



Smart Innovations in Communication and Computational Sciences pp 299–308

GPU Approach for Handwritten Devanagari Document Binarization

[Sandhya Arora](#) , [Sunita Jahirabadkar](#) & [Anagha Kulkarni](#)

Conference paper | [First Online: 12 July 2018](#)

501 Accesses | **3** Citations

Part of the [Advances in Intelligent Systems and Computing](#) book series (AISC, volume 670)

Abstract

The optical character recognition (OCR) is the process of converting scanned images of machine printed or handwritten text, numerals, letters, and symbols into a computer processable format such as ASCII. For creating OCR's paperless application, a system of high speed and of better accuracy is required. Parallelization of algorithm using graphics processing unit (GPU) along with CPU can be used to speed up the processing. In GPU computing, the compute-intensive operations are performed on GPU while serial code still runs on CPU. Binarization is one of the most fundamental preprocessing techniques in the area of image processing and pattern recognition. This paper proposes an adaptive threshold binarization algorithm for GPU. The aim of this research work is to speed up binarization process that eventually will help to accelerate the processing of document recognition. The algorithm implementation is done using Compute Unified Device Architecture (CUDA) software interface by NVIDIA. An average speedup of 2× is achieved on GPU GeForce 210 having 16 CUDA cores and 1.2 compute level, over the serial implementation.

Keywords

Pattern recognition

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Information and Communication Technology for Competitive Strategies pp 551–560

Survey of Different Approaches Used for Food Recognition

[Sandhya Arora](#), [Gauri Chaware](#), [Devangi Chinchankar](#), [Eesha Dixit](#)  & [Shevi Jain](#)

Conference paper | [First Online: 31 August 2018](#)

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Part of the [Lecture Notes in Networks and Systems](#) book series (LNNS, volume 40)

Abstract

Food recognition is an ever-growing field gaining rapid momentum in the past couple of years. Various approaches have been implemented to get accurate results by correctly identifying the food item. Traditional methods like the implementation of neural networks, SVMs, HMMs utilizing hand-crafted features of the large data-sets of food images are one way of developing food recognition systems. To improve the accuracy, modern methods using newer concepts of convolutional neural networks and deep learning which avoid the use of hand-crafted features are being implemented to build even better food recognition systems. These newer methods require huge data-sets of images of food items to work with to obtain good results. Besides approaches based on image recognition, other innovative images are also being explored for recognizing food images. Food items are being recognized using the cutting sounds, acoustic sensors, electronic tongues and so on.

Keywords

Convolutional neural network **Deep learning**

Food recognition **Image recognition** **Neural network**

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Nivedita Dairniwal

Brain Mapping using CPPG

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Functional Near Infrared Spectroscopy is the non invasive optical technique for measurement of neural activity and hemodynamic response that has a potential for brain mapping. In fMRI the gold standard for brain mapping is BOLD signal. This research aims to develop a system to capture the cranial PPG (CPPG) using Infrared (IR) source (860nm) and detector (OPT 101). AC excitation for the IR source in the range of 1 to 2 MHz plays major role in the CPPG sensor. Brain functional activity in prefrontal lobe is detected by placing the sensor on the forehead. The CPPG signal is captured with eyes open (EO) and eye blinking (EB) activity and for various emotions (Happy and Sad). A six level wavelet decomposition of CPPG signal is performed using Daubechies 9 and statistical features are calculated. The CPPG signals for happy and sad emotions are decomposed using wavelet transform to different wavelet sub-bands based on their frequency content. Emotions alter the covariance structures of multivariate matrices at different scales and the corresponding Eigen values.



Dr. Nivedita Daimwal has completed her PhD from Sathyabama University, Chennai. Presently she is working as an Assistant Professor in Cummins College of Engineering for Women, Pune, India.



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pp 251–261

Design of Time-Frequency Localized Filter Bank Using Modified Particle Swarm Optimization

[Swati P. Madhe](#) , [Amol D. Rahulkar](#) & [Raghunath S. Holambe](#)

Conference paper | [First Online: 12 April 2019](#)

836 Accesses

Part of the [Advances in Intelligent Systems and Computing](#) book series (AISC, volume 940)

Abstract

This paper presents a design of an optimized time-frequency localized, perfect reconstruction filter bank (FB) based on modified Particle Swarm Optimization (PSO). The PSO scheme is modified to add the constraints as vanishing moments (VMs) and perfect reconstruction (PR) during the design of the FB. First, VMs are imposed in order to

initialize the coefficients of linear-phase, low-pass-analysis filter. Next, the initialized coefficients, satisfying VM constraint are used in modified PSO (MPSO) scheme to obtain optimized time-frequency localized low-pass-analysis filter. Similarly, a linear-phase, low-pass-synthesis filter is designed by adding PR and VM constraints. The proposed FBs are illustrated with numerical examples and their performances are validated by comparing their time-frequency localization and frequency band errors with those of existing FBs. The proposed MPSO scheme minimizes the frequency band errors and optimizes the time-frequency localization of FBs. This simultaneous time-frequency localization is useful in extracting most effective features from the signal.

