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# Meta-Reinforcement Learning Based Resource Management in Software Defined Networks Using Bayesian Network

Publisher: IEEE

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Ashish Sharma ; Sanjiv Tokekar ; Sunita Varma   **All Authors** ...



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### Abstract

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- III. Proposed Resource Management For SDN Using Bayesian Network
- IV. Experimental Analysis
- V. Conclusion

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**Abstract:**The capacity of Software Defined network (SDN) to efficiently manage resources depends heavily on the scalability of both the scale of the network and the services it sup... **View more**

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##### Abstract:

The capacity of Software Defined network (SDN) to efficiently manage resources depends heavily on the scalability of both the scale of the network and the services it supports. An effective resource allocation (RA) method is necessary for managing dynamic network traffic and load distribution across several controllers. The uncertain and dynamic relationship between resources has prevented reinforcement learning (RL) from performing effectively for real-time load in SDN, despite its use for load balancing. This is because reinforcement learning models resource management as a linear optimization issue. This paper presents a Bayesian framework to build an intelligent optimization framework for SDN resource management by employing deep meta-RL. It is a variant of conventional RL that requires less data for training but still helps the agent grasp the underlying policies. To accomplish load balance, the Bayesian network is trained with RL to make the most optimal decisions based on the predicted amount of congestion. Adjusting the controller's parameter weights automatically helps it cope with congestion caused by heavy loads. This algorithm decides on the best action based on the prediction made by reinforcement learning. In this case, the resource management strategy proposed by SDN has been experimentally validated to confirm the theoretical understanding. This work used a real-time database from the electricity distribution center in Indore, India data center to assess the proposed work's efficiency and efficacy.



**Published in:** 2023 IEEE 3rd International Conference on Technology, Engineering, Management for Societal impact using Marketing, Entrepreneurship and Talent (TEMSMET)

**Date of Conference:** 10-11 February 2023

**DOI:** 10.1109/TEMSMET56707.2023.10150107

**Date Added to IEEE Xplore:** 16 June 2023

**Publisher:** IEEE

**► ISBN Information:**

**Conference Location:** Mysuru, India

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 **Contents**

**I. Introduction**

There has been a dramatic shift in the networking paradigm due to the explosion in internet usage over the past two decades and the resulting diversity in service requirements. Due to the inability of legacy IP networks to support modern high-throughput applications, SDN has evolved which completely revamped the foundations upon which traditional IP networks were built. It proposes a network architecture that is both extremely scalable and programmable, allowing for the placement of network entities to be customized to meet the needs of individual services. Switches, routers, firewalls, load balancers, and other network hardware can be optimally configured to increase the network's throughput by a large margin. By dissociating the data and control planes, software-defined networking (SDN) enables highly adaptable management of network logic.

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Published: 2018

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A Deep Reinforcement Learning Based Switch Controller Mapping Strategy in Software Defined Network  
IEEE Access

# Determination of Transmission Error and Mesh Stiffness in Spur Gear Pair using CAD-FEM Integration Approach

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**Abstract.** Unwanted sound and sensations are key sources of excitations in gear drives. They developed because of Transmission Error (TE). TE is a consequence of geometric or engineering flaws like profile/pitch error etc. or distortions like spall, indentation, crack, rubs etc. arising due to the diverse load conditions. These distortions and various gear parameters like number of teeth, contact ratio, module, pressure angle etc. have huge effects on TE and produce changes in mesh stiffness. This demands to investigate the effects of these parameters on TE and mesh stiffness for the avoidance or early finding of causes of malfunctions in the transmission system using computer models using CAD-CAE (FEM) software. In this paper the TE and mesh stiffness is determined using CAD-FEM integration approach and the impact of some of the gear parameters, tooth tip radius and geometric flaw- pitch error is analyzed. The modeling of spur gears & assembly to form gear pair is done in CAD software SOLIDWORKS. The gear pair formed is then introduced into FEM software Ansys for simulation using transient structural analysis method to find angular deformations and then TE and mesh stiffness. Several charts are drawn amongst rotation angle of one of the gears (driver gear) and TE/mesh stiffness for different gear parameters. The work demonstrated the use of CAD-CAE integration approach and point out that all these parameters affect TE and mesh stiffness in a meaningful way.

