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PREFACE

It gives us immense pleasure to start the Editorial Note for the International Journal of Machine Learning and Networked Collaborative Engineering (IJMLNCE) ISSN No. 2581-3242, a quarterly published, Open Access, peer-reviewed, International Journal. In the New Year 2018, we would like to convey our warm greetings to each one of you. Our wish with the New Year brings happy research outcomes & brings happiness-prosperity in your lives. In the Volume No 02, Issue No 01, we are happy to write that our journal manuscript information available with CrossRef, CiteFactor, DRJI, Google Scholar, Index Copernicus, J-Gate, ROAD, and Scilit.

In the Volume No. 02 Issue No. 01, we have five research papers, within the scope of the journal, which covers various aspects of machine learning and collaborative engineering.

The first paper in this list is "Eight Legs Rimless Wheel Robot Model Driven on Level Ground Using one Actuator", authored by Mohammad Farhan Ferdous. This paper explores how a rimless wheel can walk on the level ground with the help of actuators. A control framework has been set up to establish the fact they have proposed. The researchers have created a 4 DOF numerical model of an underactuated rimless while [1].

In the next paper, authored by Surbhi Sharma et al., "An Innovative Approach for Quick Shopping using QR Code", has been widely demonstrated. This paper focuses on the advancement in virtual shopping via QR Code using smartphones, which can be simple and easily approachable as well as customer friendly. In this paper, the authors have represented an app where using the QR Code the URL can be found as well as the purchase of the product, order inclusion and bill generation after purchase is also possible using the technique. This work is an innovative concept in the world of digital marketing and management area doubtlessly [2].

The next paper in the list, authored by Nguyen Hoang Ha and Nguyen Hoang Nguyen, covers the area of cloud computing. The paper is based on a heuristic algorithm

on Particle Swarm Optimization (PSO) on cloud computing. The authors have chosen SaaS providers as their target object and they have compared their results with the existing solutions available using CloudSim simulation. The work focuses on the issue of admission control and the schedule for the requirements of users toward of multi-objective optimization. The novelty of the work is due to the specific calculation of fitness function, the local best position of each particle and the global best position of the entire swarm [3].

Our fourth paper, authored by Sunil Kumar Joshi et al., has been selected from Mobile Ad Hoc networking area (MANET), again a highly demanding research area. This paper focuses on Multidimensional performance analysis for packet delivery and calculating the routing overhead. The authors have considered two routing protocols, namely AODV and AOMDV for their proposed work and correlation has been made between Ad-hoc On-Demand Distance Vector convention and Ad-hoc On Multipath Demand Distance Vector convention utilizing system test system. NS2 has been preferred as the simulation tool for the work. [4].

The last paper selected for this version, authored by Vishal Dutt, Akhansha Jain, and Abhilash Parashar, focuses on research centric approach and utilization of Big Data management in case of virtual shopping or window shopping. The main focus of their proposed work is on the consume factorization of contraptions, systems and the most steady information as for The Big data's works out. They have shown how effective use of Big Data can give an association a centered favored edge and be of respect, rather than being satisfied to simply assemble and have the sensible edifying collection [5].

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CALL FOR PAPER

International Journal of Machine Learning and Networked Collaborative Engineering (IJMLNCE) with ISSN **2581-3242**, is a quarterly published, open access, peer-reviewed, international journal, focuses on publishing authentic and unpublished

quality research papers in the emerging field of Machine Learning and Collaborative Engineering.

This is a scientific journal aims to promote highly qualitative and innovative research works, not limited to but focuses on the area of machine learning, collaborative engineering, and allied areas. We publish only original research articles, review articles, and technical notes.

The journal is registered with CrossRef **10.30991/IJMLNCE**. Each accepted manuscript shall be assigned a unique digital object identifier for identification. The abbreviated key title for our journal allocated by ISSN is **Int.j.mach.learn.Networked.collab.eng**. The journal appears in popular indexes like CrossRef, CiteFactor, DRJI, Google Scholar, Index Copernicus, J-Gate, ROAD, and Scilit. Our journals manuscripts can also be found in the directory of **ReserachGate & Kudos**.

In this present technological era, the areas like machine intelligence, machine learning, and its associated domains are one of the most popular and demanding choices for the researchers as well as the industry personnel.

In last few years, numerous uses of machine learning and its related domain have drawn ample attention of the people, which has generated a large number of applications in this field, making machine learning and collaborative engineering highly admired one.

Machine intelligence or machine learning is not a new concept. In terms of Artificial Intelligence, we were familiar with several aspects of the field, but nowadays with the introduction of machine learning, the use of this has been highly evolving, especially for improving the lifestyle of the human being.

There are numerous application areas of machine learning or machine intelligence, irrespective of any famous sector, from Healthcare, Space, Automation, Aviation industries etc. to the entertainment industry and even in academia.

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Eight Legs Rimless Wheel Robot Model Driven on Level Ground Using one actuator

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Abstract

It is outstanding that a rimless wheel (RW) needs actuators to walk on the level ground. There is the primary test hard to discover an appropriate control framework to accomplish a stable RW movement. There is the model of the eight-legged under actuated rimless wheel with the middle. To start with, we created 4-DOF numerical model of an under actuated rimless wheel (URW) and figured the condition of movement as per the Lagrange's technique. We likewise perform numerical recreations utilizing the model created and demonstrate that a steady stride can be produced with the appropriate introductory condition and physical parameters. The numerical recreations demonstrate that, by embracing this control framework, the URW with middle can walk steadily on level ground, and the URW can be driven with an extensive variety of speed and high productivity by changing the control parameter.

Keywords

Robot,

level ground,

wheel,

eight legs

1. Introduction

In the late 1980s and mid-1990s, McGeer spearheaded uninvolved dynamic strolling by presenting the rimless wheel [1]. The progression of the rimless wheel was considered fundamentally. Since the presentation of the rimless wheel, its latent steadiness on a delicate slope was resolved to be 1-period half steady[5]. With frictional misfortunes, the framework is asymptotically steady. In this movement, the vitality lost when the swing foot hits the ground is recuperated by gravitational potential vitality. In this way, a completely inactive dynamic walker can just stroll down an incline. To acknowledge level-ground strolling, dynamic power, supplanting gravity, must be infused into the biped robot. McGeer proposed different techniques including, 1) applying an indiscreet push as the positioning leg leaves the ground, 2) changing the leg length, and 3) using response torque against an inclining middle. In 2009, F. Asano and Zhi-Wei Luo explore on "Asymptotically stable biped step which can produce in light of security standard of a rimless wheel" [2, 3]. That examination was contrasted and those for the rimless haggle significant steadiness standard determined. Albeit numerous investigations have gotten the main control technique for level-ground strolling, there are generally few papers on the fourth control strategy. From a tasteful point of view, it is normal for a biped robot to have a middle. Also, from a building viewpoint, numerous instruments can be included in the middle, in this way incredibly growing the application extent of a biped robot. Thusly, it is essential to incorporate and control the middle of a biped robot. The rimless wheel (RW) which was one of the least difficult utmost limit cycle walkers [4], built up a consistent single – step cycle when strolling on a slant latently. In this manner, the ideal strolling states were found and created in detached utmost passive limit cycle walker.Underactuated Rimless Wheel Robot Model

