Sivaraman, R. Markkandan & Subbiah Meenakshisundaram

Department of Chemistry, Indra Ganesan College of Engineering, Tamil Nadu, Manikandam, Tiruchirapalli, 620 012, India

Shanmugam Sivaraman

Department of Chemistry, Thiru A. Govindasamy Government Arts College, Tindivanam, Tamil Nadu, India

R. Markkandan

Department of Electronics and Communication Engineering, Mount Zion College of Engineering and Technology, Pudukkotai, Tamil Nadu, India

Kasinathan Pandiarajan

Contributions

S S: data curation, investigation, visualization, validation, writing, original draft. K P: data curation, investigation; SP M: review, editing, and supervision. The final version of the manuscript submitted was approved by all the authors.

Corresponding author

Correspondence to Subbiah Meenakshisundaram.

Ethics declarations

Competing interests

The authors declare no competing interests.

Additional information

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

RETRACTION NOTE

Retraction Note to: Brain tumour classification using saliency driven nonlinear diffusion and deep learning with convolutional neural networks (CNN)

K. Uthra Devi[1] · R. Gomathi[2]

Retraction note to:
Journal of Ambient Intelligence and Humanized
Computing (2020) 12:6263–6273
https://doi.org/10.1007/s12652-020-02200-x

The Editor-in-Chief and the publisher have retracted this article. This article was submitted to be part of a guest-edited issue. An investigation concluded that the editorial process of this guest-edited issue was compromised by a third party and that the peer review process has been manipulated. Based on the investigation's findings the Editor-in-Chief therefore no longer has confidence in the results and conclusions of this article.

The authors have not responded to correspondence regarding this retraction.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

✉ K. Uthra Devi
  uthrak17@gmail.com

[1] Department of Information Technology, Indra Ganesan College of Engineering, Trichy, Tamil Nadu, India

[2] Department of Electronics and Communication Engineering, University College of Engineering-Dindigul Campus, Tamil Nadu, Dindigul, India

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

🙋 Springer

21

Article

Investigation of Dual–Pass Inclined Oscillating Bed Solar Dryer for Drying of Non-Parboiled Paddy Grains

Ganapathy Ponnambalam Arul [1], Selvam Thulasi [2,*], Pitchaipillai Kumar [3], Veeranan Arunprasad [4], Saboor Shaik [5], Mohamed Abbas [6,7], Parvathy Rajendran [8,9], Sher Afghan Khan [10] and C. Ahamed Saleel [11]

[1] Department of Mechanical Engineering, Indra Ganesan College of Engineering, Srirangam 620012, Tamil Nadu, India; arul4577@gmail.com
[2] Department of Mechanical Engineering, University College of Engineering, Thirukkuvalai, Nagappattinam 610201, Tamil Nadu, India
Department of Mechanical Engineering, Ariyalur Engineering College, Ariyalur 621704, Tamil Nadu, India; kumarjpc@gmail.com
[4] Department of Mechanical Engineering, Theni Kammavar Sangam College of Technology, Koduvilarpatti, Theni 625534, Tamil Nadu, India; arunprasad2978@gmail.com
School of Mechanical Engineering, Vellore Institute of Technology, Vellore 632014, Tamil Nadu, India; saboor.nitk@gmail.com
Electrical Engineering Department, College of Engineering, King Khalid University, P.O. Box 394, Abha 61421, Saudi Arabia; mabas@ku.edu.sa
Computers and Communications Department, College of Engineering, Delta University for Science and Technology, Gamasa 35712, Egypt
[9] School of Aerospace Engineering, Engineering Campus, Universiti Sains Malaysia, Nibong Tebal 14300, Pulau Pinang, Malaysia; aeparvathy@usm.my or parvathy.rajendran@firstcity.edu.my
Faculty of Engineering & Computing, First City University College, Bandar Utama 47800, Selangor, Malaysia
Department of Mechanical Engineering, Faculty of Engineering, International Islamic University, Kuala Lumpur 53100, Selangor, Malaysia; sakhan06@gmail.com
Department of Mechanical Engineering, College of Engineering, King Khalid University, P.O. Box 394, Abha 61421, Saudi Arabia; ahamedsaleel@gmail.com
* Correspondence: thulasi_oxford@yahoo.com

Abstract: This Paper determines an experimental study of dual-pass solar dryer with a bed tilt of 0.5° and varying oscillating frequency of drying chamber namely 1.25, 1.75 and 2.25 Hz for drying an agricultural produce namely non–parboiled paddy grains. The oscillations and bed tilt are provided to move the grains from entry to exit of the top bed and moving down to bottom bed and finally exits from the dryer. The new technology has been used in the solar dryer for drying of agricultural produce such as non-parboiled paddy grains to increase the quality and to decrease the loss of the dried produce. The present dryer model was used for drying 45 kg of non–parboiled paddy grains from 19% (w.b) to the approved range of 12–14% of moisture content obtained in a single experimental day. The dried paddy grains obtained an average moisture content are 13.03, 13.22 and 13.51% at the frequency of oscillation of 1.25, 1.75, 2.25 Hz, respectively. The maximum thermal and pick-up efficiency of the model were obtained at 1.00 p.m. in all cases. For the frequency of oscillation of 1.25, 1.75 and 2.25 Hz, the maximum dryer thermal efficiency was 44.47, 43.39 and 41.39%, respectively, and the maximum pick–up efficiency was 80.41, 79.19 and 76.21%, respectively. The optimum drying performance was obtained at the oscillating frequency of 1.75 Hz with the bed tilt of 0.5°.