**Key words:** SOLIDWORKS, Pitch Error, Tooth Tip Radius, Tooth Geometry Error, Deformations, Ansys

## 1. Introduction

Gears are the backbone of the transmission system, and spur gears are the most frequently used elements in it. They are also exposed to distortions because of various engineering/geometric flaws or altering load situations. These distortions are responsible for the development of unsolicited sound and excitations resulting in power or torque loss. To explore the effects of these on power transmission systems such as gear drives, several methods ranging from theoretical or mathematical to experimental or computer simulations are frequently applied successfully. The work presented here shows the use of a CAD and FEM software integration approach developed by [1] for the calculation of mesh stiffness to find the TE and mesh stiffness to analyse the effects of various gear parameters, tooth tip radius and pitch error on TE and mesh stiffness. Pitch error is the difference in theoretically correct pitch and



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# Performance of UFMC Waveform Design implemented in Massive MIMO system for 5th Generation Wireless Communication Systems

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- II. System Model
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**Abstract:**Next generation wireless network are intended to support heterogeneous networks and to meet the major challenge of coping with spectral efficiency (SE) to accommodate lar... **View more**

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##### Abstract:

Next generation wireless network are intended to support heterogeneous networks and to meet the major challenge of coping with spectral efficiency (SE) to accommodate larger number of users with reduced complexity and latency. One way is to increase the number of antenna arrays at base station which can provide the multiplexing gain and reduced radio frequency (RF) chains. Massive multiple-input multiple-output (MIMO) system with large number of antennas is designed to increased spectral efficiency. A lot of signal processing challenges in Massive MIMO system are to be deal with to improve spectral efficiency in multi antenna technology. This paper addresses multicarrier signal format named Universal Filtered Multi-Carrier (UFMC) as new waveform in multi-user massive MIMO systems. UFMC is the most promising waveform to be used in 5G and beyond networks as it facilitates multiple users to be served within the same frequency and time slot. In this paper, UFMC modulation with Quadrature Amplitude Modulation (QAM) mapping into the massive MIMO system with linear processing is implemented and the result are shown that it achieves higher SE and even high data rates with reduced Bit Error Rate (BER).

**Published in:** 2022 4th International Conference on Advances in Computing, Communication Control and Networking



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(ICAC3N)

**Date of Conference:** 16-17 December 2022

**DOI:** 10.1109/ICAC3N56670.2022.10074534

**Date Added to IEEE Xplore:** 28 March 2023

**Publisher:** IEEE

**► ISBN Information:**

**Conference Location:** Greater Noida, India

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## ☰ Contents

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### I. Introduction

5G wireless networks are targeted mainly the three use cases: enhanced mobile broadband (eMBB) to deal with mainly the feature of Augmented and virtual reality, massive machine-type communications (MTC) with huge devices with Internet of Everything (IOE) industry and ultra-reliable low-latency communications (uRLLC) in real time applications to cope with latency. To use the available spectrum for communication efficiently is the major challenge in 5G. So a more flexible and reliable air interface is required to meet future mobile communication systems requirement and to move from cell-centric to user-centric approach [2]. To cope with the network densification with limited available spectrum, radio access techniques need to be analyzed and designed. So the multicarrier waveform is used as air interface to facilitate the flexibility in heterogonous networks [3]. For this, new multi-carrier modulation Universal filtered multi-carriers (UFMC) technique is used to design waveform and further combined with large multi-antenna systems to enhance the system performance [4]. The waveform is physical structure of the signal to carry the information via a communication channel. The major design criteria for waveform to meet the following requirements of 5G: high Spectral Efficiency (SE) and Energy Efficiency (EE) [2]. The major design feature of modulation technique is flexibility and scalability to provide service in broad and heterogeneous areas of applications.