Fig-1 demonstrates the model of a URW with a middle. This walker comprises of an eight-legged rimless haggle middle connection. The range of the RW which is proportional to the leg-outline length is l (m) and the middle length is Lt (m). The relative blessed messenger between two contiguous edges, (rad). The mass of the RW is m1 (kg), and that of the middle is m2 (kg).The add up to mass is m = m1 + m2 (kg).the middle connection is associated with the RW at the inside position, and the snapshot of idleness about the joint is I1 (kg.m^2) for RW and I2 (kg.m^2) for the middle.

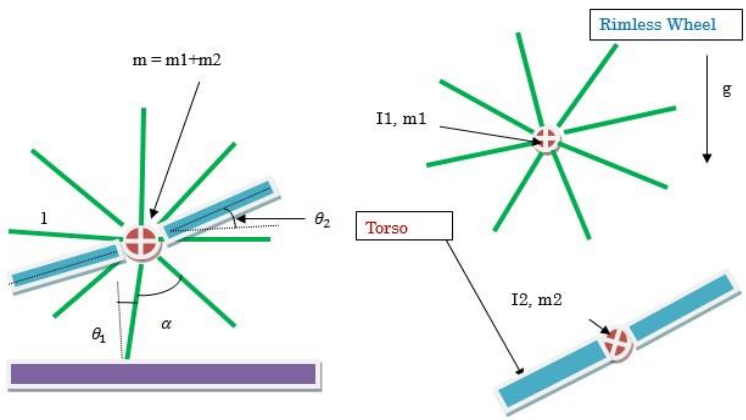

Fig. 1: An Underactuated rimless wheel robot model

The URW can apply a joint torque between the torso and RW. We assume that the contact purpose of the positioning leg with the ground does not slide or bounce amid movement. The URW display at that point turns into a 4-DOF framework. We characterize as the precise position of the RW with the regard to vertical, and as the rakish position of the middle connection as for level, individually.

2. Equation of Motion

Let q = [x z θ_1 θ_2]^T be the generalized coordinate vector.

Kinetic Energy of the walking robot,

$$K = \frac{1}{2} m (\dot{x}_1^2 + \dot{z}_1^2) + \frac{1}{2} (I1 * \dot{\theta}_1^2 + I2 * \dot{\theta}_2^2) \quad (1)$$

Potential Energy of the walking robot,

$$P = mg(Z + L * \cos\theta 1) \quad (2)$$

The walking robot equation of motion then becomes

$$M(q)\ddot{q} + h(q,\dot{q}) = Su + J^T\lambda \quad (3)$$

$$M(q) = \begin{bmatrix} m1+m2 & 0 & L(m1+m2)\text{Cos}[\theta 1] & 0 \\ 0 & m1+m2 & -L(m1+m2)\text{Sin}[\theta 1] & 0 \\ L(m1+m2)\text{Cos}[\theta 1] & -L(m1+m2)\text{Sin}[\theta 1] & I1 + L^2(m1+m2) & 0 \\ 0 & 0 & 0 & I2 \end{bmatrix}$$

$$h(q,\dot{q}) = \begin{bmatrix} -d\theta 1^2 L(m1+m2)\text{Sin}[\theta 1] \\ (m1+m2)(g - d\theta 1^2 L\text{Cos}[\theta 1]) \\ -2gL(m1+m2)\text{Sin}[\theta 1] \\ 0 \end{bmatrix},$$

3. Collision Equation

The inelastic crash of the foreleg (the following position leg) with the ground is then demonstrated as

$$\boldsymbol{M(q)}\dot{\boldsymbol{q}}^{+} = \boldsymbol{M(q)}\dot{\boldsymbol{q}}^{-} + J_I^T \lambda_I \quad (4)$$

Where the superscripts "−" and "+" remain instantly previously and quickly after effect. Note that q in Eq. (4) is equivalent to q− = q+. The drive vector given as the zero time necessary for the rash power at effect.

4. Control Method

To hold the middle which is running one engine. On the off chance that we are setting up an immaculate control framework then middle can get high proficient vitality. The control yield is expected to accomplish steadier stride from URW.

$s = \begin{bmatrix} 0 \\ 0 \\ 1 \\ -1 \end{bmatrix}$, where ***s*** is control input of motor.

$u = -50*\theta_1 + 0.03;$ (5)

Lambda = inv(J*inv(M)*J')*(J*inv(M)*(h-s*u)); (6)

N = J'*Lambda + s*u;

This walker can apply a joint torque, u (Nm), between the positioning leg and the middle. The middle capacities as a response wheel for the RW; the positioning leg can utilize the response torque for the drive. Lambda is the Lagrange undetermined multiplier that speaks to the vertical ground response drive.

5. Gait Generation and Numerical Simulation

Utilizing a changed rendition of ODE45 in Matlab R2015a. We consider here some record made in Matlab, for example, fundamental, impact, parameter and so forth. Crash setup meets with machine exactness. We utilize is the edge of rimless wheel separately. α is the point between the rimless wheel leg. m2 are mass of RW and middle individually. L is the leg length of the rimless wheel is the length of the middle. g is the increasing speed because of gravity.

Table 1: Physical Parameter settings

m1	1 kg	I_1	1 kg. m^2
m2	1 kg	I_2	1 kg. m^2
L	1 m	G	9.81 m/s^2
Lt	1 m	α	$\pi/4$ rad

The Fig-2 shows the simulation movie of URW robot with Torso driven on level ground (Simulation Movie). This eight legs robot can walk continuously on the level ground without fall down.

