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PROJECT ABSTRACTS
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COMPOSITION WITH CONTEXT IN COMPUTER VISION

To understand every new object that comes in front of you need intelligence which takes help of compositionality and conceptuality. We always have an intelligence of understanding complex structure which takes an object and applies some rules to create some sense and build knowledge. As an example imagine a black mango. Even though it sounds strange to imagine such object called black mango, we can till imagine it. This is because we know what mango is and how black colour looks. Thus compositionality and contextualise can go on creating new and complex structures. It is common to apply this concept in natural language pro cessing, but applying the same concepts to visual objects create a new challenge in Computer V is ion field. The aim of our project is to apply compositionality and contextualise to visual objects. This problem statement comes under the domain of Computer Vision and deep learning. The problem of classification is well known and can b e easily done under this domain but building knowledge by composing objects and instances while respecting context increases the difficulty of a mo del. The current state-of-the-art models follow the data driven approach where the complex concepts are learned using hundreds and thousands of labelled examples instead of being composed. Thus our approach is different which is to compose known concepts to generate new and complex ones. In this project, we will focus on compositionality to compose unseen combinations of primitive visual concepts. We take two different primitives and Vb and combine them to form more complex primitive Vb . As an example, consider Va as the set of attributes and Vb as objects and thus Vab consists of complex concepts formed by attribute

EXTRACTION OF RDF TRIPLES FROM WIKIPEDIA

Knowledge graph construction has always been a costly endeavour requiring Skilled domain experts or a large amount of human effort, resulting in high quality but low coverage knowledge bases like WorldNet. However, projects like DBpedia and YAGO have taken advantage of the structured content of Wikipedia to construct semantic graphs that are both high coverage and high quality. While DBpedia has successfully extracted entity properties from Wikipedia infoboxes, only a fraction of the articles have infoboxes1. A large amount of information is hidden in the unstructured text. We describe a bootstrapping method which uses existing properties from DBpedia to identify context around entities and learn regular expressions that can match entity relation pairs. As an artefact of our processing we make available a dataset of sentences with tagged named entities .

ONTOLOGY-BASED IDS FOR SLOW DOS ATTACKS

The usage of web services has increased rapidly amongst the people as it leads to the increment in the productivity, especially in areas such as e-business (on-line transactions). Web application attacks are growing rapidly and are becoming difficult to detect despite the availability of ingenious intrusion detection methods. The need for defence mechanisms against these threats led to the introduction of Intrusion detection systems (IDS).
We introduce a novel method of intrusion detection for Slow DoS attacks using Ontology based methods and Machine Learning classifiers in attempt to get better accuracy rates and also trace

the attacks as Ontology helps us trace the attacks by knowledge acquisition. We have also analyzed the traffic characteristics for four Slow DoS attacks and have detected the important features for each of these attacks.

WEB PERSONALIZATION TOOL

Internet addiction is common among many millennial, and these people do not even realize that they have an addiction. This tool provides a detailed statistical analysis of the user's web usage. So, he can track where he sp ends his time most and also other utilities based on these stats and thus it helps him to control and monitor his web usage and prevent many side effects which could harm your social, emotional, and physical health. This tool is scalable and available to the user all the time across all the platforms wherever he uses chrome browser. This tool runs on the user side, so their history and cache is secure as all the pro cessing script runs in his browser and no data is accumulated except error logs. The users credentials if he signs up from a nongoogle email address are also stored encrypted.

The websites browsed are classified into respective categories using data mining algorithms like Naive Bayes and n-grams. After analysis and classification of users browsing history, user is provided with a detailed productivity rep ort of his activities, the rep ort basically includes the amount of time the user has spent in each category and websites are enlisted according to their categories. Other utilities like providing Relevant recommendations, blocking irrelevant advertisements, closing suspended tabs, Scheduling sites to op en or close on their own are also provided to help the user to control his time spent on the web.

