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# SECURITY THREATS ON CLOUD COMPUTING VULNERABILITIES

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## ABSTRACT

Clouds provide a powerful computing platform that enables individuals and organizations to perform variety levels of tasks such as: use of online storage space, adoption of business applications, development of customized computer software, and creation of a "realistic" network environment. In previous years, the number of people using cloud services has dramatically increased and lots of data has been stored in cloud computing environments. In the meantime, data breaches to cloud services are also increasing every year due to hackers who are always trying to exploit the security vulnerabilities of the architecture of cloud. In this paper, three cloud service models were compared; cloud security risks and threats were investigated based on the nature of the cloud service models. Real world cloud attacks were included to demonstrate the techniques that hackers used against cloud computing systems. In addition, counter measures to cloud security breaches are presented.

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# BIG DATA IN CLOUD COMPUTING REVIEW AND OPPORTUNITIES

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## ABSTRACT

Big Data is used in decision making process to gain useful insights hidden in the data for business and engineering. At the same time it presents challenges in processing, cloud computing has helped in advancement of big data by providing computational, networking and storage capacity. This paper presents the review, opportunities and challenges of transforming big data using cloud computing resources.

## KEYWORDS

Big data; cloud computing; analytics; database; data warehouse

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# Monitoring Student Attendance Using A Smart System at Taif University

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## ABSTRACT

The university system in the Kingdom of Saudi Arabia is concerned with student attendance for lectures, and it is the responsibility of lecturers to monitor student attendance for each lecture. By the end of the semester, students get an attendance register indicating which lectures the student has attended and it reports the calculated percentage for each student's attendance in each course. Universities have regulated the mechanisms and the acceptable percentages of student absence. The process for a lecturer to manually check student attendance consumes a lot of time and effort, either during the lecture or when in the process of emptying absenteeism and inserting it into the university's electronic system. Therefore, Saudi universities compete to find modern methods of checking student attendance that will avoid the disadvantages of manually taking attendance. For this reason, they have produced electronic attendance systems, for example, using a student's fingerprint, an eye recognition system, or a mobile phone system to read a QR code designed for the same purpose. All of these systems have the disadvantage that they consume a lot of time, as all students have to line up at the fingerprint reader or the eye detector for identification. Therefore, the problem of the consumption of lecture time is still present, even with these modern systems. Therefore, the aim of this research is to propose a smart mobile application that is able to check the attendance of students without having to consume lecture time or require any effort from the lecturer. The system automatically recognizes the attendance of students through their university ID cards. Each lecturer would use his/ her own mobile phone to use the proposed system to check the attendance of students instead of using manual method to register the attendance of students and the students' ID cards that are detected by coming within range of the lecturer reader would represent present students, and missing student ID cards represent absent students

## KEYWORDS

Context Awareness, RFID, Monitoring Student Attendance.

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# DATA WAREHOUSE AND BIG DATA INTEGRATION

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## ABSTRACT

Big Data triggered furthered an influx of research and prospective on concepts and processes pertaining previously to the Data Warehouse field. Some conclude that Data Warehouse as such will disappear; others present Big Data as the natural Data Warehouse evolution (perhaps without identifying a clear division between the two); and finally, some others pose a future of convergence, partially exploring the possible integration of both. In this paper, we revise the underlying technological features of Big Data and Data Warehouse, highlighting their differences and areas of convergence. Even when some differences exist, both technologies could (and should) be integrated because they both aim at the same purpose: data exploration and decision making support. We explore some convergence strategies, based on the common elements in both technologies. We present a revision of the state-of-the-art in integration proposals from the point of view of the purpose, methodology, architecture and underlying technology, highlighting the common elements that support both technologies that may serve as a starting point for full integration and we propose a proposal of integration between the two technologies.

## KEYWORDS

Big Data, Data Warehouse, Integration, Hadoop, NoSql, MapReduce, 7V's, 3C's, M&G

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# FUTURE AND CHALLENGES OF INTERNET OF THINGS

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## ABSTRACT

The world is moving forward at a fast pace, and the credit goes to ever growing technology. One such concept is IOT (Internet of things) with which automation is no longer a virtual reality. IOT connects various non-living objects through the internet and enables them to share information with their community network to automate processes for humans and makes their lives easier. The paper presents the future challenges of IoT , such as the technical (connectivity , compatibility and longevity , standards , intelligent analysis and actions , security), business ( investment , modest revenue model etc. ), societal (changing demands , new devices, expense, customer confidence etc. ) and legal challenges ( laws, regulations, procedures, policies etc. ). A section also discusses the various myths that might hamper the progress of IOT, security of data being the most critical factor of all. An optimistic approach to people in adopting the unfolding changes brought by IOT will also help in its growth.

## KEYWORDS

IoT, Internet of Things, Security, Sensors.

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# CLUSTERING ALGORITHM FOR A HEALTHCARE DATASET USING SILHOUETTE SCORE VALUE

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## ABSTRACT

The huge amount of healthcare data, coupled with the need for data analysis tools has made data mining interesting research areas. Data mining tools and techniques help to discover and understand hidden patterns in a dataset which may not be possible by mainly visualization of the data. Selecting appropriate clustering method and optimal number of clusters in healthcare data can be confusing and difficult most times. Presently, a large number of clustering algorithms are available for clustering healthcare data, but it is very difficult for people with little knowledge of data mining to choose suitable clustering algorithms. This paper aims to analyze clustering techniques using healthcare dataset, in order to determine suitable algorithms which can bring the optimized group clusters. Performances of two clustering algorithms (Kmeans and DBSCAN) were compared using Silhouette score values. Firstly, we analyzed K-means algorithm using different number of clusters (K) and different distance metrics. Secondly, we analyzed DBSCAN algorithm using different minimum number of points required to form a cluster (minPts) and different distance metrics. The experimental result indicates that both K-means and DBSCAN algorithms have strong intra-cluster cohesion and inter-cluster separation. Based on the analysis, K-means algorithm performed better compare to DBSCAN algorithm in terms of clustering accuracy and execution time.