Keywords

Filter bank Particle Swarm Optimization

Perfect reconstruction

Time-frequency localization

Vanishing moments

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Dr. Niketa Gandhi

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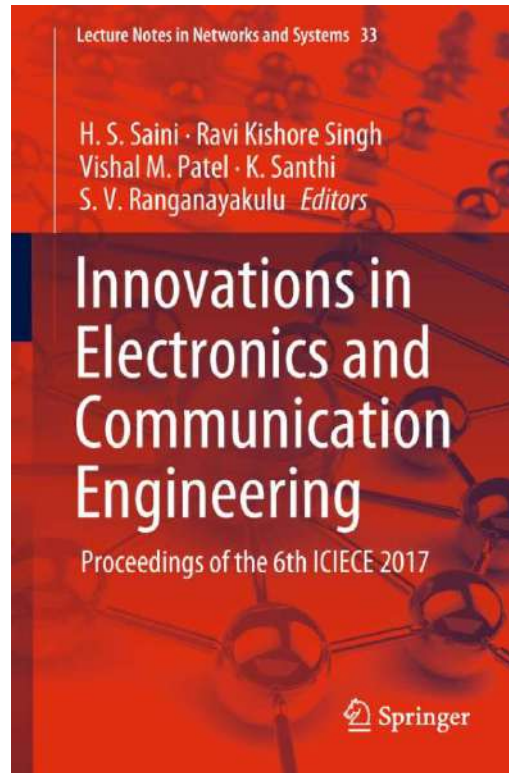
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Performance Parameter Based Comparison of Slantlet Transform and Discrete Cosine Transform for Steganography in Biomedical Signals



Performance Parameter Based Comparison of the Slantlet Transform and Discrete Cosine Transform (DCT) for Steganography in Biomedical Signals

Apurwa S. Jagtap  & Revati Shiram

Conference paper | [First Online: 29 August 2018](#)

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Part of the [Lecture Notes in Networks and Systems](#) book series (LNNS, volume 33)

Abstract

In this paper, we present patient's information hiding using the Slantlet Transform and Discrete Cosine Transform (DCT). DCT transforms the signal from spatial domain to frequency domain. It can separate the image into high-, middle- and low-frequency components. In DCT-based technique, insertion of secret information in carrier depends on the DCT coefficients. The Slantlet Transform is known as Orthogonal Discrete Wavelet Transform (ODWT). It separates 1-D signal in two sub-bands, LL and HH. It divides 2-D signal into four sub-bands, HH, HL, LH

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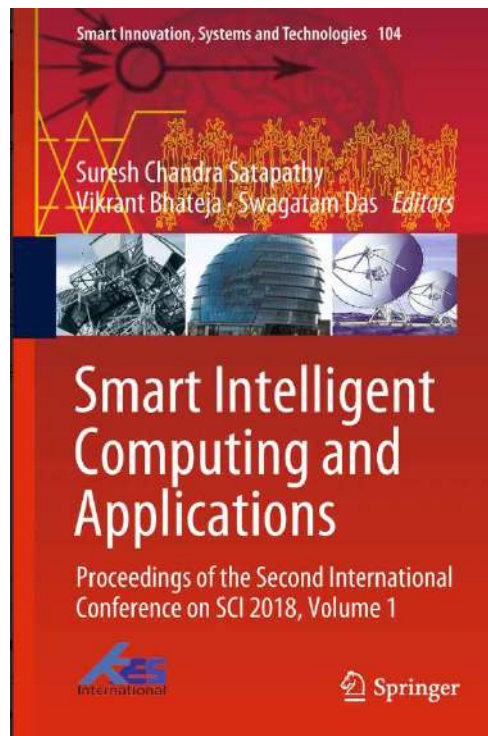
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Energy Distribution and Coherence based Changes in Normal and Epileptic Electroencephalogram



Energy Distribution and Coherence-Based Changes in Normal and Epileptic Electroencephalogram

Revati Shriram , V. Vijaya Baskar, Betty Martin, M. Sundhararajan & Nivedita Daimiwai

Conference paper | [First Online: 02 October 2018](#)

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Part of the [Smart Innovation, Systems and Technologies](#) book series (SIST, volume 104)

Abstract

In endeavor toward better understanding of brain functions, the analysis of information transfer between the various brain lobes plays a crucial role. Electroencephalogram (EEG) is an electrical brain signal in microvolts, which provides unique and important information about the brain dynamics. Frequency of EEG signal lies between 0 and 100 Hz. In epileptic or seizure related studies, decomposition of EEG signal into various frequency sub-bands such as α , β , δ , θ , and γ is essential. EEG plays a key role in diagnosis of neurological disorders such as epilepsy. In this paper, we explore decomposition of EEG by db18 wavelet, power spectral