ANIMAL HUSBANDRY ADVICE CALL CENTRE

A call centre is a central place where Customer Care Associates (CCA) handles inquiries of customers via the telephone. In the course of recent decades, the quick acceleration in access to inventive techniques that is computers and cell phones specifically has expanded the request of creative methods to interfacing these tools to handle issues and queries of farmers regarding health challenges of livestock's. Animal Husbandry Advice Call Centre (AHACC) is a Helpline that aims to Guide the farmers to get the information about the schemes available (provided by Government of Maharashtra and India) for livestock rearing and receive advice from knowledgeable person or specialist (if required) about the health issues along with all other problems related to live stocks. The goal of this project is to help operators (of call centre) get solution about the queries that user (farmer here) has asked for. The project aims to provide interface for different level of operators of the call centre and also computer technology integration to help operators to store information regarding caller and retrieve it when call is received again along with phone control capabilities (hang up, answer call, hold, conference, transfer).

Machine Learning Based Music Player

Since the early studies of human behaviour, emotion has attracted the interest of researchers in many areas of Technology. More recently, it is a growing field of research in computer science and machine learning. Music plays a vital role in people's everyday life. People like to listen to music that matches their emotional states The mood is statistically inferred from various data sources primarily: audio, image, text, and sensors. Human's mood is identified from facial expression and speech tones. Physical activities can be detected by sensors that humans usually carry in form of cell phones. The state of the art data science techniques now make it

computationally feasible to identify the actions based on very large data sets. The program learns from the data. Machine learning helps in classifying and predicting results using trained information. Using such techniques, applications can recognize or predict mood, activities for benefit to user. Emousic is s real time mood and activity recognition use case. It is a smart music player that keeps learning your listening habits and plays the song preferred by your past habits and mood, activities etc. Which means its personalised play-list generator?

HOST BASED INTRUSION DETECTION SYSTEM USING DECISION TREE AND NAIVE BAYES ALGORITHMS

A network intrusion is any unauthorized access to a computer network. For detecting a network intrusion, the defenders should have a clear understanding of

How attacks work. In a network environment, intrusions possess a major security

Issue which can be an unauthorized activity on a computer network which is generally difficult to detect. Through this project we aim to monitor computer

Network for malicious activity using Intrusion Detection System (IDS).

In this work, we aim to use Supervised Machine Learning Algorithms such as Naive Bayes classifier and Decision Tree Classifiers, and compare their output and eefficiency. The machine learning algorithms are used on a labelled dataset, which classifiers The connections as good or bad. As a result, the accuracy of the classification result has to be maximized by maintaining low false-negative and low false-positive rates.

TEXT SUMMARIZATION AND WORD SENSE DISAMBIGUATION USING SENTENCE EMBEDDINGS

Word Embeddings like word2vec, GloVe have revolutionized the field of NLP. Recently, sentence embeddings, which build up on word embeddings to provide a sentence level representation of data have been proposed, and have provided good results on sentence similarity tasks. However, their potential applications for other downstream NLP tasks have not been explored yet. In this project we analyzed the performance of two approaches to building sentence level embeddings from word2vec and GloVe. The first, SIF embeddings have been created through statistical techniques, while the other, sent2vec, have been trained using a neural network. Using these two sentence embeddings straight out of the box with no hyper parameter tuning or task/corpus specific retraining, we compared and contrasted the performance of these sentence embeddings on downstream NLP tasks, like extractive and abstractive summarization, and word sense disambiguation. We created simple specialized algorithms which allowed us to apply sentence embeddings on each of these tasks, and measured their performance against established baselines. On the Opinosis dataset, our extractive summarization method for both embeddings beats the MEAD baseline but does not b eat the more competitive Opinosis baseline. Both embeddings also b eat the simple random sense baseline and the most-frequent-sense baseline in the WSD task. This proves that sentence embeddings are to some extent successful in capturing the semantics of language.