Keywords: dual–pass oscillating bed solar dryer; dual–pass flat plate solar collector; thermal efficiency of the dryer; pick–up efficiency; moisture content; non–parboiled paddy grains

Research Article

Study of Mechanical Performance of BN Grafted Graphene Oxide Hybrid Aerogel for Polypropylene Composites

P. Nishanth,[1] G. Vimala,[2] L. Girisha,[3] M. Mahaveer Sree Jayan,[4] K. Balamanikandasuthan,[5] A. S. Rajesh,[6] V. K. Girish,[7] R. Thandaiah Prabu,[8] and Endalkachew Mergia Anbese [9]

[1]*Department of Aeronautical Engineering, East West College of Engineering, Bengaluru, Karnataka 560064, India*
[2]*Department of Chemistry, Chellammal Women's College, Guindy, Chennai, Tamil Nadu 600032, India*
[3]*Department of Mechanical Engineering, PES Institute of Technology and Management, Shivamogga, Karnataka 577205, India*
[4]*Department of Mathematics, Indra Ganesan College of Engineering, Tiruchirappalli, Tamil Nadu 620012, India*
[5]*Department of Mechanical Engineering, Velammal Institute of Technology, Chennai, 601204 Tamil Nadu, India*
[6]*Department of Mechanical Engineering, JSS Science & Technology University, Mysuru, Karnataka 570006, India*
[7]*Department of Mechanical Engineering, Panimalar Polytechnic College, Chennai, Tamilnadu, India*
[8]*Department of Electronics and Communication Engineering, Saveetha School of Engineering, SIMATS, -602105, Chennai, Tamilnadu, India*
[9]*Department of Civil Engineering, Ambo University, Ambo, Ethiopia*

Correspondence should be addressed to Endalkachew Mergia Anbese; endalkachew.mergia@ambou.edu.et

Boron nitride-strengthened polymer matrix composites based on 3-dimensional porous materials are a considerable problem to develop. GO-BN aerogel (GO-BN) has been generated using a unique method for manufacturing large-scale 3D BNs and graphene oxide (GO) aerogels. Propylene was then added to the aerogel and polymerized in situ to create GO–BN/PP nanocomposites. Afterwards, the outcomes show that BNs and GO-BN were successfully established and that the 3D outlines using GO-BN aerogel have outstanding mechanical properties. Around 1% of the nanocomposite was used in its construction. This aerogel's thermal conductivity was 0.135 W/mK, and its mechanical properties were greatly improved over those of pristine PP, with increases of 10.12 percent in tensile strength and 48.4 percent in flexural strength and 61.5 percent in compression strength. They may now be produced in big quantities using this simple preparation procedure.

1. Introduction

A variety of industries, such as aerospace, military, and national security, as well as some engineering materials, have explored and deployed nanocomposites for their low weight and excellent performance [1, 2]. Nanomaterial dispersion within the polymer matrix can be improved with the use of 3D GO aerogels, which allow BNs to scatter equally in the aerogel wall before filling the matrix with the appropriate polymer material [3–5]. In prior investigations, GO-BN aerogels were made by physically mixing scattered BNs with

the GO. However, grafting BNs onto the surface of GO has only been studied in a few methodical ways [6, 7]. Because of this, it is critical to investigate how the GO aerogel's BN structure and state affect the nanocomposites properties [8].

For nanocomposites, the application of three dimensional aerogel-strengthened filler has substantially enhanced the rough distribution of fillers and effectually improved their behavior [9]. According to [10, 11], the mechanical characteristics of nanocomposites made from graphene aerogels and poly methyl methacrylate were much better than those made using the usual blending and dispersion

The impact of boron nitride (BN) on tribological behaviour of AZ84 magnesium matrix composites

Rupesh Kushwah [a], Mahaveer Sree Jayan [b] ⊠, H. Kanagasabapathy [c], T.Ch. Anil Kumar [d] ⊠, Shubhajit Halder [e], Naziya Begum [f], S. Rajkumar [g] ⊠

[a] Department of Chemistry, Government SSA PG College, Sihora, Jabalpur, Madhya Pradesh 438225, India

[b] Department of Mathematics, Indra Ganesan College of Engineering, Trichy 620 012, India

[c] Department of Mechanical Engineering, PSR Engineering College, Sivakasi 626140, India

[d] Department of Mechanical Engineering, Vignan's Foundation for Science Technology and Research, Vadlamudi, Guntur Dt., Andhra Pradesh 522213, India

[e] Department of Chemistry, Hislop College, Nagpur, Maharashtra 440001, India

[f] Department of Chemistry, College of Natural and Computational Science, Debre Berhan University, Debre Berhan 445, Ethiopia

[g] Department of Mechanical Engineering, Faculty of Manufacturing Institute of Technology, Hawassa University, Ethiopia

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Show less ∧

∝ Share ❞ Cite

Abstract

In this experimental work, evaluate the effect of BN on AZ84 Magnesium alloy composite. The results of testing exposed the higher tribological properties of the composites compared to the unreinforced alloy due to the enhanced BN particle. The BN particulate concentration increased, the wear resistance of composites increased, and wear rate decreased significantly compared to material matrix alloys. On a mechanical insulation layer which prevents metal contact the surface has a mechanically mixed oxygen and iron layer. With an increased BN content the coefficient of friction is decreased and reached minimum at its 9 vol% BN.