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On the Bit Error Rate of Opportunistic Wireless Systems that Employ Non-Square Quadrature Amplitude Modulations  
2019 IEEE Fourth Ecuador Technical Chapters Meeting (ETCM)

# Performance Analysis of Universal Filtered Multicarrier Waveform with Various Design Parameters for 5G and Beyond Wireless Networks



Smita Jolania, Ravi Sindal, and Ankit Saxena

**Abstract** The next-generation cellular networks have the challenges to achieve higher data rates, low latency, and higher spectral efficiency to support the usage scenarios like massive machine type communication (mMTC) to support a high density of devices, ultra-reliable low-latency communication (URLLC) to provide high-speed mobility, and enhanced mobile broadband (eMBB) to handle larger traffic. Universal filtered multicarrier (UFMC) will be one of the possible solutions for a fifth-generation (5G) wireless network. This research paper provides a comprehensive parameterized UFMC waveform with higher-order quadrature amplitude modulation (QAM). The performance criteria such as Fast Fourier Transform (FFT) length, sub-band size, and higher-order QAM techniques with various prototype filter design constraints are analyzed and the system performance is presented. It has been concluded that UFMC is much flexible and efficient modulation technique to fulfil the dynamic requirements of 5G and beyond wireless networks.

**Keywords** UFMC · 5G · OFDM · MIMO · Spectral efficiency

## 1 Introduction

The massive deployment of wireless systems and Internet devices with new application scenarios has created demands for ubiquitous connectivity with extreme data traffic. To fulfill these needs, 5G technology has emerged to cope with challenges like increase in user density, seamless connectivity, traffic density, data rate, and extensive applications. In the current cellular network, increasing bandwidth or increasing cell density is the major factors considered to meet the requirement of peak data rate and increased capacity. The primary challenge in this approach is that the limited resources are reaching their saturation and also increasing the cost of the hardware [1].

---

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# Soil Analysis and Classification to Improve the Crop Yield in Agriculture Using Fast Graph - CRNN Approach

Publisher: IEEE

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**Abstract:**Changes in land use over the past few decades have left their mark on Earth's surface. Key ecosystem services provided by soils are currently being altered due to global ... **View more**

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##### Abstract:

Changes in land use over the past few decades have left their mark on Earth's surface. Key ecosystem services provided by soils are currently being altered due to global environmental changes. In light of these factors, monitoring equipment is required to maintain a healthy ecological status and advance soil conservation on a local, regional, and global scale. This system demonstrates the potential utility of remote sensing in collecting soil properties. Methodologies based on various remote sensing devices and classification strategies have been developed for assessing soil characteristics. Soil analysis by remote sensing is a relatively new area of study in the agricultural sciences. The majority of people in India rely on agriculture as a means of subsistence and economic survival. The low cost of yield prediction has led to a decline in agricultural output in recent years. Predicting yields is challenging because of the many variables at play, including as soil, rainfall, and fertilizers. The quality of the soil is crucial for agricultural output. MSC and SNV are used in the suggested method for preprocessing. LDA is used for feature selection. The proposed method employs FGCRNN to train the envisioned model. The proposed model is evaluated in comparison to the CNN and GRU models. Its performance is superior to that of the other two types.