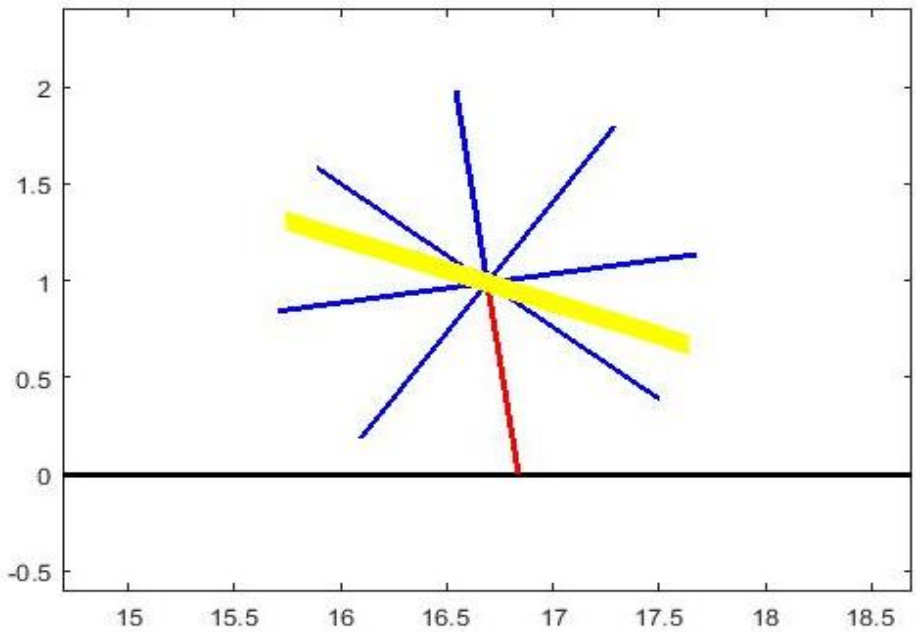

Fig. 2: URW robot with Torso driven on level ground (Simulation Movie)Fig - 3 to Fig - 9 demonstrate the reenactment after effects of URW with middle on the level ground. Here we utilize the $T_{set=}$ 20 sec the development of the progression time frame for the initial 100 stages in the strolling walk produced in all figures. We can see that the URW 4-DOF eight-legged robot displays period 4-movement and get a steady step.