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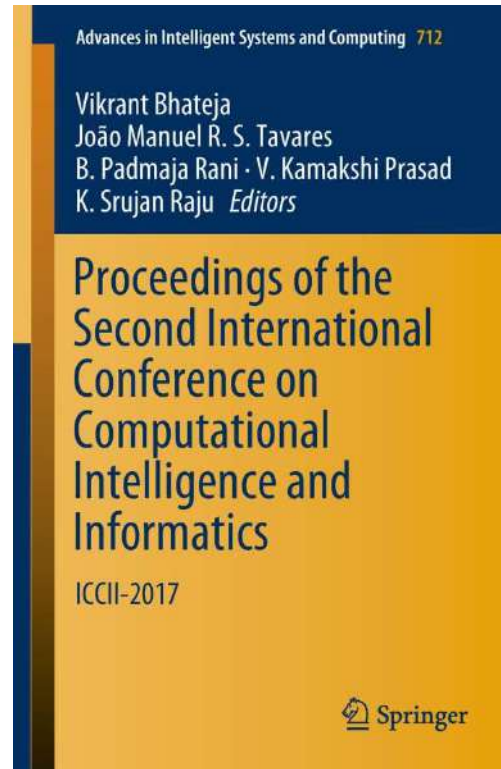
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Statistical Analysis of Derivatives of Cranial Photoplethysmogram in Young Adults



Statistical Analysis of Derivatives of Cranial Photoplethysmogram in Young Adults

Revati Shriram  Betty Martin, M. Sundhararajan & Nivedita Daimiwai

Conference paper | [First Online: 24 July 2018](#)

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Abstract

Every day risk of cardiovascular diseases is increasing in young adults. Now researchers are working on study related to a single bio-signal for prediction of maximum physiological parameters. One of such a bio-signal is photoplethysmogram (PPG). Non-invasive measurement of blood volume change is carried out by using PPG. PPG captured from a cranial site is known as cranial photoplethysmogram (CPPG). Most of the time various bio-signals acquired from the brain are used to study only the brain-related disorders. Near-infrared spectroscopy-based sensor used to record CPPG from frontal region can be used to predict heart rate, oxygen saturation, blood pressure, cardiac output and respiration rate. This

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Statistical Analysis of Derivatives of Cranial Photoplethysmogram in Young Adults

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Robust Estimation of Brain Functional Connectivity from Functional Magnetic Resonance Imaging Using Power, Cross-Correlation and Cross-Coherence


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Abstract

Functional near-infrared spectroscopy is an optical non-invasive technique for measurement of neural activity and hemodynamic response and has a potential for brain mapping. In this work, we aimed to develop a system to capture the cranial photoplethysmogram (cPPG) using IP

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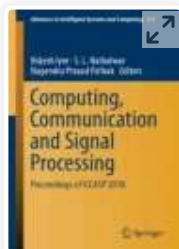
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Computing, Communication and Signal Processing pp 781–790

Convex Optimization-Based Filter Bank Design for Contact Lens Detection

[Swati Madhe](#)  & [Raghunath Holambe](#)

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Abstract

We have designed a novel convex optimization-based filter bank (FB), which minimizes the frequency band errors and optimizes time–frequency localization at the same time. The designed FB is regular and satisfies the constraint of perfect reconstruction (PR). In convex optimization, we have optimized quadratic constrained quadratic programs by transforming it into a semidefinite program. We have also compared the frequency band errors and time–frequency localization of proposed FB with existing FB. We have used this FB for designing a new contact lens detection (CLD) system. The IIITD database has been used for this

purpose. The results have been expressed in terms of correct classification rate (CCR). The superiority of the designed FB has been shown by comparing the results with other existing CLD systems. The newly designed FB can also be effectively used for various signal processing applications.

Keywords

Filter bank **Convex optimization**

Frequency band errors

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Abstract

To overcome the drawbacks of the conventional heart rate measurement method, a new approach is developed to measure cardiac pulse automatically using video imaging technique and wavelet analysis. In this paper, the color video images of the human face are used for detection of cardiac pulses. The specific region of interest (ROI) in face image is detected to obtain red, green, and blue intensity signals. Next normalized red, green, and blue intensity signals are decomposed using discrete wavelet transform (DWT) to obtain approximate and detail coefficients. Then, the specific frequency band from decomposed signal is obtained with the help of bandpass filter using Hamming window function. The cardiac pulse is measured with the help of pulse frequency in power density spectrum of filtered signal. The cardiac pulse measured with help of this system is compared with heart rate measured from reference ECG signal of the same object. This technique improves the accuracy from 73.14 to 89.86% if forehead of the subject is considered instead of face.

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In recent decade, the number of system uses biometric system for authentication. There were several biometric systems present based on external physiological characteristics such as face, iris, fingerprint, palm print etc. but few researchers worked on the internal physiological characteristics as a biometric. This project includes the design of an ECG-based biometric system that uses machine learning and deep learning techniques. ECG contains detailed information about electrical operation of the heart and the nature of this activity is highly personalized and can be used as biometric for authentication purpose. ECG based biometric can be mainly used in IOT based health care systems where data is transferred on internet. Other biometric systems require extra hardware to be used in health care systems. As ECG of a patient is taken in the hospitals, the same can be used for identification without extra hardware. Interval features of ECG signal are extracted and given to machine learning and deep learning algorithms. Machine learning techniques like SVM and KNN are used and deep learning is based on CNN. The datasets with diverse ECG behaviors are considered including MITDB, FANTASIA, NSRDB and QT. These

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Publisher: IEEE

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 **Contents**

I. Introduction

Health care involves a great deal of data on patients who need to be registered and archived. This information is necessary at every stage of treatment and is difficult to control. Security is very important in this case. The biometry of the check-up assistance refers to the biometric application in the doctor's office, in hospitals. The blend of patient records and distinguishing proof mistakes are an immediate and genuine risk to quiet security, protection and quality [1], [2]. These organizations are under tremendous pressure to improve their access to patient identification and guarantee access to protected health information (PHI) to guarantee protection, reduce recovery errors and avoid data breaches that compromise the reputation, costs and quality of the supplier. Biometric innovation can add operational efficiencies to the healthcare system that decrease costs, diminish fraud and increment patient satisfaction by reducing health check errors. Therefore, ECG can be used as a biometric character in fitness cares.