Introduction

Magnesium is considered a highly attractive material for a wide range of uses combined with ease of processing, casting, formability and recycling. In recent years research has taken place on AZ84 magnesium alloy. Mg32 (Al, Zn) 49 is an essential reinforcement phase of AZ84 magnesium alloy, which has 535 °C, a higher thermal stability than Mg17Al12, a major reinforcement stage of magnesium alloy AZ91, with a melting point of 535 °C. In comparison with magnesium alloys in AZ series, the resistance to creeping and casting is better in Magnesium alloy AZ84. The

Improved Priority Aware Mechanism for Enhancing QoS in MANET

Mohan Prabhu Nallayam Perumal[1] · C. S. Kanimozhi Selvi[2]

Abstract

Priority Aware mechanism utilizing connection-oriented approach doesn't offer uniform throughput and low end-to-end delay when the velocity of mobile nodes is extended beyond 2 m/s. On the other hand, when a connection-less approach is utilized, it offers significantly less QoS to the admitted streams when compared to the connection-oriented approach. Hence it is unsuitable for non-data loss and delay sensitive application. In this paper, an improved priority aware mechanism is proposed and incorporated over the standard Ad hoc On-Demand Distance vector routing protocol (IPA-AODV) to address the aforesaid issue. In IPA-AODV, if any forwarding node's velocity is more than velocity threshold, it is restricted to participate in the routing process. Further, when the aggregate value of active streams bandwidth utilization exceeds the data rate threshold low precedence stream will be suspended. For experimental setup, five contending streams of TCP connection and CBR traffic are chosen in ns2, which explicitly express their data rate and with distinct precedence value to simulate the behavior of non-data loss applications such as financial applications. In another trial, UDP connection is given highest precedence along with CBR traffic to simulate the behavior of delay-sensitive applications such as VOIP, Video on Demand (VoD) etc. From the simulation outcomes, IPA-AODV outflanks AODV and PA-AODV protocol concerning throughput, packet delivery ratio (PDR), and end-to-end delay (EED). IPA-AODV offers 4.5% average increase in throughput when compared with AODV, 78.08% and 156.77% reduction in average end-to-end delay and 0.075% and 0.19% average increase in PDR when compared with PA-AODV and AODV respectively.

Mohan Prabhu Nallayam Perumal
mohanmcesc2010@gmail.com

C. S. Kanimozhi Selvi
kanimozhi@kongu.ac.in

[1] Indra Ganesan College of Engineering,   India

Kongu Engineering College, Erode, India

Springer

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

RJC

GNP-COPPER HEXACYANOFERRATE MODIFIED ELECTRODE FOR VOLTAMMETRIC CHARACTERIZATION AND BEHAVIOR IN THE PRESENCE OF BUTYLATED HYDROXYANISOLE

A. Leostandly[1, ✉], G. Sivasankari[2] and S. Boobalan[3]

[1]Department of Chemistry, St. Joseph's College (A), Trichy-02, Tamilnadu, India

[2]Department of Chemistry, Cauvery College for Women (A), Trichy-18, Tamilnadu, India

[3]Department of Chemistry, Indra Ganesan College of Engineering, Trichy-12, Tamilnadu, India

✉Corresponding Author: gsivasankari.chem@cauverycollege.ac.in

ABSTRACT

The modification of a graphite electrode with copper hexacyanoferrate as mediator is discussed how to determine Butylated Hydroxyanisole (BHA). Copper hexacyanoferrate modified electrode was equipped by dipping of metal solution on a GNP-L-Cys-wax (gold nano particle- L-cysteine) composite graphite electrode. The chemically modified electrode's electrochemical behavior was assessed by FESEM, UV and electrochemical studies etc. The cyclic voltammogram obtained by applying the potential flanked by 200 mv and 900mv using 0.1 M KNO_3 solution showed a pair of redox peaks. BHA exists to undergo electrocatalytic oxidation at the working electrode. The feat of the working electrode in static and dynamic conditions to be appraised. The rectilinear current retort of the working electrode under both conditions for the determination of BHA confirms its utility as an amperometric sensor for batch and flow systems. The working electrode preserve is simply erect by a simple immobilization method and has the advantages of good dependableness, hasty retort and astonishing firmness. The use of the modified electrode as an amperometric sensor for determining BHA in commercial samples has been proposed.

Keywords: Copper hexacyanoferrate, BHA, GNP, Wax Composite Electrode and CME.