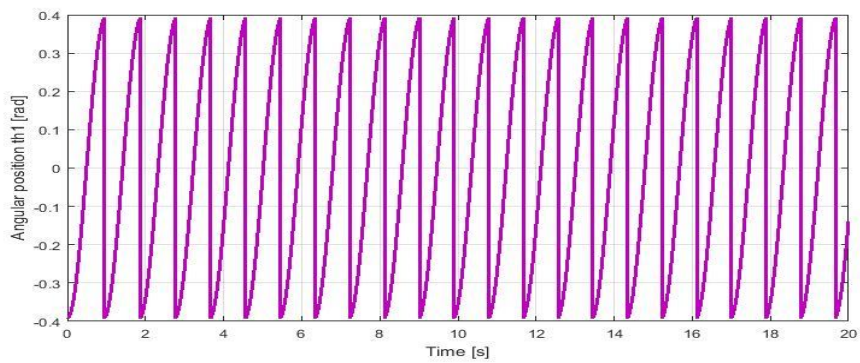

Fig 3: Angular position of th1 with time

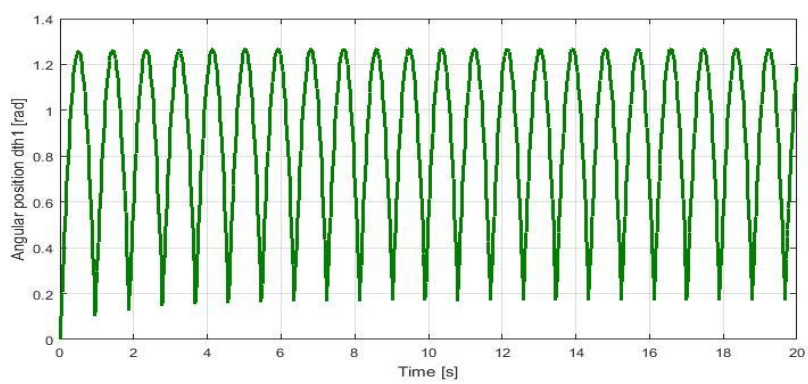

Fig. 4: Angular velocity of dth1 with time

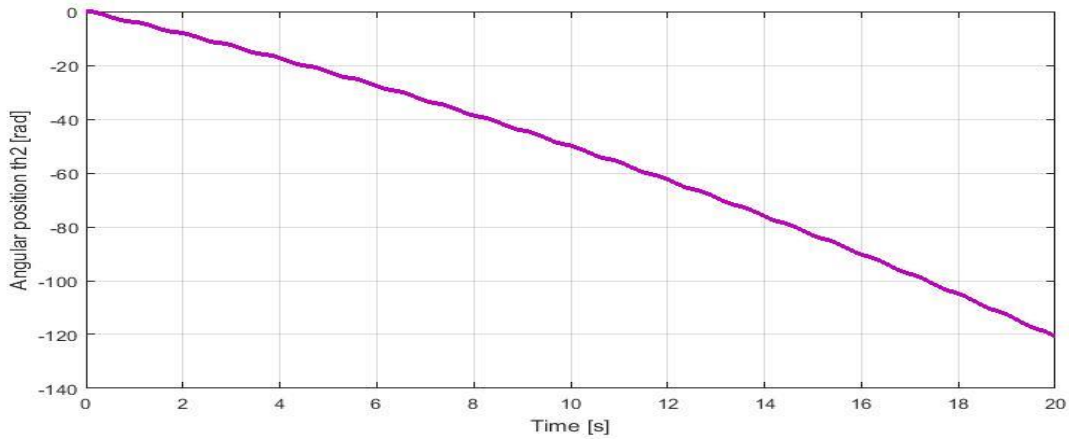

Fig. 5: Angular position of th2 with time

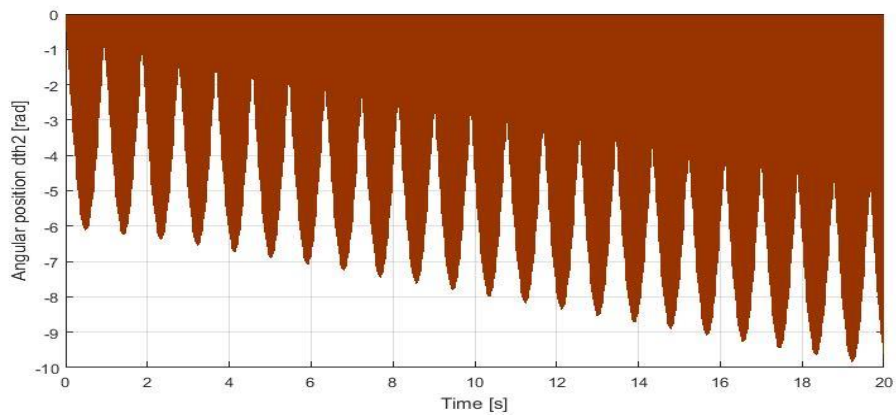

Fig. 6: Angular position of dth2 with time

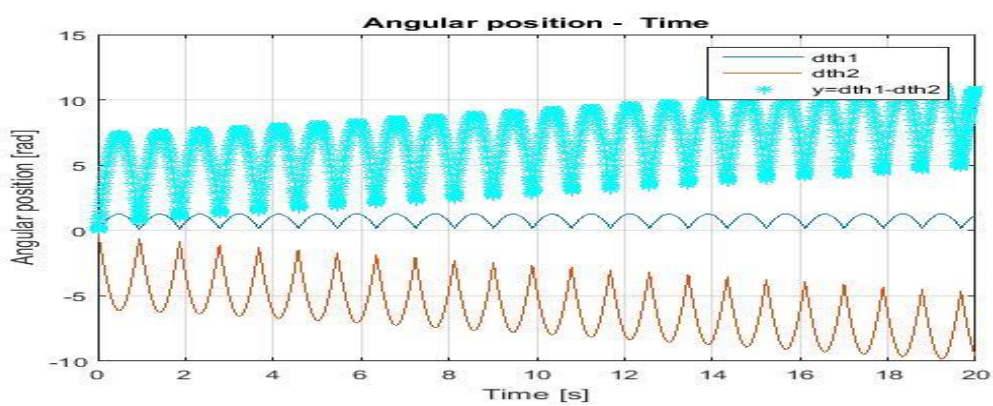

Fig. **7:** Differentbetween dth1 and dth2

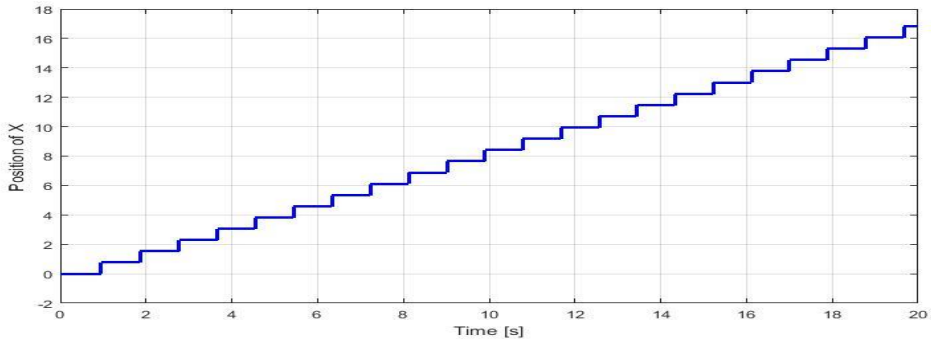

Fig. 8: Position of x

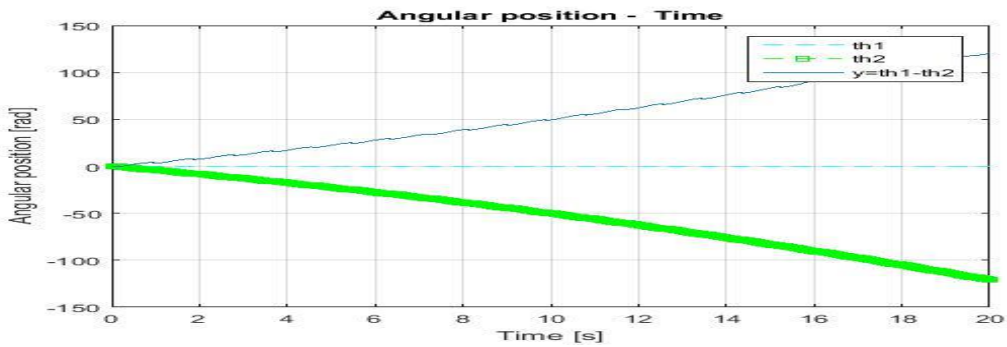

Fig. 9: Angular position of dh1 and th1

6. Conclusion

This examination portrays the underactuated rimless wheel with middle which driven on level ground and likeness with biped strolling automated mechanism.We built up the scientific model of 4-DOF URW with middle which can be driven on level ground.We connected here condition of motion.During the numerical recreation, we attempted ordinarily for an appropriate control framework and accomplish a steady step age.

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An Innovative Approach for Quick Shopping Using QR-Code for Indian Precinct

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Abstract

In the present scenario life style became too fast and in this rushing life style shopping become hectic for everyone. In the era of technical achievement, there are multiple advanced ways available for shopping. In which window shopping, virtual shopping is few common names. Present paper elaborated about the advancement in virtual shopping via QR code over smart phone. we are creating a shopping system which is simple, fast, easily approachable and mutually supported by both customers and merchants. In view of the smartphone have become a highly used handheld device, a simple android /IOS application was given to design shopping system run on smart phones, with the help of QR code generation and recognition technology.

Keywords

Quick Response code,

Shopping Mall,

Smart Trolley

1. Introduction

Over the last few years, technology has introduced many products which can be used to reach the consumers. One such innovation is QR codes – short for Quick Response codes – originally created by a Toyota subsidiary in 1994 to track auto parts [7]. The QR codes are similar to bar codes used currently by retailers to track inventory and price products at the point of sale. The main difference is the amount of data that they can hold [3].

QR-codes can also be used in shopping malls. If we see a hypothetical system where every item will have a specific QR-code so, the customers have to scan the QR-code of the products they want to purchase and as the customer submits the final order, the smart trolley in go down will collect the ordered products from each stall in go down. As soon as the procedure gets complete, the customer will collect the bill as well as products from the cash counter. Everybody gets amped up for new innovation and much more energized when it can spare them cash QR codes in retail enables customers to have an all the more fulfilling purchasing knowledge by giving them a chance to investigate the items using QR codes[2]. The QR codes

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are intended to furnish the shopper with more data on the item before they make their buy, and in addition enable them to make the buy ideal from their telephone.

A portion of the ways retailers utilize QR codes are to incite new items, offer coupons, look at costs in different stores, and permit coordinate web based shopping. A showcasing device as well as upgrades client benefit as well! Some QR codes scanners are connected to the store stock and can really reveal to us the amount, size and shading presently in load of the item checked. Each time we examine an item it is put away in your telephones inner memory and in you QR application history [4]. This permits the QR code application to prescribe certain stores and items identifying with our checked history. We have all had those circumstances when we feel uncertain about the nature of an item before making the buy. QR Codes in retail enable clients to interface with each other on the web. Whenever checked, QR Codes raise the item and its client surveys. Perusing positive audits about an item from an outsider will improve the probability that the client will make the buy. If all else fails, examine the code and enjoy the second suppositions.

QR codes are not another mushy uneven promoting strategy utilized by stores. The codes are utilized to profit the two gatherings and make all around item and administration fulfilment.