## KEYWORDS

Dataset, Clustering, Healthcare data, Silhouette score value, K-means, DBSCAN

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# DATA MINING MODEL PERFORMANCE OF SALES PREDICTIVE ALGORITHMS BASED ON RAPIDMINER WORKFLOWS

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## ABSTRACT

By applying RapidMiner workflows has been processed a dataset originated from different data files, and containing information about the sales over three years of a large chain of retail stores. Subsequently, has been constructed a Deep Learning model performing a predictive algorithm suitable for sales forecasting. This model is based on artificial neural network –ANN- algorithm able to learn the model starting from sales historical data and by pre-processing the data. The best built model uses a multilayer neural network together with an "optimized operator" able to find automatically the best parameter setting of the implemented algorithm. In order to prove the best performing predictive model, other machine learning algorithms have been tested. The performance comparison has been performed between Support Vector Machine –SVM-, k-Nearest Neighbor k-NN-,Gradient Boosted Trees, Decision Trees, and Deep Learning algorithms. The comparison of the degree of correlation between real and predicted values, the average absolute error and the relative average error proved that ANN exhibited the best performance. The Gradient Boosted Trees approach represents an alternative approach having the second best performance. The case of study has been developed within the framework of an industry project oriented on the integration of high performance data mining models able to predict sales using– ERP- and customer relationship management –CRM- tools.

## KEYWORDS

RapidMiner, Neural Network, Deep Learning, Gradient Boosted Trees, Data Mining Performance, Sales Prediction.

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# AN ALGORITHM FOR PREDICTIVE DATA MINING APPROACH IN MEDICAL DIAGNOSIS

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## ABSTRACT

The Healthcare industry contains big and complex data that may be required in order to discover fascinating pattern of diseases & makes effective decisions with the help of different machine learning techniques. Advanced data mining techniques are used to discover knowledge in database and for medical research. This paper has analyzed prediction systems for Diabetes, Kidney and Liver disease using more number of input attributes. The data mining classification techniques, namely Support Vector Machine(SVM) and Random Forest (RF) are analyzed on Diabetes, Kidney and Liver disease database. The performance of these techniques is compared, based on precision, recall, accuracy, f_measure as well as time. As a result of study the proposed algorithm is designed using SVM and RF algorithm and the experimental result shows the accuracy of 99.35%, 99.37 and 99.14 on diabetes, kidney and liver disease respectively.

## KEYWORDS

Data Mining, Clinical Decision Support System, Disease Prediction, Classification, SVM, RF.

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# SMART MOTORCYCLE HELMET: REAL-TIME CRASH DETECTION WITH EMERGENCY NOTIFICATION, TRACKER AND ANTI-THEFT SYSTEM USING INTERNET-OF-THINGS CLOUD BASED TECHNOLOGY

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## ABSTRACT

Buying a car entails a cost, not counting the day to day high price tag of gasoline. People are looking for viable means of transportation that is cost-effective and can move its way through traffic faster. In the Philippines, motorcycle was the answer to most people transportation needs. With the increasing number of a motorcycle rider in the Philippines safety is the utmost concern. Today technology plays a huge role on how this safety can be assured. We now see advances in connected devices. Devices can sense its surrounding through sensor attach to it. With this in mind, this study focuses on the development of a wearable device named Smart Motorcycle Helmet or simply Smart Helmet, whose main objective is to help motorcycle rider in times of emergency. Utilizing sensors such as alcohol level detector, crash/impact sensor, Internet connection thru 3G, accelerometer, Short Message Service (SMS) and cloud computing infrastructure connected to a Raspberry Pi Zero-W and integrating a separate Arduino board for the antitheft tracking module is used to develop the propose Internet-of Things (IoT) device. Using quantitative method and descriptive type research, the researchers validated the results from the inputs of the participant who tested the smart helmet during the alpha and beta testing process. Taking into account the ethical consideration of the volunteers, who will test the Smart Helmet. To ensure the reliability of the beta and alpha testing, ISO 25010 quality model was used for the assessment focusing on the device accuracy, efficiency and functionality. Based on the inputs and results gathered, the proposed Smart Helmet IoT device can be used as a tool in helping a motorcycle rider when an accident happens to inform the first-responder of the accident location and informing the family of the motorcycle rider.

## KEYWORDS

Smart Helmet, Internet of Things, Sensors, Real-Time Crash Detection, Emergency Notification, Tracker, Anti-Theft System Cloud Based Technology.

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# SIMULATION OF SOFTWARE DEFINED NETWORKS WITH OPEN NETWORK OPERATING SYSTEM AND MININET

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## ABSTRACT

With the emergence of recent technologies in the field of computer network, traditional infrastructure in the field of networks have become obsolete and incompatible with respect to the new architectures of open networks that emerge with force. This is how software-defined networks emerge by enabling cloud computing ecosystem, enterprise data centers, and telecommunications service providers. The major contribution of this paper is the simulation of an ecosystem based on a software defined network by making use of certain types of networks topologies and using the virtualization of the open network operating system (ONOS) and Mininet as a network emulator.

## KEYWORDS

Computer Network, Software-defined Networks, Network Topologies, Simulation, Open Network Operating System.

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