INTRODUCTION

In recent years, the determination of compounds of biological interest at reduced overpotentials is the primary goal of scientists of electrochemistry. Chemically Modified Electrodes (CMEs) have gained importance as analytical probes for the amperometric detection of natally relevant chemicals. This is dependent on the intrinsic selectivity attained in CMEs as a result of an intentional change of the electrode surface.[1] The working electrodes accordingly offer a substitute to the conventional ones with the additional advantage of reducing the overpotential. Working electrodes be primarily based on the immobilization of redox species on the surface of the electrode. These redox sorts arbitrate the transmission of electrons from the electrode to the substrate, diminish the overpotential of intention substrates and improve sensitivity and exactitude.[2] Accessory of the electroactive sort to an electrode can be achieved by electrodeposition, surface assimilation, ensnare them hooked on polymer matrices and mechanically transferring them onto the solid electrode façade.[3] Diverse inorganic complexes dole out as modifying agents.[4] An imperative faction of inorganic complexes that have been used for electrode modification is the transition metal hexacyanoferrates. Owing just before their affluent electrochemical possessions, they provide a wide range of applications in assorted fields.[5-10] A numeral cramming established on working electrodes with metal hexacyanoferrates have earlier been reported for the determination of analytes of environmental and biological interests.[11-19]

BHA (Butylated hydroxyanisole) is a chemical antioxidant that is used as a preservative in food, food sleeves, animal feed, and medicinal products. Examine, foundation, into rubber followed by gasoline crop, it is also a preservative used for vitamin A. It has been accompanied by matured fats and fat content foods for its antioxidant assets. It is expansively worn because of its soaring thermal stability and ability

An improved DFA based kernel ensemble learning machine using local feature representations for face recognition

Kavitha N[a,*], Ruba Soundar K[b] and Sathis Kumar T[c]

[a]AP/CSE Department, Indra Ganesan College of Engineering, Trichy, Tamil Nadu, India
[b]CSE Department, P.S.R Engineering College, Sivakasi, Tamil Nadu, India
[c]AP/CSE Department, Saranathan College of Engineering, Trichy, Tamil Nadu, India

Abstract. In recent years, the Face recognition task has been an active research area in computer vision and biometrics. Many feature extraction and classification algorithms are proposed to perform face recognition. However, the former usually suffer from the wide variations in face images, while the latter usually discard the local facial features, which are proven to be important for face recognition. In this paper, a novel framework based on merging the advantages of the Key points Local Binary/Tetra Pattern (KP-LTrP) and Improved Hough Transform (IHT) with the Improved DragonFly Algorithm-Kernel Ensemble Learning Machine (IDFA-KELM) is proposed to address the face recognition problem in unconstrained conditions. Initially, the face images are collected from the publicly available dataset. Then noises in the input image are removed by performing preprocessing using Adaptive Kuwahara filter (AKF). After preprocessing, the face from the preprocessed image is detected using the Tree-Structured Part Model (TSPM) structure. Then, features, such as KP-LTrP, and IHT are extracted from the detected face and the extracted feature is reduced using the Information gain based Kernel Principal Component Analysis (IG-KPCA) algorithm. Then, finally, these reduced features are inputted to IDFA-KELM f r performing FR. The outcomes of the proposed method are examined and contrasted with the other existing techniques to confirm that the proposed IDFA-KELM detects human faces efficiently from the input images.

Keywords: Face recognition, kernel ensemble learning machine, adaptive kuwahara filter, improved dragonfly algorithm

1. Introduction

Face recognition (FR) has emerged as one of the most extensively studied research topics that span multiple disciplines, such as pattern recognition, signal processing, and computer vision [1]. Many governments throughout the world are also interested to have face recognition systems due to its numerous important applications in identity authentication, security access control, intelligent human-computer interaction, and automatic indexing of image and video databases [2]. However, they remain unsuccessful due to poor recognition rate, i.e., recognizing a person in real-time, due to various factors [3]. To improvise face recognition, various techniques have been developed by researchers in the field of preprocessing, feature extraction, feature selection, and classification in order to obtain efficient results.

The pre-processing takes place prior to any principal component analysis of training data and before the projection of any test images into face space [4]. Various image processing techniques can be used to enhance the captured image as well as increase the recognition rate. Image normalization

*Corresponding author. N. Kavitha, AP/CSE Department, Indra Ganesan College of Engineering, Trichy, Tamil Nadu, India. E-mail: nkavithamail@gmail.com.

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road

Hybridization of Mean Shift Clustering and Deep Packet Inspected Classification for Network Traffic Analysis

Sathish A. P. Kumar[1] · A. Suresh[2] · S. Raj Anand[3] · K. Chokkanathan[4] · M. Vijayasarathy[5]

Abstract

Network traffic processing is an automated method for arranging and optimizing network traffic, based on the parameters. The traffic data is gathered to begin the study of the component of network traffic. Subsequently, the clustering and grouping process is carried out to evaluate network traffic. Continuous evaluation of the patterns of network traffic remained a daunting challenge during traffic classification. However, existing approaches have not been able to reduce time consumption and improve clustering accuracy for network traffic analysis. In order to resolve these problems, a Density-based Mean Shift Clustering and Deep Packet Inspection Classification (DMSC-DPIC) methodology is implemented to perform an efficient network traffic analysis. In addition, the classification model DPI has been developed to identify network Traffic by payloading data points with minimum time as real as well as non-real-time traffic. In the DPI classification model, data points are grouped into various groups by analyzing associated points throughout the session. The experimental assessment of the proposed methodology DMSC-DPIC is carried out with the CAIDA anonymized Internet Traces Dataset and achieves improved efficiency compared with state-of-the-art work in terms of clustering precision, classification time and communication overhead.