2. Drawbacks of Existing System

There are many drawbacks of conventional bar code system used in Indian shopping malls. System software failure may cost more delays and a light beam might be refracted by water particles suspended in the atmosphere, resulting in focus distortion. In laser scanning, durability and cost are the two disadvantages and a barcode becomes scratched or crumpled the reader may not be able to read it[4]. If the scan rate of a reader is exceeded by the speed of movement of the bar codes, a loss of reading accuracy, together with failure to read a bar code**.** A bar code reader cannot read a bar code if there is any obstacle between the reader and the bar code.

2.1. Problems Faced by Old System

Shopping malls are a hectic and tedious place where in today's world time is very precious[4]. Following are the problems customers are facing:

In shopping malls, customers firstly have to look for their required products, secondly they have to manage a cart (trolley) with them in case they have too many products to buy so large shopping area is required to accommodate more number of customers with trolleys.

a) Customers have to stand in long queues for a longer period of time, which is very time consuming.

b) There are chances that after the customers select the product and if their mind change then they put the product in the stall of some other products, so rearrangement of products in their proper places become time consuming and cumbersome for the staff members of the shopping mall.

c) Chances of damage of products are high.

2.2. Literature Review

Expanding exercises of individuals over Internet has filled in as another business medium, another method for moving toward business. It is giving favourable position to web based business and spread of online offers of item and foodstuffs, which leaded the ascent to the idea of virtual shopping. Virtual shopping can be characterized as a client is surfing on web he takes a gander at a commercial of a specific brand or item at any site and he tapped on that connected to pick up learning in regards to that item either to buy or to have general data of that specific thing without physically touching the item independent from anyone else is named as virtual shopping. It can be expressed as utilizing web variant for shopping which was beforehand done through inventories; a man arranges the things through moving over the items he sees on the screen and the one which he discovers ideal for he arrange it as opposed to going to shop (Barnatt, 1998)[2].

It resembles exchanging of item deals through electronic means, a move from shopping physically through store configuration and seeing inventories in printed versions however transforming it with

electronic arrangement and electronic inventory to a shape which constitute by means of World Wide Web and web utilizing (Parsons, 2002)[7].

3. Proposed System

Quick response code applications it empowers the client to record the putting away address and the organization's URL of the thing which the client may discover intriguing to him while he is strolling and seen at any publicizing stance or either looking through the magazine and with the utilization of cell phones it catches the picture of that code and through the assistance of QR code application show in the telephone empowers the client to find the URL, organization data and the item portrayal he is being taking a gander at. At that point associating with web and opening the coveted website page, choosing the thing and continuing towards the instalment zone to make the instalment (Jones, Comfort, Clarke-Hill, and Hillier, 2010).

Customer after entry to the shopping mall:

a) Open the App.

b) Login to the App.

c) After login scan QR code kept on the entry door (unique QR code will be assigned to the customer)

Fig. 1(a): Scanning QR Code at the time of entry

d) After the QR code is assigned, customer can purchase the product, even customer can select products from the previous ordered list or bill.

e) After the final order of products, customer will click on bill generation and go to bill counter.

f) Each trolley will have unique id and as the customer is clicking on bill generation, the unique trolley id will be connected with the customer'sQR code id.

Fig. 1(b) Reading QR code at the entry of Shopping Mall.

Fig. 2(a): Scanning QR Code on products

g) Then the trolley will be moved to each stall in the go down and the shop/stall keeper will put the customer's ordered products in the trolley and goes to the next stall and same process will continue till the order is completed.

Fig. 3: Purchased products

h) Then the trolley will be moved to the billing counter by the embedded system and the customer will take the products and pay the bill.

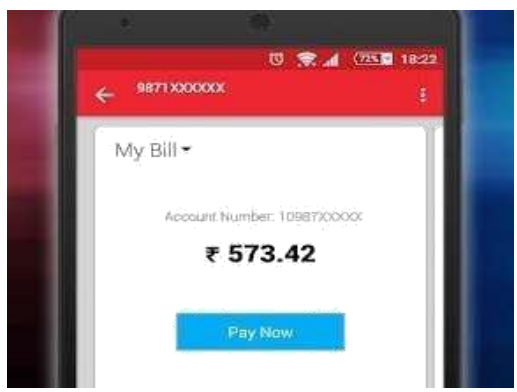

Fig. 4: Pay bill

4. Process of Shopping Using QR-Code

i) QR-codes can also be used in shopping malls. Here we are proposing a system (mobile application) where sample product will have a specific QR-code so, the customers have to scan the QR-code of the products they want to purchase. As soon as they complete their shopping, instead of standing in long queues with their products, they just have to collect their bill as well as their products from the cash counter.

j) Customer has to install app before entry and as the customer will come for shopping will open the software(mobile application) and then a unique id will be assigned to each customer. After the unique id is assigned customer can start scanning the QR code for the product he/she wants to purchase. Sample Products are displayed with QR code and customer needs to scan product QR code using app and has to enter quantity. As the customer will finish with the order a unique smart trolley (unique s mart trolley number will be given to the customer) will be assigned to each customer in the godown.

k) In godown, stalls will be there with shopkeeper and person/software to put products in trolley when arrives. When customer tap on check-out in app, the trolley will go to each stall one by one, and stall keeper will put products in trolley as displayed in Fig. 5. Stall will have related items. Trolley will have QR code and when it arrives to stall, the software in store will have the order given by customers. So, only those ordered products will be kept in smart trolly.

l) The billing amount will be reflected immediately including discount and offers. Until he/she reaches Billing Counter he/she will not have trolley. When he/she reaches at billing counter and do check-out, the trolley will come with all the purchased products from go down and immediately he/she can pay bill.

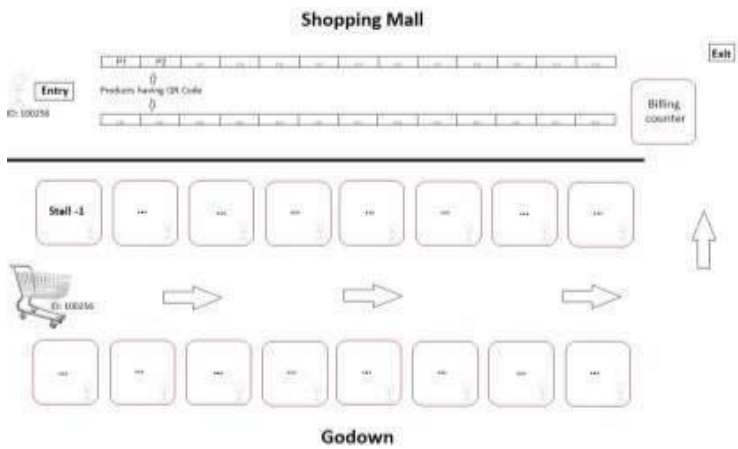

Fig. 5: Processing of Product in Shopping Mall

5. Advantages

a) As all the trolleys are kept in the go down more number of customers can be accommodated for shopping.

b) The numbers of trolleys required are less as compared to the existing system.

c) A straightforward sweep catches the coveted data.

d) The Decoded information can be put away in the server and can be seen by the clients.

e) High precision in picture catching.

f) Client can without much of a stretch identify the qr code picture, by means of his Android versatile itself.

g) As the stalls with original products are kept in go down, the shopping area will become large or specious, so, shopping area will not be crowded.

h) Remunerating clients with coupons and unique offers each time they check one of their QR codes, makes a feeling of dependability amongst them and their image. Feeling happy with their administration and their buy will make them more prone to purchase from us later on and prescribe their image to individuals they know.