ARTIFICIALLY TALENTED ARCHITECTURE FOR THEME DETECTION

Theme detection or theme recognition of a document is the recent topic of discussion. Theme of a document implies the identification of what the "document" is talking about. A document can be a single sentence or bunch of paragraphs. If the process of identification of the theme is automated, it can help in various activities like Semantic analysis in Natural Language

Processing (NLP), Building a ChatBot which correctly infers the context of the input statements, building a personal assistant and many more. Language can be ambiguous many a times, hence in this project we have tried to reduce the ambiguity and reduce delay in conversations and produce better results. We have used Neural Network to find out the theme of a document. As the topic name is Artificially Talented Architecture for Theme Detection, we propose a ChatBot that is efficient in identifying responses by identifying the theme of the conversation. Theme Detection reduces the processing time of search algorithm to improve overall performance significantly. We also propose a Home Automation module to demonstrate real life importance of this project.

AUTOMATIC DETECTION OF MOTORCYCLISTS WITHOUT HELMET

Motorcycles have always been the primary mo de of transport in developing countries. In recent years, there has been a rise in motorcycle accidents. One of the major reasons for fatalities in accidents is the motorcyclist not wearing a protective helmet. The most prevalent method for ensuring that motorcyclists wear helmet is traffic police manually monitoring motor at road junctions or through CCTV footage and penalizing those without helmet. But, it requires human intervention and efforts. This project proposes an automated system for detecting motorcyclists not wearing helmet and retrieving their motorcycle number plates from CCTV footage video. The proposed system first does background subtraction from video to get moving objects. Then, moving objects are classified as motorcyclist or no motorcyclist. For classified motorcyclist, head portion is located and it is classified as helmet or non-helmet. Finally, for identified motorcyclist without helmet, number plate of motorcycle is detected and the characters on it are extracted. The proposed system uses Convolution Neural Networks trained using transfer learning on top of pre-trained mo del for classification which has helped in achieving greater accuracy.

AUTOMATIC TEXT SUMMARIZATION

Extractive Text Summarization is a Natural Language Processing problem of forming a summary by using the most important sentences of an article and has been addressed in many different ways. In our research, we develop a model that uses metrics for giving importance to sentences, and apply it to Machine Learning and Deep Learning Models. Using the results obtained we find the optimal approach, along with other approaches that work particularly well, to do extractive text summarization. In addition, we analyze why these models perform better than the rest. Finally, we also find the importance of each metric in forming a summary based on several evaluation measures.

MACHINE LEARNING BASED ADAPTIVE ALGORITHM FOR DRIVERLESS CARS

Autonomous driving vehicles are proving to b e prevalent in agriculture, go transportation and cities prone to heavy traffic. Such vehicle must be able to follow best and safest predetermined path without human intervention for on-road driving such that it adapts according to its use, to qualify as fully autonomous. Considering the multiple advantages that autonomous vehicles provide, it is essential to study and analyze general public opinions and acceptance of the existing techniques. This literature review thus studies various survey papers regarding the techniques used in driver-less vehicles with the goal to compare existing approaches and study the conclusions and results they lead to. The aim is to not only study these methods but also to classify them according to the approach used and results in various experiments. Based on

these results, the survey identifies various methods that can be addressed in the future experiments.

SOCIAL MEDIA FILTERING USING MACHINE LEARNING

In Social Networking, it has become increasingly difficult to filter posts on your news feed/wall. The system currently works on text data ie. Tweets, but other multimedia forms can also b e added in future. The system gives user choice on which filtering to b e carried out. The project currently works on categorization of tweets based on user choice and sentiment analysis of filtered tweets. Filtering pro cess is achieved through a Machine Learning based Naive Bayes classifier automatically categorizing tweets in supp ort of category and also predicting its sentiment. System fetches only posts ie. Tweet (text, author, date, sentiment and category) preferred by user ie. Categories chosen by user before fetching tweets. Posts do not matching user preferences are skipped. Dataset for Sentiment Analysis and categorical model were also tested on Decision Tree and Supp ort Vector Machine classifier.

