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# **Enhancing and Measuring the Performance in Software Defined Networking**

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## **ABSTRACT**

Software Defined Networking (SDN) is a challenging chapter in today's networking era. It is a network design approach that engages the framework to be controlled or 'altered' adroitly and halfway using programming applications. SDN is a serious advancement that assures to provide a better strategy than displaying the Quality of Service (QoS) approach in the present correspondence frameworks. SDN etymologically changes the lead and convenience of system instruments using the single high state program. It separates the system control and sending functions, empowering the network control to end up specifically. It provides more functionality and more flexibility than the traditional networks. A network administrator can easily shape the traffic without touching any individual switches and services which are needed in a network. The main technology for implementing SDN is a separation of data plane and control plane, network virtualization through programmability. The total amount of time in which user can respond is called response time. Throughput is known as how fast a network can send data. In this paper, we have design a network through which we have measured the Response Time and Throughput comparing with the Real-time Online Interactive Applications (ROIA), Multiple Packet Scheduler, and NOX.

## **KEYWORDS**

Software Defined Networking, SDN, Quality of Service, QoS, Real-time Online Interactive Application, ROIA, Network Operating System, NOX, CES, MPLSTE, Switch Capacity, Number of Queues Impact, QoE Evaluation, Bandwidth Isolation.

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# **Analysis of LTE Radio Load and User Throughput**

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## **ABSTRACT**

A recurring topic in LTE radio planning pertains to the maximum acceptable LTE radio interface load, up to which a targeted user data rate can be maintained. We explore this topic by using Queuing Theory elements to express the downlink user throughput as a function of the LTE Physical Resource Block (PRB) utilization. The resulting formulas are expressed in terms of standardized 3GPP KPIs and can be readily evaluated from network performance counters. Examples from live networks are given to illustrate the results, and the suitability of a linear decrease model is quantified upon data from a commercial LTE network.

## **KEYWORDS**

LTE, Traffic Model, Processor Sharing, Network Measurements.

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# **Ensemble of Probabilistic Learning Networks for IoT Edge Intrusion Detection**

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## **ABSTRACT**

This paper proposes an intelligent and compact machine learning model for IoT intrusion detection using an ensemble of semi-parametric models with Ada boost. The proposed model provides an adequate realtime intrusion detection at an affordable computational complexity suitable for the IoT edge networks. The proposed model is evaluated against other comparable models using the benchmark data on IoT-IDS and shows comparable performance with reduced computations as required.

## **KEYWORDS**

Adaboosted ensemble learning, IoT edge security, machine learning for IoT

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# **Scalable and Energy Efficient Task Offloading Schemes for Vehicular Cloud Computing**

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## **ABSTRACT**

Smart vehicles of today on road are equipped with advanced computational units, multiple communication technologies, intelligent sensing platforms, and human-computer interaction devices which utilize Vehicular Edge Networks to support services offered by the remote cloud. This being named as Opportunistic Vehicular Edge Computing recently, has the possibility to supplement the services provided by the Edge gadgets. Many Vehicular Edge Computing architectures have been proposed as of late which support task offloading. One among the premier difficulties in these networks is efficiently utilizing the resources available at the vehicular nodes. The present work uses APEATOVC, a conveyed and versatile protocol for economical, efficient and effective task offloading in these networks which address the adaptability of vehicular clouds. The results obtained by extensive simulations are presented to assess and contrast its performance with existing protocols.

## **KEYWORDS**

Vehicular Cloud Computing, Mobile Edge Computing, Vehicular Ad-Hoc Networks, Computation Offloading.

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# **PERFORMANCE EVALUATION OF OSPF AND RIP ON IPV4 & IPV6 TECHNOLOGY USING G.711 CODEC**

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## **ABSTRACT**

Migration from IPv4 to IPv6 is still visibly slow, mainly because of the inherent cost involved in the implementation, hardware and software acquisition. However, there are many values IPv6 can bring to the IP enabled environment as compared to IPv4, particularly for Voice Over Internet Protocol (VoIP) solutions. Many companies are drifting away from circuit based switching such as PSTN to packet based switching (VoIP) for collaboration. There are several factors determining the effective utilization and quality of VoIP solutions. These include the choice of codec, echo control, packet loss, delay, delay variation (jitter), and the network topology. The network is basically the environment in which VoIP is deployed. State of art network design for VoIP technologies requires impeccable Interior Gateway routing protocols that will reduce the convergence time of the network, in the event of a link failure. Choice of CODEC is also a main factor. Since most research work in this area did not consider a particular CODEC as a factor in determining performance, this paper will compare the behaviour of RIP and OSPF in IPv4 and IPv6 using G.711 CODEC with riverbed modeller17.5.