6. Conclusion and Future Enhancements

This approach for quick shopping or virtual shopping is well suited for today's hectic and busy schedule of ours. It is adaptive in terms of time and accessibility during easily used by individual's mobile phone. Each and every customer will have their individual account so no any hurdle during payment and making purchased item bills[5]. There is a huge advantage of this approach that it is effective in terms of time and required less amount of manpower to manage different counters of shopping mall.

- Customers bank details can be maintained. So, customer don't have to wait long in bill payment. it is easily implemented by attached a bank payment gateway API with this app, where individual customer can choose any type of payment option either by their debit or credit card of any Bank and by using Net Banking.
- We may include some rewards or offers voucher during their items selection[3].
- We may include some additional discount offers over special days or festivals and notify the sign up users and customer's.

QR Codes are already very popular in Asia[7], and, as mobile becomes the dominate platform for accessing the internet, Ultimately, I'd happy to see paper Fact Tags replaced by digital Fact Tags such as those offered by MicroSigns. Retailers could even offer built in NFC transmitters to interact with shoppers' mobile devices (For example, imagine Digital Fact Tags that could instantly change colors to highlight the products that best matched a search you performed on your phone). If it does happen it might take some time for retailers, QR Codes are going to be the best and most popular option for the next several years.

Fig. 6: Future of QR Code Technology

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A Scheduling Algorithm based on PSO Heuristic in Cloud Computing

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Abstract

The goal of the SaaS provider is the most protable; the user's goal is to meet requirements as quickly as possible but still within budget and deadline. The algorithm's aim gives the schedule to satisfy the objectives of the agents, this is a very difficult problem. This article studies heuristic PSO (Particle Swarm Optimization) and model of components in the cloud computing to propose a model of PaaS providers; admission control algorithm and scheduling for the user's requirements towards multi-objective optimization of time.The schedule given by the algorithm in order to: (1) optimizing the time for the user, (2) providing the greatest benefits for SaaS providers, (3) satisfying for the constraints of QoS (Quality of Service) of the user. The result of the algorithm is installed and compared with other algorithms on CloudSim.

Keywords

Quick Response code,

Shopping Mall,

Smart Trolley

1. Introduction

Cloud computing is a distributed computing model for large scale, it provides services to users by employing resources (hardware, software, storage resources, ...) via the internet[18].It provides services to users by employing resources via internet. Users may employ the various resources through their requirements and pay as they use. When users send requests together with the constraints as todeadline, budget, workload, arrival time, ... to SaaS providers, SaaS providers use PaaS to admission control, then conduct scheduling requirements as Figure 1. PaaS provider searches for suitable resources on IaaS to logical mapping to user requirements.

The problem of scheduling on cloud computing differs from the multi-processor scheduling problem in some features:

a) Can perform parallel tasks, tasks can always be completed on time.

b) Resources on cloud computing are provided by many vendors. So, at every moment, users can find the right resources.

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c) Each request can reuse the expiration period of the other request

d) Each user rents a virtual machine for a period of time. If the user does not use up the amount of time, other users can take advantage of it.

Generally, Scheduling problem on cloud computing with parameters such as workload, budget, deadline, ... is an NP-complete problem [1]. Therefore, one can not use the exhaustive method to find the optimal solution because the search time is too large. Nowadays, researchers often use heuristic methods to find near-optimal solutions such as: greedy method EDF ((Earliest Deadline First)) [4][19], ACO (Ant Colony Optimization) method [2] [20], techniques optimized fuzzy bees [3], ...

On cloud computing, users rent resources on datacenters and pay for cost over time. . Therefore, the scheduling problem based on constraint Quality of Service (QoS) is often used. In this case, the user's parameters such as arrival time, budget, deadline, etc., are given priority when scheduling. Jzau-Sheng Lin and colleagues [5] has proposed a scheduling model for cloud computing with the goal of bringing the highest profit for the SaaS provider but only interested in the deadlines and budget of the requirements. The study [6] focuses on the scheduling requirements for power savings on IaaS provider. Ramkumar N [7] has proposed a real-time scheduling algorithm but focused to solve scheduling tasks quickly satisfy most of the requirements deadline regardless of cost and its budget. Swarupa Irugurala, Dr.K.Shahu Chatrapati [8] has proposed a scheduling algorithm but is concerned only with the cost of virtual machine initialization and the cost of using the virtual machine. Gomathi B. and Medhat A. Tawfeek base on PSO (Particle Swarm Optimization), ACO to propose scheduling algorithms but only concerned with the execution time of the system.

Professor Rajkumar Buyya and colleagues [20], [21]have proposed scheduling algorithm works on cloud computing foward the system performance. The authors have combined with parallel processing, heuristics and PSO to handle the large volume of work. The proposed study and build the model of optimize non-linear workflows, minimize retrieve data for workloads which are requiring a large volume of data on cloud computing. These studies use a heuristic algorithm to provide PSO algorithm for faster convergence and computing time is less than the existing algorithm. However, these algorithms applies only to classes of problems with large volumes, the data transmission time is larger than the calculation time, not interested in the user's QoS constraints.

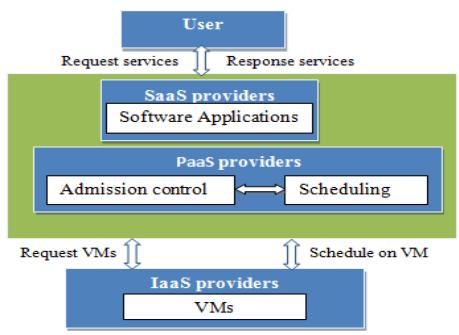

Fig.1: IaaS, Paas and SaaS Providers

The studie [22] are using the heuristic of the pack to provide optimal schedule of implementation time, not interested in the user's QoS constraints. To optimize the execution time, the studies [18], [23] are using the heuristic ACO, GA to provide a schedule with the aim of giving time to complete the smallest system but still satisfy the user's QoS constraints. The present study focuses on time constraints, not concerned about the cost of the system.