SENTIMENT ANALYSIS OF MOVIE REVIEWS USING NEURAL NETWORKS

Deep Learning Methods have more advantage than traditional Machine Learning Methods for sentiment analysis because of it can overcome the challenges faced by sentiment analysis.
Given proper and sufficient amount of training time and training data, deep learning model promises to perform the task on any text genre of sentiment classification with no data specific manual feature engineering. Here we describe long short term memory approach.

IMPLEMENTATION AND ANALYSIS OF A SERVERLESS SHARED DRIVE WITH AWS LAMBDA

Server less computing is an emerging new paradigm in cloud computing. Server less denotes a special kind of software architecture in which application logic is executed in an environment without visible pro cesses, operating systems, servers or virtual machines. Server less enables the deployment of applications and services to the cloud as co de snippets or functions as opposed to a monolithic program. While server less is rapidly evolving, it lacks a standard definition and general consensus within the technical community but has the potential to massively alter the way in which software delivers business value. This work aims to show how to go beyond traditional back-end architectures that requires the user to interact with a server by building a server less Shared-Drive which relies entirely on a computer service such as Amazon Web Service (AWS) Lambda and an assortment of useful third-party API's, services and pro ducts. The project demonstrates how to build the next generation of systems that can scale and handle demanding computational requirements without having to provision or manage a single server. The application is also tested to compare the response time for cold and warm requests, effect on load balancing, performance on memory reservation and resource retention behaviour. Additionally, the gaps and limitations in current server less architecture are discussed

SUPER RESOLUTION OF IMAGES USING GENERATIVE ADVERSARIAL NETWORKS

Super-resolution is a term for a set of methods of up scaling video or images without deteriorating their quality and even for sharpening of low resolution images. In fields of

astronomy, remote sensing, microscopy and tomography - the acquired images may be handicapped by a variety of factors. The affected images may be indistinct, noisy and deficient in spatial and/or temporal resolution. Super-resolution can be used as an effective remedy for the same. Super-resolution has gained importance in recent years on account of availability of cheaper computational power. This project aims to use super-resolution for sharpening of images by estimation of high resolution (HR) image/video from one or more low resolution (LR) observations of the same frame, using Wasserstein Generative Adversarial Networks with improved Gradient Penalty (WGAN-GP). A dataset consisting of low and high resolution images will be trained. We will also be doing a comparative study of this with Super Resolution Convolution Neural networks (SRCNN).

KRISHIFORWARD : SMART AGRICULTURE USING MACHINE LEARNING AND IOT
Due to the use of Internet of Things (IoT) communication between different things is effective. The application of IoT in agriculture industry plays a key role to make functionalities easy. Using the concept of IoT and Machine Learning, the smart farming system has been developed in many areas of the world.

The proposed system acquires data from the sensors (Soil moisture, pH, Temperature) on an android application using the WiFi connection. Arduino Uno R3 ATmega328P kit is used for connecting sensors and transferring data to an android application. Sensor readings are analyzed using machine learning algorithms and appropriate crop suggestion for the farmland is communicated to the user via an android application.