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The High-Efficiency Video Coding (HEVC) standard is the ITU-T Encoding Expert Group (VCEG) and the ISO/IEC MPEG (Group of Experts in Moving Image) (JCT-VC). HEVC (High Efficiency Video Coding) is a standard video pressure, H.264 or MPEG-4 section 10 of H.265 and MPEG-H section 2, one of a few potential relatives.

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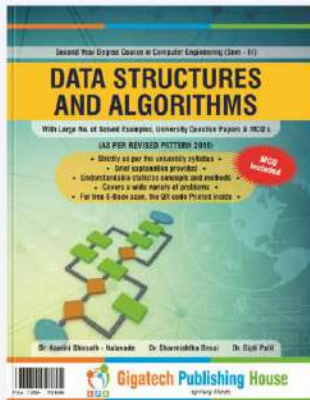
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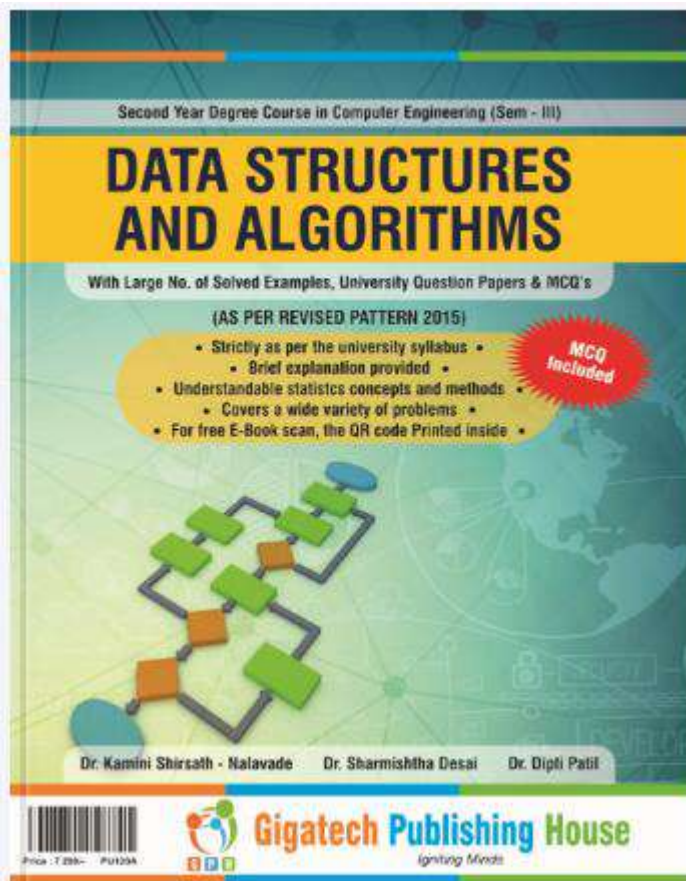
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In the multimedia technology domain, Text Detection from an image is emerging as a fastest growing research and technology areas. The textual data in the images contain useful information for habitual explanation. The input to the system will be an image, particularly a colored one. The image will be processed to detect the area containing the text, the crucial features that uniquely identify the text characters will be detected and extracted and finally, the text is extracted into a text file. The text detection process begins with denoising of the image followed by converting it to a grayscale image followed by a binarization of that grayscale image. Once grayscale, the extracted text is written into a text file. The proposed model is robust to different font sizes, font colors, background colors. The performance of the presented system is demonstrated by showing the results for a set of images taken from various sources across the web.

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I. Introduction



Smart Innovations in Communication and Computational Sciences pp 299–308

GPU Approach for Handwritten Devanagari Document Binarization

[Sandhya Arora](#) , [Sunita Jahirabadkar](#) & [Anagha Kulkarni](#)

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The optical character recognition (OCR) is the process of converting scanned images of machine printed or handwritten text, numerals, letters, and symbols into a computer processable format such as ASCII. For creating OCR's paperless application, a system of high speed and of better accuracy is required. Parallelization of algorithm using graphics processing unit (GPU) along with CPU can be used to speed up the processing. In GPU computing, the compute-intensive operations are performed on GPU while serial code still runs on CPU. Binarization is one of the most fundamental preprocessing techniques in the area of image processing and pattern recognition. This paper proposes an adaptive threshold binarization algorithm for GPU. The aim of this research work is to speed up binarization process that eventually will help to accelerate the processing of document recognition. The algorithm implementation is done using Compute Unified Device Architecture (CUDA) software interface by NVIDIA. An average speedup of 2× is achieved on GPU GeForce 210 having 16 CUDA cores and 1.2 compute level, over the serial implementation.