## **KEYWORDS**

IPv4, IPv6, Network topology, VoIP, CODEC

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# **Routing Protocols Performance in Mobile Ad-Hoc Networks Using Millimeter Wave**

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## **ABSTRACT**

Self-Organized networks (SONs) have been studied for many years, and have attracted many researchers due to their substantial applications. Although the performance of such networks in the lower band networks (sub-6 GHz band frequencies) has been well studied, there are only sparse studies on SON in higher frequency bands, such as the millimeter wave (mmWave) band ranges between 28GHz and 300GHz. mmWave frequencies have attracted many researchers in the past few years because of its unique features and are now considered as an important part of the next generation of wireless communications namely (5G). In this paper, we study the performance of some well-known routing protocols in the case of mmWave Mobile Ad hoc Networks (MANET) using the ns-3 mmwave module that was developed recently. SONs are within the goals for the next release of the 3GPP New Radio (NR) standardization process (Release-16) for the 5G, which makes the study of the behavior of such frequency bands for these networks an important activity towards achieving such goal. Mathematical and simulation results show a great improvement in the routing protocols delivery rates and power consumption when using mmWave compared to the sub6GHz band frequencies.

## **KEYWORDS**

Millimeter wave, Routing, mobile ad-hoc networks (MANET), Self-Organized Networks (SON), 5G, performance evaluation.

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## **Threats and Anti-threats Strategies for Social Networking Websites**

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### **ABSTRACT**

Social networks can offer many services to the users for sharing activities events and their ideas. Many attacks can happen to the social networking websites due to trust that have been given by the users. Cyber threats are discussed in this paper. We study the types of cyber threats, classify them and give some suggestions to protect social networking websites of variety of attacks. Moreover, we gave some ant threats strategies with future trends.

### **KEYWORDS**

Social Networking Websites, Security, Privacy, Cyber threats

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# **Improvement of Multiple Routing Based on Fuzzy Clustering and PSO Algorithm in WSNs to Reduce Energy Consumption**

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## **ABSTRACT**

One of the most important issues discussed in Wireless Sensor Networks (WSNs) is how to transfer information from nodes within the network to the base station and select the best possible route for transmission of this information, taking into account energy consumption for the network lifetime with maximum reliability and security. Hence, it would be useful to provide a suitable method that would have the features mentioned. This paper uses an Ad-hoc On-demand Multipath Distance Vector (AOMDV) as a routing protocol. This protocol has high energy consumption due to its multipath. However, it is a big challenge if it can reduce AOMDV energy consumption. Therefore, clustering operations for nodes are of high priority to determine the head of clusters which LEACH protocol and fuzzy logic and Particle Swarm Optimization (PSO) algorithm are used for this purpose. Simulation results represent 5% improvement in energy consumption in a WSN compared to AOMDV method.

## **KEYWORDS**

Energy Aware Routing Protocol, Fuzzy Logic, Ad-hoc Multipath, LEACH, Particle Swarm Optimization Algorithm

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# **A HYBRID MODULATION METHOD FOR DIMMING IN VISIBLE LIGHT COMMUNICATION**

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## **ABSTRACT**

In visible light communication in which information is superimposed on light, its communication range is visible. On the other hand, when the modulation that brightness is changed according to information is used, it is not good for the human eye because human feels flicker for the changed brightness. Therefore, the pulse width modulation which is used in the infrared remote controller, is not suitable for the visible light communication. And the pulse position modulation that sends information at the position of a pulse is often used. In pulse position modulation, for example, when one symbol uses four slots, quad information can be sent by turning on only one slot among the four slots and turning off the other three slots. In this method, the brightness becomes  $\frac{1}{4}$  and feels not flicker but darker than when it is always on. On the other hand, when inverted pulse position modulation in which these slots of ON and OFF are reversed is used, since one slot is OFF, and three slots are ON, the brightness becomes  $\frac{3}{4}$ , which does not become too dark. In this paper, we propose a hybrid modulation that can vary the brightness other than  $\frac{1}{4}(25\%)$  or  $\frac{3}{4}(75\%)$  by combining these pulse position modulation and inverted pulse position modulation. We have two experiments; one is measuring its communication performance and the other is the evaluation for visual flicker by the human eye and. From the view of the communication performance, each brightness is the same performance. So, the changing brightness does not affect to the performance. For the dimming, we interviewed 10 people how to feel the flicker in visible light communication. As the result, they do not feel the flickers. So, our proposed hybrid modulation method can be adapted for the dimming lighting equipment.

## **KEYWORDS**

Visible Light Communication, lighting control, dimming, wireless communication

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# **A Rapid Deployment Big Data Computing Platform for Cloud Robotics**

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## **ABSTRACT**

The primary contribution of this research is the production of a general cloud robotics architecture that leverages the established and evolving big data technologies. Prior research in this area has not released all details of their deployed architectures, which prevents experimental results from being replicated and verified. By providing a general-purpose architecture, it is hoped that this framework will allow future research to build upon and begin to create a standardised platform, where research can be easily repeated, validated and compared. The secondary contribution is the critical evaluation of the design of cloud robotic architectures. Whilst prior research has demonstrated that cloud-based robotic processing is achievable via big data technologies, such research has not discussed the choice in design. With the ecosystem of big data technologies expanding in recent years, a review of the most relevant technologies for cloud robotics is appropriate to demonstrate and validate the proposed architectural design.

## **KEYWORDS**

Cloud robotics, big data, OpenStack, Apache, ROS.

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