AUTONOMOUS SELF DRIVING RC CAR

Currently we are living in the world which is moving towards automation. From Automating Airplanes to Automating Calls at call centre, we have tried everything and results came up really promising. What comes next to airplanes in case of transport, Autonomous Cars (Industrial Robots). According to various surveys, Airplane flying in an auto pilot mode is safer than a pilot flying it. Another survey by Insurance Institute for industrial Safety says, in year 2015 alone 35,092 peoples died in accidents in USA. Someone dies once every 88 seconds of work hour. 2.6 million Peoples are injured in industries every year. This is billions of dollars of loss. Comparatively, self-driving cars are already precisely that much safer. Self driving cars are dedicated to driving and can notice more, from all angles and react more quickly. No amount of text messages can affect the cars ability to stay focused on the road. Self Driving cars don't care about app ointments, frustration or stop-and-go traffic. They can set to obey law, respect road signs and they will never lose track of the speed limit on the road. The concept of self driving cars technology taken to industries will be more beneficial in terms of human loss and to environment as well. We are currently living in the world where technology is up to the mark that we can to do almost anything with it, so why not make something accessible to society which will help them to live a happy and safe life. Our aim here is to make software which will b e able to drive an robotic car, which automatic recognize various path and can b e able to make independent decisions on its own, with the help of Computer Vision, machine learning and internet of thing Longer we wait to get the autonomous robots in industries, more the people will die.

REMOTE PATIENT MONITORING SYSTEM

Heart diseases are one of the major causes of death in the world today. According to WHO statistics, there are more than 10 million heart attack cases just in India. In the medical world, heart patients can be best served when under constant surveillance of a doctor. It is costly as well as not feasible for the patients to regularly take the tests by going to the doctor's place. In order to simplify the situation we are planning to build an Android based mobile application for the medical, which uses the novel idea of Internet of Things (IoT) and cloud computing. The key parameters which are required to monitor the patient include temperature, Electro Cardiogram (ECG), blood pressure and pulse rate. Our planned Android applications which help the doctor monitor the patient on a regular basis. At the doctors end the Android application will show the patients readings and if the doctor detects some anomaly or wants to change the prescription then he can immediately do so, which will be reacted in the patients side. We will be embedding the sensors in a micro-controller and use them to transfer the patients readings to doctor. After having a small talk with a professional cardiologist we have boiled down to three key sensors for our proposed system. As of now we have decided to implement ECG, temperature and pulse rate sensors for our application. In future the number of sensors can be added so that more relevant and detailed information goes to doctor and more proper diagnosis happens. We think that our application will be of lot of use to patients and Doctors both and will really help even in serious cases.

PORTAL APPLICATION
Digital system allows us to increase our life standard rate and to grow our modernization in daily routine work to work basis. The Basic Aim for this project is to develop a Fingerprint enable Digital System which help to optimize the work eficiency and Decrease error rate happens due to human work mistakes. This System basically Helps to store the daily record of the Attendance and keep track of them So in the time they will available for the further processing. With the help of android application students can view their attendances at real time of their respective subjects. This system will provide both manual i.e. through android.
application and bio metric i.e. through wireless device attendance taking facilities. By collecting digital attendances, a student presence can be known. Like if student is interested in activities, clubs or any other group. The student side application is more like social network where one can maintain his/her academic activities and building a prole. The faculty side application is more like professional network where faculties of different department can connect and can maintain their professional prole. This System also includes the feature of Keeping the Record of Storing the attendance in their respective portal account system.

INTRUSION DETECTION SYSTEM USING MACHINE LEARNING TECHNIQUE
In the domain of security, detecting intrusions is an important area of research with the rapid development of internet in everyday life. Many intrusion detection systems employ various classifier algorithms for classifying network traffic as normal or abnormal. These unique classifier models fail to achieve a high attack (DR) detection rate with low (FAR) false alarm rate because of the large amount of data. In this project classification and predictive models for detecting vulnerabilities are built by using machine learning classification algorithms. That is Supp ort Vector Machine (SVM) and Random Forest Classifier (RFC). HTTP CSIC 2010 data set is tested by these algorithms. In this particular paper we have tried to increase detection rate and reduce false alarm rate. We have captured raw network data of HTTP CSIC 2010 using Wire shark, according to the features we have classified them into two i.e., important features and other features.Important features are ones when removed from database accuracy get reduced. So we have to consider that feature in feature selection. Then we have done the feature

extraction and save the database. After that we have applied Random Forest Classifier (RFC) and Supp ort Vector Machine (SVM) on the database using Weka tool. We have calculated high detection rate (DR) and low false alarm rate (FAR) and compare with the existing systems. We have done the binary classification on application layer as normal traffic and anomalous traffic.