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Real Time Facial Expression Recognition using Deep Learning

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Date Written: May 18, 2019

Abstract

As we move towards a digital world, Human Computer Interaction becomes very important. A lot of research has been done in this field over the past decade. Face expressions are a key feature of non-verbal communication, and they play an important role in Human Computer Interaction. This paper presents an approach of Facial Expression Recognition (FER) using Convolutional Neural Networks (CNN). This model created using CNN can be used to detect facial expressions in real time. The system can be used for analysis of emotions while users watch movie trailers or video lectures.

Keywords: Facial Expression Recognition, Convolutional Neural Networks, Deep Learning, Transfer Learning

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This paper presents a novel real-time meta learning approach for predicting health risk of a patient under observation on a smartphone. While making health predictions, consideration of patient's history and real-time trend of signal behavior is very important. This paper discusses the real-time healthcare system which learns the trend of various physiological signals with newly designed real-time stream mining algorithm PARC-Stream. It makes a health risk prediction on the fly using combination of both historical and dynamic risk rule base of patient. This meta Learning approach increases the chance of accurate risk prediction. Our experimental results proved that our novel meta learning approach used for health risk prediction gives a high prediction accuracy of 99% over other methods of using only single

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Social media today, has grown into a vital facet of modern human existence. A remarkable amount of the information reaching us comes in the form of posts and messages on social media. As a result of the ever-growing social media, it has turned into an essential scheme for viral marketing and influencing the masses. Hence, it becomes imperative to discern how information spreads on such networks and how much. The methodology suggested in the Restrained-Susceptible-Infected-Recovered (RnSIR) Model enables us to calibrate the spread of knowledge and material on networks. This paper proposes an interface which uses the calculations given by the RnSIR model. Essentially, this interface prompts users to give a network interaction data set as the input and outputs the information dispersion on inputted network. It uses the same algorithms to do this as the RnSIR model.

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E. Rajalakshmi ; Prajakta Kumbhojkar ; Shyamsalinee Rawal ; Masumi Jain ; Sneha Thombre [All Authors](#)

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Abstract	Abstract:
Document Sections	By etymology, the word viral stems from virus, a term used to describe the spread of effect of infectious symptoms across organisms. On the internet, a piece of content can spread similar to a virus, making people infected as and when they come in contact with it. The infection usually occurs when the user shares it, with its circle of friends and associates on a social network. However, it is possible to predict the reach of information across a number of users in a directed network data set. This is possible through the proposed interface which uses the calculations proposed in the Restrained-Susceptible-Infected-Recovered (RnSIR) model. The interface accepts a data set as an input from the users whilst giving the percentage of information spread in that network as the output. The calculations at the interface back-end are done by using the same algorithms as used by the RnSIR model, to select influential nodes and then calculate the said percentage using them with the help of an algorithm. The interface poses to be useful for tracking the spread of information in a directed network for social media marketing and peripheral tactics.
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Soft Computing in Data Analytics pp 351–359

MidClustpy: A Clustering Approach to Predict Coding Region in a Biological Sequence

[Neeta Maitre](#)  & [Manali Kshirsagar](#)

Conference paper | [First Online: 22 August 2018](#)

647 Accesses | **1** [Citations](#)

Part of the [Advances in Intelligent Systems and Computing](#) book series (AISC, volume 758)

Abstract

Data mining can act like a medium to discover new avenues in bioinformatics rather than just a pattern recognition in the biological sequences. It is useful in the sequence analysis, and clustering can be used to reduce the total number of operating sequences to perform this analysis.

Expressed sequence tags (ESTs) are the complimentary DNA sequences, shorter in size and instrumental in locating coding region in genomic sequences. Clustering of these ESTs requires basic computer knowledge for sequence analysis and its relevance in the field of biology. MidClustpy is an algorithm specifically designed to cluster ESTs

based on the most accurate part in the sequence. The similarity search for locating coding region in a query sequence can be assisted by MidClustpy algorithm. The research paper is, thus, focussed on the effective use of expressed sequence tags using MidClustpy for prediction of coding region.