Keywords Network traffic analysis · Mean shift clustering · Probability density function · Deep packet inspection · Data points

1 Introduction

Network Traffic analysis is an essential process for efficient troubleshooting and resolving issues to assist the network services. Network Traffic analysis is the process of interrupting and examining the messages to identify the data from patterns. Self-Learning Classifier for Internet Traffic (SeLeCT) algorithm was introduced in [1] for discovering classes of traffic through guaranteeing the network visibility. SeLeCT algorithm identifies classes of traffic. The algorithm failed to estimate the network patterns to perform traffic classification.

✉ M. Vijayasarathy
vijayasarathynitt@gmail.com

Extended author information available on the last page of the article

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

 Springer

SPRINGER LINK

Further Advances in Internet of Things in Biomedical and Cyber Physical Systems 175–186

Chapter

A DCNN Based Real-Time Authentication System Using Facial Emotions

Mun

Chapter | February 2021

396

Part

Abstract

The purpose of this work is to design a real-time authentication system using Deep Convolutional Neural Networks (DCNN) based on facial emotions that could be used for security checks in public places. The design of the system is conducted in five stages. Initially, facial expression images for the seven categories are captured preprocessed and

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

human-robot interaction. In: IEEE Transactions
on Systems. Man. and Cybernetics: Systems.
(TIPTEKNO), pp. 1–4. IEEE (2019)

Author information

Authors and Affiliations

Department of ECE, Indra Ganesan College of
Engineering, Manikandam, Trichy. 620012, India

A. Praveen Edward James

School of Engineering, Taylor's University,
Taylor's University Lakeside Campus, No. 1,
Jalan Taylor's, 47500, Subang Jaya, **Selangor**
Malaysia

Mun Hou Kit

Chandy College of Engineering, Mullakadu,
Tuticorin, 628005, India

T. Anthony Snow Patta

Corresponding author

Correspondence to A. Praveen Edward Jan

Editor information

Editors and Affiliations

Department of Automatics and Applied
Software, Aurel Vlaicu University of Arad, Arad,
Romania

Valentina E. Balas

Department of Computer Science and
Engineering, CMR Institute of Technology
(Autonomous), Hyderabad, Telangana, India

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

30

ORIGINAL RESEARCH

Analyzing uncertainty in cardiotocogram data for the prediction of fetal risks based on machine learning techniques using rough set

E. Kannan[1] · S. Ravikumar[1] · A. Anitha[2] · Sathish A. P. Kumar[3] · M. Vijayasarathy[4]

Abstract

The key focus of this venture is to evaluate the calibration of classifiers built on rules, trees, and functions by exploring the uncertain information that exists in the Cardiotocography (CTG) dataset. Classification is imperative in diagnosing the health of the foetus and new born specifically in critical cases. It facilitates the obstetricians in acquiring the information of foetal well-being in pregnancy, substantially for the woman with complications. The research aims to classify the CTG data points into normal, suspicious and pathologic. Rules, trees, and function-based classifiers are applied in machine learning for predicting the health of the new born. Particle Swarm Optimization (PSO) is used in pre-processing for selecting the relevant features. Rough set approximations are exploited in extracting the uncertain information from the data set. The result reveals the importance of useful information present in the uncertain data during classification. In this paper, the overall highest accuracy is displayed by Random Forest classifier with 99.57% and a tree-based approach has shown its supremacy over other approaches.

Keywords Cardiotocography · Optimization Feature selection · Classification · Machine learning · Rough set PSO

M. Vijayasarathy
vijayasarathi2k@gmail.com

E. Kannan
ek081966@gmail.com

S. Ravikumar
ravikumars.086@gmail.com

A. Anitha
amitaanandakumar@gmail.com

Sathish A. P. Kumar
sathish.acad01@gmail.com

Department of Computer Science and Engineering, School of Computing, SRM Institute of Science and Technology, Kattankulathur, Chennai, Tamil Nadu, India

Post Graduate Department of Computer Science, D. K. M. College for Women, Vellore, Tamil Nadu, India

Department of Electrical Engineering and Computer Science, Cleveland State University, Cleveland, OH, USA

Department of Electronics and Communication Engineering, Indra Ganesan College of Engineering, Manikandam, Tiruchirappalli District, Tamil Nadu, India

1 Introduction

Cardiotocography (CTG) is a ubiquitous technique that employs recording the foetal heartbeat and Uterine Contractions (UC) in the third trimester (ie. 28th week) of pregnancy (Cesarelli et al. 2009; Smith et al. 2019). During pregnancy, obstetricians require a means of monitoring the foetal heart beat for tracking foetal distress. The widest spread method is quantifying the Foetal Heart Rate (FHR). The instrument used to measure FHR is commonly called as Cardiotocograph and alternatively identified as Electronic Foetal Monitor (EFM) (Macones et al. 2008).