FACIAL SEARCH ENGINE

Face recognition systems are in demand nowadays, with their growing demand in daily life purposes. Be it unlocking your smart phone with your face, or be it arranging photos according to each person's face, face recognition is quite useful. And if that face recognition is used to search in videos or a large data set, and provide result on the basis of facial parameters, then it will be quite interesting and useful. That is if we are watching a video and if want to search the actor or the person in the video, by our method one can just click on the person/actor and get the search results. In our method we convert our video into respective P-frames ,than the user must select the P-frame on which he/she wants to apply the face recognition algorithm. Our face recognition algorithm detects features and aspects (such as nose, eyes ,ears),of face in the image, and then generates candidates for face detects. These face candidates are later compared with the data present in the training data set to identify the face in the image. Then the face is searched using different parameters like distance between eyes, nose length, ears size etc. and the results are shown after completion of process.

AUTOMATIC ANECDOTE DETECTION

Stories and anecdotes are often used by teachers, speakers, authors, and leaders to communicate abstract ideas and illustrate concepts. Stories by customers in business conversations (such as customer supp ort) in social media channels are also important sources of information. Discovering these anecdotes from texts such as books, articles and blogs posts are currently done by human researchers. In this project, we aim to automatically identify these stories from such sources, so as to:
• Improve the productivity of such researchers
• Provide a story-detection component that can be used by other text
analytics systems
To do this, we plan to:
• Define what a story is and its analytical components.
• Use a Machine Learning based approach to identify potential regions of
stories in unstructured text sources
• Build an application to do this.
The application that we aim to build will attempt to:
• Automatically identify regions of anecdotes (think of it as putting a
< anecdote >< /anecdote > tag around such regions of text)
• Classify them by certain labels (such as sports, films, business etc.) -
these labels will be provided by us.

LEARNING AID FOR DYSLEXICS

Dyslexia is the most common learning disability amongst children today. Dyslexics often face a lot of problems in reading and writing even in the later stages of their life. It is difficult for them to comprehend text and read fluently and accurately. They also have trouble answering questions about something they've read however, when it's read to them they may have no

difficulty at all. Standard pen-paper methods have helped mitigate the effects of dyslexia however they also take substantial amount of time for the student and sometimes are not fully able to mitigate the effects of dyslexia effectively. With massive strides in digital technology we feel that a digital solution to this problem can prove to b e effective and efficient. It will help fasten the learning pro cess amongst these students who come across a wide variety of digital tools and are more prone to get attracted to such tools for learning than the standard pen-paper tools. This rep ort will further explore, explain and analyze the pro cess in which this the Learning Aid, an android application came into being as well as demonstrating the justifications project and the decisions taken throughout.

PRIVACY PRESERVING DATA AGGREGATION ON SECURE CLOUD

Today, if one wants to perform computation on shared data, one needs access to the shared data on cloud. This results in privacy risks as the client gets access to encryption keys on the shared data for performing computation. Also in case of large dataset, such computation becomes expensive where enough computation power is not available with an individual client. It is often desired to delegate the ability to process then data, without giving away access to it. The proposed solution uses a homomorphic encryption scheme which keeps the data in private state i.e encrypted, but allows a client with no possession of the secret decryption key to compute any(still encrypted) result of the data, even when the function applied over the data is very a complex one. In short, a third party can perform complicated processing of data present on the cloud without being able to access it. Among other things, this helps make cloud computation compatible with privacy. Differential privacy is a mechanism through which one can ensure privacy while computation on shared data. It allows one to perform aggregation techniques while maintaining privacy. One can perform this computation on encrypted shared data through a technique called homomorphic encryption which produces encrypted results. The proposed work focuses on computing privacy preserving aggregate in secure cloud. The scenario is where individuals encrypt their data using public key homomorphism encryption techniques. Differentially Private Aggregation mechanisms aggregate individual data points for sharing while preserving their privacy. The encrypted data is stored on cloud and all data processing is done on encrypted data. Analysts ask for aggregation statistics and server returns privacy preserving aggregate by using novel concept of Differential Data Privacy. Open research issues are computation of sensitivity from encrypted data, however this can be estimated by using domain knowledge.