Keywords

Data mining **Expressed sequence tags**

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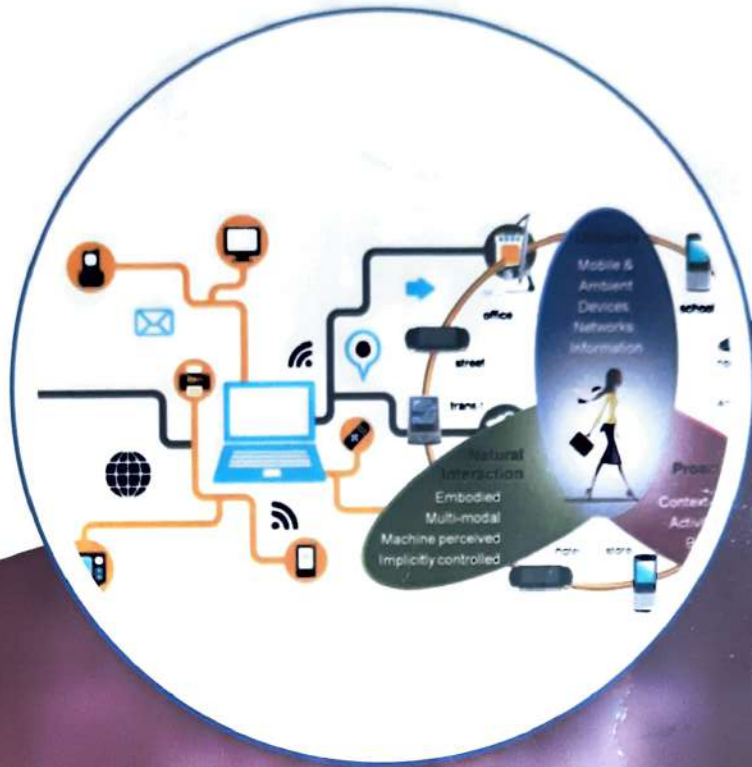
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Deep Eyes

Rashmi Vagha, Dr. Chhaya Gosavi
Cummins college of engineering for women, Pune

ABSTRACT

The use of Deep Neural Networks can be observed in almost every aspect of our lives such as security, medical, gaming, social media, banking, etc. In such situations, it is absolutely necessary that the methods and techniques used should be analyzed properly. One of the upcoming ways to checking correctness is analysis performed concurrently with the design process. This paper focuses on DeepEyes, a progressive visual analytics system to design and analyse DNNs during training. DeepEyes uses the concept of receptive fields to study the input and output of each layer in the DNN. Various maps generated such as Activation Heatmap, Input map, Filter map and Perplexity Histograms act as visual aids in checking the patterns detected by the DNN and the significant filters with respect to feature recognition are identified. Thus, the analysis becomes easy and the user gets control over its output. By utilizing the DeepEyes system one of the main limitations of Deep Neural Networks can be solved which is its complexity which increases with the number of layers. Therefore, the use of DeepEyes in designing deep neural networks can make the tasks of the user simpler and quicker. This technology has the potential to supersede the existing techniques.

KEYWORDS

Deep neural networks, Visual analytics, Deep learning, Computer vision, Artificial intelligence.

INTRODUCTION

Technologists are constantly trying to bridge the gap between a machine and human beings. In doing so, the biggest breakthrough is the design and development of intelligent systems. These systems are able to perform tasks such as visual perception, speech recognition, translation between languages and decision making. Artificial Intelligence (AI) is further branches into Machine Learning, Robotics, Expert Systems, Natural Language Processing, Speech, Vision and Planning. . A program can be called intelligent if it can perceive and be conscious about its environment and take an appropriate action in such a way that it increases its chances of successfully achieving its goals. Thus, an “intelligent” program should be able to exhibit behaviour that would be regarded intelligent if they were exhibited by human beings. Machine Learning is one of the strongest foundations of AI. It includes training a software model using data and using that trained model to predict results for data that is completely new to the model. Machine learning has two broad types – Supervised and Unsupervised. In supervised learning, the values of the variable to be predicted are known. Hence, some data can be used for training the model and a part of the data can be used to check the correctness of the model. In unsupervised learning, there are no known label values. Thus, the model must be trained by using the similarities between the observations. The technique used in unsupervised learning is called clustering where each new observation is assigned to the cluster of observations with the most similar results or characteristics. Deep learning is a subset of machine learning that has networks capable of learning unsupervised from data that does not have any structure or labels. It includes a set of machine learning algorithms that model high level abstractions in data. Deep Learning can be applied in fields like image processing, natural language processing, audio recognition, social media filtering, robotics, bio-information and drug design. An artificial neural network (ANN) is a

Volume 7, Issue X, OCTOBER/2018 Page No:386

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Design and Analysis of Solar Desalination System Using Compound Parabolic Concentrator

S A Kedar¹, K Arul Raj¹ and A K Bewoor²

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Both in the developed and developing countries availability of drinking water is the main priority of human being. Fresh water available in nature 3% on the earth. This research is an attempt to use solar

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Analysis of Basic-SegNet Architecture with Variations in Training Options

[Ganesh R. Padalkar](#)  & [Madhuri B. Khambete](#)

Conference paper | [First Online: 12 April 2019](#)

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Part of the [Advances in Intelligent Systems and Computing](#) book series (AISC, volume 940)

Abstract

Deep learning techniques are becoming popular for vision-based automation applications. Recently, various deep convolutional neural network architectures have been evolved for image classification, object detection and semantic image segmentation tasks. SegNet is one of the successful encoder-decoder convolution architectures, implemented for semantic image segmentation. We simulated Basic-SegNet architecture using MATLAB R2017b. SegNet architecture is built layer by layer without using any pre-trained model. Multi-class images from Pattern Analysis, Statistical Modelling and Computational Learning Visual Object Classes 2012 database, are used to train the architecture. The segmentation results obtained on test images are evaluated by calculating accuracy, intersection of union, boundary F1 measure and execution time. These evaluation parameters are computed over database as well as for individual object class. Training options like learning rate and its schedule, filter size, number of filters and number of epochs are varied to analyze their effects on the performance of architecture. This research work is focused on analysis of Basic-SegNet architecture with variations in training options.