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### I. Introduction

Farmers strive for economically efficient agricultural production by maximizing crop yield while minimizing input costs. Problems with agricultural yield can have a significant impact on the bottom line if the crops aren't spotted in time. In terms of global relevance, potatoes are currently ranked as the fourth most important staple food. The rising popularity of potatoes, in addition to the need for improved crop protection, higher-yielding gerrnplasm, and more efficient and productive management approaches since the farmland is shrinking. Forecast of Decisions about harvesting and selling potatoes benefit greatly from knowing their expected yield in advance. Because of the importance of soil parameters in evaluating numerous agricultural tasks, agriculture engineering is influenced by them Having a thorough understanding of the land's individual characteristics can aid with its management and agricultural use. At the continental and regional stages, geological history, biota and temperature have the greatest impact on soil chemical and physical properties; but, at the local scale, topography and human activities are the key determinants. Using an optical microscope, you can view the soil's component parts, which include things like clay minerals, fragments of plant stuff, and quartz grains. Soil structure directly affects the form, sharpness, contrast size, voids, frequency, and spatial arrangement of key particles. Many of these features are also affected by factors such as the magnification used, the way they are cut, the alignment of components, and so on. To promote agricultural modernization and substantially raise food production, a new idea known as "smart agriculture" has been introduced. Smart agriculture systems bring cutting-edge computer and information technology to the including the Internet of Things (IoT), food production industry, cloud computing and artificial intelligence (AI). The Internet of Things (IoT) and artificial intelligence (AI) are crucial to the advancement of smart farming systems. By automatically gathering and transmitting agricultural data to data centers, artificial intelligence techniques like artificial neural networks and clustering enable farmers to make more informed decisions. The amount of water utilized for irrigation, for instance, may be determined by analyzing data gathered from the surrounding agricultural area. When water scarcity in an area forces irrigation, for example, it will be implemented without delay. An early technique of categorization is provided by combining a ground survey with an existing topographic map of land usage. Recent developments in remote sensing image classification systems have made it possible to classify soil types with greater regularity. Visible and near-infrared spectroscopy is a noninvasive and efficient method of measurement. Numerous uses in farming, medicine, and petroleum have been discovered. The approach of spectrum analysis yields useful substance data indirectly. An approximate strategy for developing an effective correction model between the spectrum and the data is used to achieve this result. As spectral technology is used to soil classification, various soil models are developed to replace the knowledge acquired from remote sensing photos. A simple and non-destructive method for classifying soils. Soil texture influences both its water-holding capacity and its fertility. Agricultural uses and environmental process monitoring both benefit greatly from a thorough understanding of soil texture. "Soil texture" refers to the relative abundance of soil particles of varying sizes. It depends on how much clay, sand, and silt there are in the soil. Soil textures can be classified using criteria like this, with taxonomies like KA5 system being one example. It is not feasible to conduct widespread monitoring using in-situ soil texture measurements because of their high cost. Another option for surveying such large areas is optical remote sensing. For instance, hyperspectral sensors, which assess objects' solar reflectance spectra, are a part of such optical remote sensing systems. Reflectance measurements of soil can be used to infer the presence of clay and other mineral and organic soil components.

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# A Survey on Different Application Areas based on RSS (Received Signal Strength) and Possible Hardware and Software Tools for the Collection of RSS

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**Abstract**—Apart from serving basic communication to users, reach of wireless networks to users has been facilitating various applications and mechanisms which can add on multiple functionality of networks. Received signal strength Indicator (RSSI)/ Channel state Information (CSI) is one such statistics available on user device, which can be used to achieve multiple adjuncts network functionalities and few applications. This paper focuses mainly on RSSI based Human activity recognition (HAR), Node identification as applications and Physical layer key generation (PLKG) as security mechanism. HAR utilizes variations in RSSI values to detect presence of human or their activities. Similarly in node identification, on the basis of RSSI and environment between Access point and nodes, access point predicts the node location. Further, one of the emerging research areas PLKG, also uses RSSI preprocessing to achieve better network performance.

The paper also presents comprehensive survey on hardware cards installed in user devices and software tools used to quantify RSSI in HAR applications.

**Keywords**— *Wireless networks, Received signal strength, Human activity recognition, Secure key generation.*

## I. INTRODUCTION

Wireless Networks prove themselves the most promising solution for future-generation wireless applications due to their numerous advantages over wired networks. Some of the crucial advantages of wireless networks are flexibility, easy accommodation of wireless nodes or devices in the network during run time, mobility of nodes, low cost, etc. Despite all these advantages, wireless networks are constrained to secure data from intruders, and prone to interference, speed, etc. Vast research has been carried out and still continued, to make wireless networks more secure and reliable to co-up with future-generation applications. Various solutions have been proposed in the literature to make wireless networks secure. Among these, the physical layer security technique is gaining more attraction, for a few decades. Physical layer security techniques, mainly concentrate on either encryption-based techniques or channel randomness-based techniques. Channel encryption has now become an older solution because modern