DATA ANALYSIS FOR HEALTH CARE SYSTEM

Phonocardiography is one of the techniques which helps in identification and further diagnosis of diseases related to human heart. Contraction of heart muscles and closure of heart valve produces heart sound and murmur, which can be analyzed by an experienced cardiologist. The objective of this study is to generate an automatic classification method using phonocardiogram data for anomaly detection in heart sound. The proposed system consists of four stages namely 1) Data Acquisition 2) Preprocessing 3) Feature Extraction and 4) Classification. The Accuracy of the system is 91.5% with sensitivity of 92% and speciality of 91% .

PASSIVE IP TRACEBACK:DISCLOSING THE BOT-NET OF IP SPOOFERS FROM PATH BACKSCATTER

It is long known attackers may utilize fashioned source IP location to cover their real areas. spoon attack source trace back is an open and challenging problem. Deterministic Packet Marking (DPM) is a simple and effective traceback mechanism, but the current DPM based trace back schemes are not practical due to their scalability constraint. However, due to the challenges of deployment, there has been not a widely adopted IP trace back solution, at least at the Internet level. As a result, the mist on the locations of spoofers has never been dissipated till now. This paper proposes Passive IP (PIT) trace back that bypasses the deployment difficulties of IP traceback techniques. PIT investigates Internet Control Message Protocol (ICMP) error messages (named path backscatter) triggered by spoong tracks, and tracks the spoofers based on public available information (e.g., topology). In order to traceback to involved attack source, what we need to do is to mark these involved ingress routers using the traditional DPM strategy. Similar to existing schemes, we require participated routers to install a trac monitor Along these lines, PIT can discover the spoofers with no arrangement necessity. This paper represents the reasons, accumulation, and the factual results on way backscatter,

Exhibits the procedures and adequacy of PIT, and demonstrates the caught areas of spoofers through applying PIT on the way backscatter information set. These results can help further reveal IP spoofing, which has been studied for long but never well understood. Though PIT cannot work in all the spoofing attacks, it may be the most useful mechanism to trace spoofers before an Internet-level trace back system has been deployed in real.

BINAURAL RENDERING OF AMBISONICS - A 360 DEGREE SURROUND SOUND TECHNOLOGY

Recently ambisonics format has gained popularity as directional/spatial audio encoding format for 360 degree videos, virtual reality, etc., with major video distribution platforms such as YouTube and Facebook adopting it for 360 degree videos. One of the most important characteristics of ambisonics is that it does not require the layout of speakers to be predefined for encoding. Rather the encoded representation can be decoded for any given speaker layout, which provides users, the flexibility to choose any layout of speakers and deco de the given ambisonics representation for the same. The first order ambisonics encoding of a sound field requires four channels of an audio stream and the directional information (specialization) can b e further improved by going for higher order ambisonics encoding with a larger number of channels. Rendering spatial audio requires a large number of speakers (6,8 speakers for 5.1, 7.1 surround respectively) placed in a specific way around the listener. All this hardware setup can b e replaced with a headphone and an ambisonics to binaural rendering software. Binaural rendering is based on the concept of creating the effect of a virtual speaker on headphones using Head Related Transfer Function (HRTF). The aim of this paper is to present the studies which focus on positives of ambisonics over the traditional surround sound techniques and the method for implementing the ambisonics binaural rendering system