In this paper, the virtual machines on the data center are used to map the requirements aiming at making real-time implementation of the system minimal but still meeting deadlines and budgets requirements. SAPSO and MPSOalgorithmsare proposed.The goal of these algorithms is: (1) optimizing the time for the user, (2) providing the greatest benefits for SaaS providers, (3) satisfying for the constraints of QoS (Quality of Service) of the user

The paper includes: section 2, system model;section 3, two algorithms are proposed: SAPSO and MPSO then simulating, evaluating between the algorithms and conclusions [section 4].

2. System Model

Cloud computing consists of four main components [11]: User, Software as a Service (SaaS) providers, Platform as a Service (PaaS) providers and Infrastructure as a Service (IaaS) providers. Users send requests to use the attached software to their QoS requirements to the SaaS provider. PaaS providers analyze the QoS parameters, thereby deciding whether to accept or reject user requests. If the request is accepted, the scheduler will search for resources on the IaaS provider such as Figure 1.

2.1. User model

Users send N service requests: $T = \{ t_1, t_2, \dots, t_N \}$ to SaaS vendors, $\forall t_i \in T$ is a 7-tuble$< a_i, d_i, b_i, \alpha_i, w_i, in_i, out_i >$Where

a_i: arrival time of request.

d_i (deadline): longest time users need to wait for the results.

b_i (budget): the cost of the user paid to the provider.

α_i (penalty rate): penalty rate if the supplier fails to deliver on time

w_i (workload): workload of the request.

in_i and out_i: size of input and output file

2.2. SaaS providers model

SaaS providers lease resources from the IaaS provider and its leasing software as services for users. The goal of SaaS provider is how to minimize the cost of using resources from the IaaS providers to bring the highest profit to them.

2.3. IaaS provider model

Let $X = \{ 1, 2, \dots, Y \}$ is set suppliers, each IaaS provider $x \in X$ provides M_x virtual machines: $VM_x = \{ vm_{1x}, vm_{2x}, \dots, vm_{M_x x} \}$ for SaaS providers, $\forall vm_{jx} \in VM_x$ is a5-tuble $< t_{jx}, p_{jx}, s_{jx}, Dtp_{jx}, Dts_{jx} >$includes [11]:

Initialization time t_{jx}: how long it takes to deploy one virtual machine.

Price p_{jx}: pricing depends on per hour that SaaS must pay for IaaS using VMs

s_{jx}: processor speed of virtual machines

Dtp_{jx}: the price SaaS provider must pay to transport data from resource provider client.

Dts_{jx}: data transporting speed depends on network performance.

2.4. PaaS provider model

PaaS provider model is is a 3-tuble $<R \mid npmtn \mid T_{min}>$. All IaaSprovider are not interdependent, can be executed in parallel and are denoted by R. We set schedule for N requests independently not to follow any particular order of priority (non-preemptive) on Y providers. These requirements are denoted by*npmtn*. The aim is to find the minimum total completed time for requirements but still satisfying deadline and budget of the requirements, it means that T_{min} must be found.

Call$T_{ijx}$is the time to process the request$t_i \in T$ on $vm_{jx} \in VM_x$. Based on user model and IaaS providers model (session 2.1, 2.3), then time T_{ijx} is calculated as follows:

$$T_{ijx} = CT_{ijx} + DT_{ijx} + TI_{ijx} + \beta_{ijx} \quad (1)$$

Where- CT_{ijx}: time to process the requests depends on the workload $w_i$of the request t_i and the speed$s_{jx}$of virtual machinevm_{jx}, $CT_{ijx}$is calculated as follows:

$$CT_{ijx} = \frac{w_i}{s_{jx}} \quad (2)$$

- DT_{ijx}: time to transfer data including time to send data to and retrieve data from resource providers depend on the size of the input file size $in_i$and output file size $out_i$of the request t_i, data transfer speed $DT_{ijx}$of virtual machine vm_{jx},DT_{ijx} is calculated as follows:

$$DT_{ijx} = \frac{in_i + out_i}{Dts_{jx}} \quad (3)$$

- TI_{ijx}: virtual machine initialization time is given.

-β_{ijx}: exceeded time deadline of the $t_i \in T$on virtual machine $vm_{jx} \in VM_x$.

Call $CT_{ijx}$the cost of executing the request$t_i \in T$ on the $vm_{jx} \in VM_x$. Based on user model and IaaS providers model (session 2.1, 2.3), then CT_{ijx}include cos$CT_{ijx} = CP_{ijx} + CDT_{ijx} + CI_{ijx} + CR_{ijx}$

Where the cost of processing request (CP_{ijx}) depends on the price ofvirtual machinevm_{jx} (p_{jx}), speed of virtual machine vm_{jx} (s_{jx}) and workload of request t_i (w_i). CP_{ijx} is calculated as follows:

$$CP_{ijx} = p_{jx} \times \frac{w_i}{s_{jx}} \quad (4)$$

The cost of data transmission (CDT_{ijx}) includes the cost of sending data to and retrieve data from resource providers depend on the size of the input file$in_i$and output file $out_i$of the request$t_i \in T$, data transfer speeds(Dts_{jx})and prices to transfer data $Dtp_{jx}$from the virtual machine $vm_{jx} \in VM_x$ to user computers. CDT_{ijx} is calculated as follows:

$$CDT_{ijx} = Dtp_{jx} \times \frac{in_i + out_i}{Dts_x} \quad (5)$$

Costs initialized(CI_{ijx})of virtual machine depends on the initialization time $t_{ijx}$and pricep_{ijx} of the request $t_i \in T$ on virtual machinevm_{jx}. CI_{ijx} is calculated as follows:

$$CI_{ijx} = t_{ijx} \times p_{ijx} \quad (6)$$

Costs of the SaaS provider must be returned to the users if not meeting the deadline (CR_{ijx}), depending on the penalty rate (α_i) and exceeded time deadline of request t_i on on virtual machine vm_{jx} (β_{ijx}). CR_{ijx} is calculated as follows:

$$CR_{ijx} = \alpha_i \times \beta_{ijx} \quad (7)$$

The objective of the article is find the virtual machine in the IaaS provider to minimize the time of completion, such as:

$$\sum_{i=1}^{N}\left(f_{time}(t_i)\right) \rightarrow \min(6)$$

where

$$f_{time}(t_i) = \min_{x=1\ldots Y, j=1\ldots M_x}\{T_{ijx}\} \quad (9)$$

The cost of request $t_i \in T$ is less than budget that is:

$$C_{ijx} < b_i (10)$$

The execution time (T_{ijx}) of request $t_i \in T$must less than the deadline itself:

$$T_{ijx} \leq d_i + \beta_{ijx} \quad (11)$$

Thus, To achieve the objective of article (8), two constraints (10) and (11) must be satisfied .