applications inching towards power-constrain networks such as Internet of Things (IoT). Whereas channel randomness-based techniques use key generation based on RSSI/ CSI data. This technique doesn't allow public key sharing over a wireless channel, which adds further security to the networks. RSSI values were extracted from beacons exchanged between two nodes before actual data transmission to know the signal strength, whereas CSI is the impulse response of the channel. By preprocessing RSSI/CSI using various available algorithms or mathematical models, further improvement in the system performance can be achieved. Some of the application areas based on RSSI/CSI preprocessing are Physical Layer Secure Key Generation (PLKG), Human Activity Recognition (HAR), Wireless node identification, Energy efficient wireless networks, etc.

Now consider some wireless applications based on RSSI preprocessing so that one can have an idea about how RSSI plays a vital role in an application and how preprocessing of RSSI affects network performance. For the HAR system, when an intruder enters a monitored environment, RSSI is used to record environmental changes. Human activity recognition using RSSI/CSI preprocessing tremendously improves accuracy in recognizing different human gestures [1-5]. RSS-based localization is the most widely used technique in the wireless sensor network community used to translate measured power loss into distance estimates for localization [6-7]. In some ways, radio wave strength (in terms of RSS) is a popular and ideal modality for estimating the range of sensor nodes in wireless networks. Its use has no additional cost in terms of network repair [8-9]. Physical layer secure key generation uses RSSI preprocessing to improve system performance. Two wireless nodes Alice and Bob can communicate in presence of an intruder Eve, by generating a secure key at both ends using RSSI data exchanged between them. Preprocessing of RSSI using any mathematical model or any other technique can further improve network performance between Alice and Bob [10-12]. Therefore, based on the discussion made so far, it is concluded that RSSI/CSI pre-processing can be used for



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# Priority Based Task Scheduling in Cloud Integrated WOBAN Network

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Mausmi Verma ; Uma Rathore Bhatt ; Raksha Upadhyay ; Vijay Bhat   **All Authors** ...



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- II. Related Work
- III. Proposed Work
- IV. Simulation Result
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**Abstract:** Access network infrastructures are being heavily tested by the advent of new multimedia services. Wireless-optical broadband access network (WOBAN) is being developed to ... **View more**

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**Abstract:** Access network infrastructures are being heavily tested by the advent of new multimedia services. Wireless-optical broadband access network (WOBAN) is being developed to address such demands. In a WOBAN, service requests migrate from the wireless front end to the optical backend to reach distant cloud servers, creating wireless network bottlenecks that could degrade performance. Thus, Cloud Integrated WOBAN (CIW) is a popular method for combining cloudlets with WOBAN to provide resource-intensive and delay-sensitive applications. Data packets go through a number of intermediary nodes in CIW from the source node to a wireless frontend cloudlet. However, it is a problem to figure out how to schedule these packets throughout the many cloudlets. The proposed work examines the priority-based scheduling method with the packet deadline constraint. The outcome examines a parametric evaluation of the algorithm in terms of the packet drop for the highest priority applications.