CTG monitor is widely used for evaluating the health of the foetus. A most common application of CTG monitoring is in the antenatal period of pregnancy for assessing the well-being of the foetus. The primary objective of using CTG is to assist and helps as a biological indicator for diagnosing the foetus for chronic, incessant hypoxia and acquiring knowledge about the risk of developing hypoxia (Fergus et al. 2016). Obstetricians can observe the following indicators from CTG records for diagnosing foetal risks (Cömert. et al. 2019). Baseline heart rate > 180 or < 100 bpm (beats per minute). Fluctuation persists in the heart rate < 5 bpm for > 90 min called variability. The rise

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620

Springer

Thermal Image–Based Object Classification for Guiding the Visually Impaired

✉,

G Balakrishnan

Pub   Department of CSE, Indra Ganesan College of   ✉ ▼
      Engineering, Trichy 620012, Tamil Nadu, India

A   Search for other works by this author on:

T . . . . ging technology in image processing applications such as face recognition, fault detection, object detection and classification, navigation, etc. Owing to its versatility, it has been an influential concern for many researchers recently. Thermal sensors have proficiency of sensing the object heedless of the lighting conditions. Due to this added leverage of thermal sensors, we propose a novel scheme for spotting the object, which is targeted by a specific thermal camera. The accomplishment of this task paves the opportunity for guiding the visually impaired (VI) people within the indoor environment adequately. Augmenting the obstacles in the user's path is requisite for the VI people's navigation. The image of the object is captured using the thermal camera and pre-processed for enhancing the quality of that image by suppressing the background, tuning the colour channels, etc. Noise in the thermal image is eradicated to a certain extent using Gaussian smoothing process followed by Markov random field for constructing the Gaussian mixture model. Further, the pattern is deduced and classified based on the least-squares support-vector machine. The experiment is tested for disparate timing and distance, and the optimum solution is obtained. To enact the accurate outcome with short estimation period in affordable size and cost is the main added logic behind this fused concept.

32

ORIGINAL RESEARCH

Brain tumour classification using saliency driven nonlinear diffusion and deep learning with convolutional neural networks (CNN)

K. Uthra Devi[1] · R. Gomathi[2]

Abstract

Experts notice and classify various Regions of Interest (ROI) manually for identification, analysis, and development of a treatment. To overcome errors and discrepancies of the data in this state, automated analysis is utilized. A novel method for the classification of MRI brain tumor is proposed in this paper using the saliency driven image representation and CNN based classification with optimization. Initially, the preprocessing on MRI images is carried out using canny edge detection algorithm followed by saliency driven image representation using modified minimum barrier distance and nonlinear diffusion at multiple level. Finally, feature extraction and image classification is carried out by CNN and the optimization by ADAM optimizer. The implementation is carried out and the results are evaluated which outperforms the earlier methods.

Keywords Edge detection · Minimum barrier distance · Saliency · Non-linear diffusion · CNN classification · ADAM optimization

1 Introduction

In MRI images noticing, detecting and classifying the affected brain area is a dizzy and time exhausting job. Neural human brain structure is differentiated and clarified by MRI technique. MRI technique has various imaging techniques to examine and observe the inside structure of the human brain and also gives various features like advanced differentiation of soft tissue, great resolution, and improved contrast. Classification of either standard/diseased MRI brain is essential in the medical field, especially when MRI concentrates on brain's soft tissue (Shi et al. 2010) and produces a lot of information.

By combining various techniques, which all those require a pre-processing step for accuracy of identifying tumor regions becomes more feasible. In order to stabilize the impact of magnetic field in registration of homogeneities and skull-stripping most of the algorithms make use of the

K. Uthra Devi
uthrak17@gmail.com

1 Department of Information Technology, Indra Ganesan College of Engineering, Trichy, Tamil Nadu, India

2 Department of ECE, SBM College of Engineering and Technology, Dindigul, Tamil Nadu, India

Nadu, Dindigul, India

pre-processing process for image enrichment like deblur, normalize and balance of bias field (Bauer et al. 2013). There occurs other task to the algorithms, especially when the collection of information is obtained from various scanners of MRI and those are fed to the algorithm's input. This is because MRI images collected from multi intensities as we know MRI image intensities are not same along MRI scanners. The other issues are MRI that produces various kinds of noise, differences in inter-slice intensity and tumor related problem occurring during aligning, registering, etc. To eliminate these issues, various pre-processing procedures have to be done.

The background content doesn't contain any valid data and it also leads to take much time to process. At the same point, it is essential to enhance the processing rate and reduced use of memory. Therefore, Abdel-Maksoud et al. (2015) specified that non-essential areas are not considered for processing.
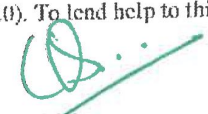
The recent advancement in the imaging system has led to the increasing demand for the new methods and algorithms that suits precise automatic detection of brain tumor in medical field. Many scientists' propagate MRI brain images for presenting multiple automated methods to discover and classify tumors in Deep Learning Convolutional Neural Network which are specified in Devunooru et al. (2020). To lend help to this requirement, deep

Springer

Feature extraction based on empirical mode decomposition for automatic mass classification of mammogram images

Vaijayanthi Nagarajan,[a,*] Elizabeth Caroline Britto,[b] Senthilvel Murugan Veeraputhiran[c]

[a]Indra Ganesan College of Engineering, Department of Electronics and Communication Engineering, Manikandam, Tiruchirappalli, India, 620 012

[b]IFET College of Engineering, Department of Electronics and Communication Engineering, Valavanur, Villupuram, India, 605 108

[c]KAPV Government Medical College Hospital, Department of Radiology, Collector's Office Road, Tiruchirappalli, India, 620 001