Keywords

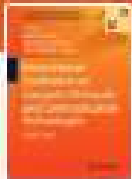
CONV-Convolution layer

ReLU-Rectified linear units

Pool-max pooling layer

Un-pool- Un-pooling layer

DAG-Directional acyclic graph



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Fuzzification of Context Parameters for Network Selection in Heterogeneous Wireless Environment

Shilpa Litake  & Mukherji Prachi

Conference paper | [First Online: 18 September 2018](#)

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In heterogeneous wireless networks, vertical handoff support provides seamless connectivity. There are multiple context parameters that influence the decision of vertical handover, hence Multiple Attribute Decision-Making (MADM) algorithms are leveraged in deciding the best network for handover. This paper proposes an MADM-based technique to select an appropriate radio access, out of available WLAN and WiMAX radio access technologies. The authors have proposed a novel HUETANS:Handoff Urgency Estimator and Target Access Network Selector module to facilitate vertical handoff. HUETANS ensures Quality of Service (QoS) by incorporating fuzzy logic controllers to handle the vagueness of wireless environment parameters. Usage of Grey Prediction technique for predicting Received Signal Strength (RSS) further restricts number of unnecessary handoffs at low level. Simulation results show that the proposed HUETANS module selects the best network.

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An Intelligent Video Surveillance System for Anomaly Detection in Home Environment Using a Depth Camera

[Kishanprasad Gunale](#)  & [Prachi Mukherji](#)

Conference paper | [First Online: 31 August 2018](#)

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Part of the [Advances in Intelligent Systems and Computing](#) book series (AISC, volume 742)

Abstract

In recent years, the research on the anomaly detection has been rapidly increasing. The researchers were worked on different anomalies in videos. This work focuses on fall as an anomaly as it is an emerging research topic with application in elderly safety areas including home environment. The older population staying alone at home is prone to various accidental events including falls which may lead to multiple harmful consequences even death. Thus, it is imperative to develop a robust solution to avoid this problem. This can be done with the help of video surveillance along with computer vision. In this paper, a simple yet efficient technique to detect fall with the help of inexpensive depth camera was presented. Frame differencing method was applied for background subtraction. Various features including orientation angle, aspect ratio, silhouette features, and motion history image (MHI) were extracted for fall

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Speech Recognition Using Novel Diatonic Frequency Cepstral Coefficients and Hybrid Neuro Fuzzy Classifier

Himgauri Kondhalkar & Prachi Mukherji

Conference paper | [First Online: 02 January 2019](#)

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Abstract

Speech recognition is the ability of the machine to identify spoken words and classify them into appropriate category. First stage in the process of speech recognition is the extraction of appropriate features from the recorded words. We propose a novel algorithm for feature extraction using diatonic frequency cepstral coefficients. Diatonic frequencies are derived

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There is a reduction in the signal-to-noise ratio of cellular networks due to interference caused by assigning the channels to the cell. As the demand for connectivity is on rise with limited spectrum availability, the interference may increase, so channels are required to be assigned optimally. This work presents applying Genetic algorithm (GA) along with Support Vector

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Human Head Pose and Eye State Based Driver Distraction Monitoring System



Astha Modak, Samruddhi Paradkar, Shruti Manwatkar, Amol R. Madane and Ashwini M. Deshpande

Abstract One of the major causes of road accidents is driver distraction. Driver distraction is diversion of attention away from activities critical for safe driving. Driver distraction can be categorized into drowsiness and inattentiveness. Drowsiness is a condition in which the driver feels sleepy, therefore cannot pay attention toward road. Inattentiveness is diversion of driver's attention away from the road. Our system provides facility for monitoring driver's activities continuously. The in-car camera is mounted to capture live video of driver. Viola–Jones algorithm is used to identify the driver's non-front-facing frames from video. Inattentiveness is detected if the system identifies consecutive frames having non-frontal face. Drowsiness is identified by continuous monitoring of the eye status, which is either “open” or “closed” using horizontal mean intensity plot of eye region. Once the system detects the distraction, alert is generated in the form of audio. This will reduce the risk of falling asleep in long distance traveling during day and night time.

Keywords Driver distraction · Drowsiness · Eye state inattentiveness · In-car camera

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I. DDoS and DoS Attacks

II. Network Intrusion Detection System

III. Statistical Based Packet Classification

IV. Machine Learning Algorithms

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Abstract:

In today's world the use of internet services has widely grown. As the number of users has increased the number of attacks on an internet service has also increased exponentially. Although there are a number of intrusion detection systems, ensuring the data security is still a challenging issue. DDoS attacks have been in the networks for a very long time and a large number of hosts are still vulnerable to DDoS attacks. Considering all the scenarios this paper aims at defining a new Intrusion Detection System using statistical behavior and Machine Learning. The proposed approach offers a solution to secure the network resources by using statistical parameters of the flow records for anomaly detection and results in an accurate and efficient system, having a faster response time.