**Published in:** 2023 IEEE International Students' Conference on Electrical, Electronics and Computer Science (SCEECS)

**Date of Conference:** 18-19 February 2023

**DOI:** 10.1109/SCEECS57921.2023.10063047



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## ☰ Contents

### I. Introduction

Over the course of the last few decades, developments in applications that require more bandwidth have posed a challenge to the access networks. We are fortunate that the framework of WOBAN [1]–[3] was established to satisfy such needs of better bandwidth and cost effectiveness. With the advent of new optical and wireless communications technologies, there are a plethora of possibilities for introducing new network designs that improve broadband access communication and pave the way for the creation of new multimedia services. Due to advancements in wireless technology, wireless mesh network (WMN) is now a viable access network design for practical implementation. However, it is not well suited for applications requiring a lot of bandwidth and is extremely vulnerable to channel defects. Passive optical network (PON) which operates in the optical domain, is currently the focus of a lot of study due to its potential for widespread use in business. Fiber-based access network has the potential to provide a low-cost, bandwidth efficient answer to the broadband access problem, but it lacks in physical availability. Thus, current studies in the field indicate that combining wired and wireless network technologies offers a network design that is adaptable, inexpensive, pervasive, and service-centric. The blend of optical and wireless networks called as WOBAN is a favourable and practical approach to facilitating access to the internet over a wide area. It consists of a WMN for user access and an optical backhaul network i.e., PON for traffic aggregation. Optical nodes (ONUs) are the building blocks of PON and are linked to an optical line terminal (OLT) at the central office (CO) through optical fiber. Wireless mesh networks (WMNs) are made up of a series of interconnected wireless routers, and few of them serve as a gateway. Through these gateways, a wireless network's front end can be linked to its optical back end. To have their traffic served by the optical back end, end users must employ wireless routers as their front-end devices.

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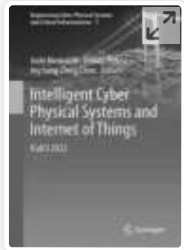
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## A Practical Approach for Crop Insect Classification and Detection Using Machine Learning

[Ravindra Yadav](#)  & [Anita Seth](#)

Conference paper | [First Online: 04 February 2023](#)

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Part of the [Engineering Cyber-Physical Systems and Critical Infrastructures](#) book series (ECPSCI, volume 3)

### Abstract

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Insect identification is one of the most pressing difficulties for Indian farmers, as numerous insect species harm a vast number of crops and hence diminish the quality of harvests, resulting in financial losses for both farmers and the country. However, in agriculture, the combination of IoT and machine

learning (ML) allows for ease and innovation, allowing farmers all over the world to better their farming operations. On the other hand, in India, a very little amount of farmers is aware of smart farming and its benefits. Various study on research paper shows that the proper use of IoT devices embedded with the machine learning algorithm can reduce the task of farmer at very early stage of the plant life and thus saving the crops from being degraded, also included the survey of various research done across the globe and identified the potential methods which must be included for the current era farmers in order to minimize the insect effect on the crops. The aim of our experiment is to involve ML and IoT technology to sense the crop conditions in terms of quality and whether it is affected by insect or not for this a experimental study with the help of image processing has been performed thus calculation of results done accordingly. There are various sensors, which are equipped with ML technology like computer vision algorithm, which make the sensor powerful, and images being captured by these sensor can be analysed automatically and thus trigger the automated pesticide treatment systems using a ML-based decision support model. In this paper, study of Convolution Neural Network (CNN), Long Short Term Memory (LSTM), Support Vector Machine (SVM), Grid search based SVM (Grid-SVM), and K-nearest Neighbour classifier has been done Among them based on the required performance, and the CNN-

# A Comprehensive Survey on Internet of Things Security: Challenges and Solutions



Nilima Karankar and Anita Seth

**Abstract** Internet of Things (IoT) is a group of self-contained objects, which is a brand-new pattern that incorporates the current existence of various devices. It is one of the most recent technologies that offer worldwide connectivity, user, sensor, and information management. Devices can become ubiquitously connected, thanks to connectivity. IoT has a number of problems, including fading, energy use, data security, network security, etc. Security emerges as one of the biggest issues among these. In this paper, a survey on IoT security solutions is presented to illustrate the various IoT security procedures. The security protocols that are divided into four categories based on technologies used to provide security such as machine learning, trust, blockchain, and cryptography have been elaborated. The major purpose of these protocols is to address the issue of network routing assaults in IoT. Each protocol's benefits and drawbacks are examined together with the performance indicators that were used.