Abstract. Breast cancer is one of the major health problems that leads to early mortality in women. To aid the radiologists, computer aided diagnosis provides a second opinion for the detection and classification of breast cancer. In this paper, two texture feature extraction methods using Empirical Mode Decomposition (EMD) have been proposed to classify the masses in mammogram images into benign or malignant. The first feature extraction method is based on Bi-dimensional Empirical Mode Decomposition (BEMD). On performing BEMD on Region of Interest (ROI) of mammogram image, the ROI is decomposed into a set of different frequency components called Bi-dimensional Intrinsic Mode Functions (BIMFs). Gray Level Co-occurrence Matrix (GLCM) and Gray Level Run Length Matrix (GLRM) features are extracted from these BIMFs and are given as input to the classifier for classification into benign or malignant. Due to the mode mixing problem that exists in BEMD, BIMFs obtained from BEMD are less orthogonal to each other. To overcome this drawback, the second feature extraction method called Modified Bi-dimensional Empirical Mode Decomposition (MBEMD) is proposed. The BIMFs are extracted by employing the proposed MBEMD on mammogram ROI. Features are extracted in a similar way as BEMD method. Support Vector Machine (SVM) and Linear Discriminant Analysis (LDA) classifiers are used for the classification of mammogram mass. The classification accuracy of 88.8%, 96.2% and Area Under the Curve (AUC)

1

CrossMark

Speech to speech interaction system using Multimedia Tools and Partially Observable Markov Decision Process for visually impaired students

S. Lokesh[1] · B. Kanisha[2] · S. Nalini[3] · M. Ramya Devi[4] ·
R. Kumar[5]

Abstract In general, visually impaired students need of another person's to teach them with the help of computers and book. However, a number of students are not aware of using the computers and understanding the concepts by self. In order to solve this issue, a speech to speech interaction system is developed on the basis of a novel dialogue management system. This interaction is developed by combining Multimedia tools and Partially Observable Markov Decision Process (POMDP) with agenda based model used in the proposed dialogue management system to learn the speech signals from user and system will reply accordingly. The proposed system helps visually impaired students to learn easily using a novel dialogue

S. Lokesh
lokeshsvh@gmail.com

B. Kanisha
johnnykanisha@gmail.com

S. Nalini
nalini.tamilmani@gmail.com

M. Ramya Devi
yamurugadasan@gmail.com

R. Kumar
rkskumar@gmail.com

[1] Department of Computer Science and Engineering, Hindusthan Institute of Technology, Coimbatore, India

[2] Department of Information Technology, Indra Ganesan College of Engineering, Trichirappalli, India

[3] Department of Computer Science & Engineering, Velammal Institute of Technology, Chennai, India

[4] Department of Computer Science and Engineering, Hindusthan College of Engineering and Technology, Coimbatore, India

[5] Department of Information Technology, Sri Ramakrishna Institute of Technology, Coimbatore, India

Springer

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620

CrossMark

Multi Model Mitigation Approach for Network Threats on Cluster Based Linear Chain Routing Protocol in Wireless Sensor Networks at QoS Development

R. Rajamohamed[1] · T. Justin Jose[2] · S. Sumithra[3] · J. Vijaya[4]

Abstract Consider the wireless sensor network (WSN) deployed in the motivation to perform data collection through the sensor nodes of the network deployed in different geographic region with same set of configuration where each can directly communicate to the base station. There are many routing protocols exists but the cluster based linear chain routing is focused towards reducing energy depletion by performing cooperative transmission to reach the destination. Because of the nodes has no mobility and the cluster formation is performed once, the linear chain routing protocol is more prone for variety of routing attacks which spoils the motivation of linear chain routing and reduce the lifetime of the network in rapid manner. We propose a multi model mitigation technique which handles variety of network threats happen in routing of packets increases the performance of WSN. This method performs flow estimation technique to identify the denial of service attacks and botnet based attacks. An light weight location verification protocol has been depicted to handle the sink hole attacks. The problem of packet dropping attack has been handled by one step verification process. The multi model mitigation techniques have produced efficient result in Quality of Service development and improve the performance of the linear chain routing.

Keywords Sink hole attack · DDOS attack · Dropping attack · Linear chain routing · WSN · QoS

R. Rajamohamed
rmd_77@hotmail.com

Indra Ganesan College of Engineering, Tiruchirappalli, India

Gurudeva Institute of Science and Technology, Kottayam, India

[3] J.J. College of Engineering and Technology, Tiruchirappalli, India

[4] National Institute of Technology, Tiruchirappalli, India

Springer

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy

CrossMark

Design of X band parallel coupled line BPF by analytical approach

B. G. Gopal[1] · V. Rajamani[2]

Abstract

The design of maximally flat band pass filter for 10 GHz center frequency with 500 MHz bandwidth for X band applications is presented in this paper. An analytical approach is discussed here along with design using EDA tool. The simulated and measured values of various parameters such as insertion loss − 1.3 dB, return loss − 22.65 dB, group delay 1.35 nS and VSWR 1.16 are compared. The measured values insertion loss − 1.3 dB, return loss − 22.65 dB, group delay 1.35 nS and VSWR 1.16 offers a very good filter response. It gives slight compromising results. The physical dimensions of the micro strip filter structure are tuned manually for better result after the analytical calculations of the dimensions. It gives clear picture that the length of the micro strip lines has major role in shifting the pass band, width and space between the lines plays a conformal contribution in varying the bandwidth, attenuation levels. The filter is matched to 50 Ω micro strip lines at both ends.