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Introduction

Packet Classification is a process to classify internet data packets to meet applications like routing and filtering. Traditional packet classification techniques include port based classification, deep packet inspection, signature-based classification and so on. Each of these systems had certain drawbacks. These packet classification techniques were earlier used for developing the

Internet Traffic Detection using Naïve Bayes and K-Nearest Neighbors (KNN) algorithm

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Mrudul Dixit ; Ritu Sharma ; Saniya Shaikh ; Krutika Muley [All Authors](#)

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Abstract

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I. Introduction

II. Machine learning algorithms to detect internet traffic

III. METHODOLOGY

» IV.RESULT AND ANALYSIS

V. CONCLUSION

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[Metrics](#)

Abstract:

Growth of internet has led to rise in number of users and its usage. Despite its advantages, exponential rise in internet usage has resulted in excess data flow over the system flooding the internet. To maintain quality of service and speed of internet along with ensuring data security as well as preventing data misuse, analysis of the internet data becomes essential. Analysis of the dataflow involves characterizing it into different types. This can be done by inspecting the packets either on basis of port numbers, payload information or statistical features. This paper aims to discuss the analysis of internet traffic using statistical features such as interpacket arrival time, time to live and number of packets helping us prevent invasion of packet information. This helps us protect user's privacy. To automate the process of categorizing internet traffic, machine learning based supervised classification techniques namely Naive Bayes and K Nearest Neighbors are implemented. Experiments to obtain highest accuracy in classifying internet traffic on basis of transaction protocol were performed. The dataset used is UNSW-NB. The results show that classification using K-Nearest Neighbors algorithm gives accuracy of 85% whereas maximum accuracy achieved using Naive Bayes algorithm is 54%.

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Gray Hole and Cooperative Attack Prevention Protocol for MANETs

[Sandeep S. Musale](#), [Sandeep L. Dhende](#) , [S. D. Shirbahadurkar](#) & [Anand S. Najan](#)

Conference paper | [First Online: 02 September 2018](#)

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Abstract

A MANET has many wireless nodes that are arbitrarily moving and communicating each other. The communication is without the use of any central coordinate or base station. It is infrastructure-independent network. It has different unique characteristics that make it more complex in routing. The routing decision is made in a decentralized manner. Although many protocols have been proposed for wireless communication, the ADOV is most widely used. The intermediate node helps to transmit data packets from source to destination. The interference of intermediate nodes introduces some serious attacks in mobile ad hoc networks. Some of them are gray hole, black hole, flooding, and selfish node attacks. In this chapter, the gray hole and cooperative attack prevention method is discussed and the results of the same are presented.

About this paper



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Comparison between five classification techniques for classifying emotions in human speech

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Abstract

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- I. INTRODUCTION
- II. LITERATURE SURVEY
- III. DATABASE CREATION
- IV. METHODOLOGY
- VI. RESULTS

Abstract:

This paper presents an algorithm for recognition of emotions in speech by extracting features such as formants, Perceptual Linear Prediction coefficients, Mel-Frequency Cepstral Coefficients, Bark Frequency Cepstral Coefficients, energy, pitch and standard deviation. The classifiers implemented are K-Nearest Neighbors (KNN), Linear Support Vector Machine (SVM), Quadratic SVM, Bagged Tree Ensemble and Quadratic discriminant. The paper presents a comparative study on the different classification techniques that can be used to distinguish between various emotions present in human speech. A comparison in terms of testing accuracy obtained using these classifiers has been performed in this paper on a database created for 4 emotions viz. anger, joy, sorrow and neutral in Marathi language.

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Visual Cryptography and Image Processing Based Approach for Bank Security Applications

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Abstract. Authentication is a critical step in initializing a bank transaction. Core banking and net banking systems use ID cards, passwords/PIN, OTP, etc. for authentication. However, these methods are still prone to forgery and hacking, due to which unauthorized person could gain access to user's account. We propose a methodology which uses an image share as authentication key. This has been created using visual cryptography and other image processing techniques to encrypt authentication parameters. It is encrypted such that the share becomes incomprehensible to human eyes and non-decryptable by hacker, thus protecting the data from forgery or hacking. This paper proposes a double authentication system where user is identified by decrypted image and PSNR value. Hence this system provides a very high level of security.

Keywords: Authentication · Cryptography · Decryption · Encryption · Extended visual cryptography · PSNR · Watermark security

1 Introduction

Authentication is validating user's identity. It is used in banks to determine whether the given user is the rightful owner of concerned account, to decide whether to allow or deny access to user. We propose a system where a unique image known as 'Encrypted share' is given to each user by the bank, which is used for authentication. Core banking uses signature, photograph, or ID card details like pan-card/UID number for authentication. Since public knows what details are used for verification, forgery of the same is possible. If authentication parameter is undisclosed, forgery is avoided. Hence, our image share is designed to hide verification parameters. Net Banking uses OTP to authenticate transaction. OTP can be accessed if device is cloned. Our encrypted share designed is incomprehensible to recreate. It is made accessible only via linked devices. The hackers cannot provide the same image as input to bank application from their side. Decryption of images is harder than decryption of string of alphanumeric data as it is multidimensional entity; hence generation of image key is preferred.