**Keywords** Internet of Things (IoT) · Security · Machine Learning (ML) · Survey · Trust · Blockchain

## 1 Introduction

The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

---

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## A Software Quality Characteristics Optimization Model to Reduce Evaluation Overhead

[Kamal Borana](#) , [Meena Sharma](#) & [Deepak Abhyankar](#)

Conference paper | [First Online: 16 May 2023](#)

**109** Accesses

Part of the [Lecture Notes in Networks and Systems](#) book series (LNNS, volume 671)

### Abstract

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Software quality evaluation is one of the critical processes for delivering good quality software products. The software quality evaluation has a significant effect on the entire project. However, for software quality evaluation a number of techniques are available. Most of the models are based on the

characteristics of software and relevant scores. But consideration and evaluation of software on all the quality characteristics are time is taken and complex, which is not suitable for all kinds of projects.

Therefore, in order to reduce the software quality assessment effort, this paper proposes a categorization of essential quality characteristics based on software project needs. Additionally, a Particle Swarm Optimization Process is proposed for recommending the suitable software quality evaluation attributes. The simulation of the model has been carried out and their performance analysis has been done. Based on the experimental analysis the results are presented and the future scope of the proposed work is explained.

Keywords

**Software Quality Models**

**Recommendation System      Machine Learning**

**Testing Cost      Model Selection**

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# Comparative study using different convolutional neural network models to predict leaf diseases in plants

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**Abstract:**The four common types of leaf diseases are Rust, Scab, Multiple diseases, Healthy. Effects of certain bacteria, micro-organisms and fungi affect the growth and developmen... **View more**

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##### Abstract:

The four common types of leaf diseases are Rust, Scab, Multiple diseases, Healthy. Effects of certain bacteria, micro-organisms and fungi affect the growth and development of leaves which can be stopped by early detection and accurate identification of leaf diseases and can also insure less spreading of infection and a healthy development of leaf takes place. This research paper use image pre-processing and can generate high recognition rates for leaf diseases. A dataset of 3642 images is taken and trained by different models like VGG16, ResNet50, InceptionV3, InceptionResNetV2 with the help of deep learning algorithm like convolutional neural networks and transfer learning approach for real time detection of leaf diseases. By training the leaves based on the proposed models we will be able to know the diseases present in the leaves. The purpose of this research paper is based on the comparison of accuracy given by different models when they are trained.

**Published in:** 2022 International Conference on Computer, Power and Communications (ICCCP)

**Date of Conference:** 14-16 December 2022

**DOI:** 10.1109/ICCCP55978.2022.10072085



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☰ Contents

**I. Introduction**

Plant plays a vital and important role in human's life. Due to change in environmental conditions these plants suffer from diseases that needs to be cured on time. If not cured on time this may result in a huge spread or in some cases may destroy the complete plant. So taking action immediately is a priority. Some plants shows visible symptoms regarding disease and is easy to treat them on time but some plants does not show visible symptoms so it is difficult to detect the kind of disease and it's challenging to treat them. There are many researches which are being done on disease of plant leaves using machine learning and deep learning techniques.

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Authors



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Figures



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References



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Keywords



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Metrics



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## Feature Selection Using Information Gain for Software Effort Prediction Using Neural Network Model

[Sushma Khatri](#)  & [Pratosh Bansal](#)

Conference paper | [First Online: 12 October 2022](#)

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### Abstract

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An important phase in software development is the prediction of effort. It has its significance in project planning, control, and budgeting. Many researchers developed common software effort estimation models known as algorithmic models. These models need accurately estimated input parameters, namely lines of code and complexity. Accurate estimation of

these features during the initial phases of the software life cycle is quite difficult. This issue of algorithmic models can be handled with non-algorithmic models. These non-algorithmic models are based on soft computing techniques such as Genetic Programming, Fuzzy Sets, and Artificial Neural Network (ANN). Many researchers proposed various models based on ANN but we did not find any estimation method focused on feature selection to remove the negative impact of irrelevant information. In this study, features with high information gain are selected using information gain to train the multilayer perceptron network FITNET. Experiment with two- and threefold cross-validation on 3 benchmark datasets shows that New ANN (NANN) trained on selected features makes effective prediction as compared with the ANN trained on all features. Our approach compared the performance using 5 performance metrics MAR, MMRE, MdmRE, PRED (25), and MSE to show that it will perform better for different metrics.