Keywords Microwave BPF · Microstripline BPF · X band filter

1 Introduction

Microwave band pass filters play a significant role in wireless communication systems. Transmitted and received signals have to be filtered at a certain center frequency with a specific bandwidth. The filter design is proposed to implement using microstrip lines. In designing a micro strip filters, the first step is to carry out an approximated calculation of microstrip lines length, width and spacing between them [1, 2]. Experimental verification gives comparison, how close the theoretical results and measurements look alike.

To construct specific filters, the desired frequency characteristics are related to the parameters of the filter structure. The general synthesis of filters proceeds from tabulated low-pass prototypes. Various physical forms of filters such as parallel coupled line filters, edge coupled line filters, interdigital filters and combline filters can be realized in distributed structures.

The parallel coupled line filter consists of a cascade of pairs of parallel coupled open circuited lines. The lines are quarter wave long at the center frequency of the filter [3, 4]. There are N + 1 coupled line section including input and output transformers in an Nth degree filter is shown in Fig. 1.

The parallel coupled line filter is often used in microwave subassemblies as it is easy to fabricate due to the absence of short circuits.

A pair of coupled lines and its equivalent circuit is shown below in Fig. 2. Here it is noted that the equivalent circuit consists of series-open circuited stubs separated by an unit element (UE) in Fig. 2. Z_{oe} and Z_{oo} are the even and odd mode characteristic impedances of the coupled line pair as depicted in Fig. 3. The UE may be decomposed into a pair of open circuited stubs separated by an inverter as shown in Fig. 4. Combining this with the equivalent circuit in Fig. 2, a final equivalent circuit consisting of series open circuit stubs separated by inverters are obtained as shown in Fig. 5 is obtained.

B. G. Gopal
bgg1969@gmail.com

V. Rajamani
rajavmani@gmail.com

[1] Department of Electronics and Communication Engineering, Indra Ganesan College of Engineering, Tiruchirappalli, Tamilnadu 620012, India

[2] Department of Electronics and Communication Engineering, Veltech Multitech Dr. Rangarajan Dr. Sakunthala Engineering College, Avadi, Chennai 600062, India

⚫ Springer

PRINCIPAL
Indra Ganesan College of Engineering
IG Valley, Madurai Main
Manikandam, Trichy-620

A comprehensive age estimation on face images using hybrid filter based feature extraction.

Karthikeyan D[1*], Balakrishnan G[2]

[1]Department of ECE, Srinivasan Engineering College, Perambalur, India

[2]Department of Computer Science and Engineering, Indra Ganesan College of Engineering, Trichy, India

Abstract

Biometric based security applications are drastically growing and it is more essential in various emerging fields such as military, surveillance systems, crime, VISA processing systems etc. One of the human-computer-interaction fields is designing an intelligent application for estimating the age automatically using face images. The main objective is to estimate the human age using facial features and to improve its accuracy. In order to improve the age estimation accuracy, the wrinkles and end point of the wrinkles on the face image are considered. To estimate the age, first the orientation features of face image are extracted using Gabor filter; second the local wrinkle features known as minutiae are extracted using m x m wrinkle patterns on the face image by a hybrid filter. The minutiae points provide accurate information on the frequencies of the facial features. The effectiveness of the proposed approach is experimented on the publicly available FG-NET and MORPH age databases and results are compared with the other existing methods. The obtained results proved that the proposed approach is better than the other approaches in terms of age estimation accuracy.

Abbreviations

KPCA: Kernal Principle Component Analysis; AGES: Ageing Pattern Subspace; AGESLDA: Ageing Pattern Subspace Linear Discriminant Analysis; AAM: Active Appearance Model; DCT: Discrete Coefficient Transformation; LBP: Local Binary Pattern; SVR: Support Vector Regression; SVM: Support Vector Machine; MAE: Mean Absolute Error; CS: Cumulative Score; FG-NET: Face and Gesture recognition research Network.

Introduction

The face of the human is the window to the soul. It helps in conveying the information regarding individual traits. Among the various personal traits, the age of the human can be inferred by some distinct patterns which emerge from the facial appearance. At the early days people have the ability to determine the age between the people of age group 20 and 60 y and they are able to conceive the age from the face even with a high accuracy. This can also be done in machines. Recent studies have proved by defining the technique of age estimation which labels a face image. This is done by a machine by calculating the exact age or a year range of an individual face. This technique was derived from the advancements such as computer vision and recognition of patterns. The estimation of age *via* faces is an interesting topic to deal with because of its rapid emergent flow in real world applications.

Related Works

In this paper, it is focused on age estimation, where the objective is to estimate the correct age or age range of a face. Existing researches for age estimation is classified into two main parts as: growth of the child and age of the adult. Many of the very old research studies utilized the coordinates of the facial feature points [1-52]. Ramanathan et al. [1] took the coordinates transformations and deformation of the facial features through landmark point. Some of the researches used face verification using progression [2], component based age estimation KPCA for estimating the age. One of the main models is Anthropometric model [3,4] based age estimation, uses the development theory of the facial skin wrinkle analysis. Aging pattern is defined [5] for a sequence of age based facial images stored in ascending order in terms of age. Some of the algorithms utilized in earlier researches are estimating the age using aging patterns according to the positioning of the images. AGES, AGESLDA [6,7], age and gender classification using the ethnicity feature estimation [8], AAM [9], DCT transformation [10], multiple linear regression analysis [11] are

Biomed Res 2018 Special Issue
Special Section: Medical Diagnosis and Study of Biomedical Imaging Systems and Applications

S472