#### Keywords

**Artificial neural network**      **Feature selection**

**Information gain**      **Software effort estimation**

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**Abstract:**Never before has the demand for non-contact tools for care of health monitoring been more obvious or evident. Digital camera vital sign measurement (RR, HR, SPo2, and BP)... **View more**

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##### Abstract:

Never before has the demand for non-contact tools for care of health monitoring been more obvious or evident. Digital camera vital sign measurement (RR, HR, SPo2, and BP) utilizes imaging technologies to analyse photos of the human and compute physiological changes. Since the ubiquitous adoption of digital cameras in all fields, innovations in optics, machine learning, and computer vision have been made. The non-contact monitoring of vital signs may be advantageous in a variety of disciplines of application, from clinical and healthcare settings to vocational and sports activities. This study gives a thorough assessment of camera assessment of physiological vital signs (RR, HR, SPo2, and BP). The viability of camera-used devices and systems in the visible range (380-750nm) for numbers are usually retrieved from videos contains few uncovered body areas (involves the face, hands and torso) with appropriate post processing techniques has been the subject of previous research. We gives an analysis of the physiological and development work for the assessment of vital signs like heart rate, blood oxygen saturation, blood pressure, and respiration rate from digital images in this review. We also discussed possible applications for these technologies. The summaries of findings from numerous applications or validation studies were presented, together with the justification



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for the measurement, a categorization of the various post-processing techniques used for source images. To encourage the progress of technology, more study is required.

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**Conference Location:** Greater Noida, India

### ☰ Contents

#### I. Introduction

There are many different types of physiological data that have been recorded; however, in primary care, the five vital signs that were most closely watched are the body temperature, blood pressure, blood oxygen saturation, and respiration rate or breathing rate (RR) [1]. The goal of this work is to establish technologies that enable scalable and early non-invasive physiological monitoring by combining expertise from these fields with those of signal analysis, computer vision, medical technology, optics, and medicine. Throughout the last 18 years, the industry has been growing quickly.

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IEEE Transactions on Biomedical Engineering



International Conference on Machine Learning and Data Engineering

# Performance Analysis of Averaged Perceptron Machine Learning Classifier for Breast Cancer Detection

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<sup>b</sup>Department of Information Technology, IET, DAVV, Indore, 452001, India

## Abstract

Breast cancer is the primary cause of women's death due to cancer; if detected in the early stage, it is a curable disease. Machine learning classification techniques are helpful in breast cancer detection. The research aims to investigate the averaged-perceptron machine-learning classifier performance on the Wisconsin original breast cancer dataset (WBC); the work has focused on two points; first, does the averaged-perceptron classifier has the quality to gain a higher accuracy than the other classifiers? Second, does it help to reduce false-negative or false-positive breast cancer predictions? The averaged-perceptron model recorded an accuracy score of 0.984 with zero false-negative predictions. The investigation has also signified the effect of threshold on false-negative or false-positive prediction. Applying the averaged-perceptron classifier in a computer-aided-diagnosis system can improve breast cancer recognition accuracy with zero false-positive or false-negative forecasts.

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*Keywords:* Machine learning; Breast cancer Wisconsin original dataset; Averaged-perceptron; Breast cancer;

## 1. Introduction

Breast cancer (BC) is recognised as primary cause of mortality of women due to cancer [1]. Machine learning (ML) performs a significant job in healthcare systems in the present scenario [2]. Breast cancer can be detected using a machine learning-enabled system more accurately in the early stage [3]. ML classification techniques are helpful in disease detection. A successful diagnosis relies on the knowledge and expertise of the experts and data from patients [4]. The deficiency of medical experts in healthcare can overcome with the use of ML-enabled systems. These systems can reduce the chances of potential error by an inexperienced person and shorten the time of medical data analysis. There are several classification models for supervised ML; some are linear, and some are nonlinear. Training and testing are crucial stages in the creation of machine learning systems. A dataset is essential to train and test the system. Worldwide, many researchers are applying their efforts to reduce breast cancer mortality; it is a curable disease if detected in the initial phase.

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