3. Construction of Algorithm

3.1. SAPSO algorithm

Based on the experience of swarm, Kennedy and Eberhart has proposedheuristic PSO [12]. heuristic PSO simulates the social behavior of birds or fish searching for food. Heuristic PSO is a common algorithm framework for solving optimal problems. So to apply PSO to the scheduling problem we need to define the parameters: velocity, *Pbest* and *Gbest* [12], [13],[14]. Bergh F. V. D and Clerc, M based on current velocity and distance from *Pbest* to *Gbest* to change position and speed as follows [14], [15]:

$$v_x^{j+1} = K \times (\omega \times v_x^j + c_1 \times r_1 \times \left(Pbest_x - pos_x^{j+1}\right) + c_2 \times r_2 \times \left(Gbest - post_x^{j+1}\right)) \quad (12)$$

where

$$K = \frac{2}{\left|2 - \varphi - \sqrt{\varphi^2 - 4 \times \varphi}\right|}, \varphi = c_1 \times z_1 + c_2 \times z_2, \varphi > 4$$

$$pos_x^{j+1} = pos_x^j + v_x^{j+1} \quad (13)$$

Therein:pos_x^j: position of particle *x* in dimension *j*;pos_x^{j+1}: position of particle *x* in dimension *j+1*; ω: inertia weight (value: 0.1 … 0.9);c_1, c_2: acceleration coefficient (value: 1..2); r_1, r_2: random number between 0 and 1;v_x^j: velocity of particle *x* in dimension *j*; v_x^{j+1}: velocity of particle *x* in dimension *j+1*; ; $Pbest_x$: local best position of particle *x*; *Gbest* : global best position of the entire swarm.

Let $P = \{1, 2, \ldots, Y\}$ is set consisting of *Y* particles. Each particle $x \in P$ willloop N times to searches food inM_x dimension space and is determined:

$$POS_{ix} = \{pos_{ix}^1, pos_{ix}^2, \ldots, pos_{ix}^{M_x}\} \quad (14)$$

$$V_{ix} = \{v_{ix}^1, v_{ix}^2, \ldots, v_{ix}^{M_x}\} \quad (15)$$

where in pos_{ix}^j is the position at the loop *i* (i=1 ... N) in dimension *j* (*j= 1 ... M_x*) of the particle *x;* v_{ix}^j is the velocity at the loop *i* in dimension *j*of the particle *x*.

In section 2, we have *Y* providersand*N* requests of users, each particle is equivalent with each providers, each particle $x \in P$loop$M_x$times to find resources for the request $t_i \in T$, The value of $pos_{ix}^j$is

virtual machine *j* of provider *x*, which is mapped to request t_i. This value is taken from 1 to M_x, and the value of $v_{ix}^j$is taken from $-M_x$to $M_x$randomly, wherein $M_x$is the number of virtual machines in each provider *x*. To achieve the goal of the problem as in formula (8), We need to determine the fitness function for particle *x* to select virtual machine *j* for request $t_i \in T$. Fitness function is calculated as follows:

$$f\left(pos_{ix}^j\right) = \frac{1}{T_{ijx}} \tag{16}$$

where $T_{ijx}$is calculated as in formula (1), (2), (3) (section 2).

After calculating the fitness function for particle *x*, We can determine the local optimal position of particle *x* is as follows:

$$pb_{ix}^{j+1} = \begin{cases} pb_{ix}^{j+1}, & if\ f\left(pos_{ix}^{j+1}\right) \geq f\left(pos_{ix}^{j}\right)\ and\ C_{ijx} \leq b_i\ and\ T_{ijx} \leq d_i + \beta_{ijx} \\ pb_{ix}^{j}, & Other\ cases \end{cases} \tag{17}$$

where $C_{ijx} \leq b_i\ and\ T_{ijx} \leq d_i + \beta_{ijx}$as constraints (10) and (11) in session 2.4

Local best position of particle *x* ($Pbest_x$) and global best position (*Gbest*) are determined as:

$$Pbest_x = \min_{x=1\dots Y,\ j=1\dots M\_x} \left(pb_{ix}^j\right) \tag{18}$$

$$Gbest = \max_{x=1\dots Y} \left(Pbest_x\right) \tag{19}$$

SAPSO algorithm

Input:

$T = \{t_1, t_2, \dots, t_N\}$, $\forall t_i \in T$is a 7-tuble $< a_i, d_i, b_i, \alpha_i, w_i, in_i, out_i >$;

$X = \{1, 2, \dots, Y\}$, $\forall x \in X$, $VM_x = \{vm_{1x}, vm_{2x}, \dots, vm_{M_x x}\}$, $vm_{jx} \in VM_x$ is a 5-tuble $< t_{jx}, p_{jx}, s_{jx}, Dtp_{jx}, Dts_{jx} >$

Output:

$S = \{t_i \rightarrow vm_{jx}, t_i \in T, vm_{jx} \in VM_x\}$ *where* $t_i \rightarrow vm_{jx}$:each request $t_i \in T$ is mapped to the $vm_{jx} \in VM_x$

Description algorithm:

1. Initialization:

   pos_{ix}^j is a random number from 1 to M_x;

   v_{ix}^j is a random number from $-M_x$x to Mx;

   $Pbest_x = pos_{1x}^1$;

   $Gbest_x = \max_{x=1\dots Y} Pbest_x$

2. Create Y thread that executes concurrently:

   $TH := \{th_1, th_2, \dots, th_Y\}, th_x \in TH$ search resources in $x \in X$.

3.FOR EACH$t_i \in T$DO

4. FOR EACH$th_x \in TH$ DO{

5. Calculate fitness function as formula (16):

$$f\left(pos_{ix}^{j}\right) = \frac{1}{T_{ijx}}$$

6. Calculate *Pbest*$_j$ as formula (18):

$$Pbest_x = \min_{x=1\ldots Y,\ j=1\ldots M\_x} \left(pb_{ix}^{j}\right)$$

7. Calculate *Gbest*$_i$ as formula (19):

$$Gbest = \max_{x=1\ldots Y} \left(Pbest_x\right)$$

8. END FOR

9. Based on $Gbest_i$, search the virtual machine which has cost less than budget: *cost* <b_i and processing time $\leq d_i + \beta_{iix}$, if found then$S := S \cup \{t_i \rightarrow vm_{ix}\}$else the request has been reject;

10. Update the position and velocity of the particles as formula (12),(13):

$$v_x^{j+1} = K \times (\omega \times v_x^j + c_1 \times r_1 \times \left(Pbest_x - pos_x^{j+1}\right) + c_2 \times r_2 \times \left(Gbest - post_x^{j+1}\right))$$

$$pos_x^{j+1} = pos_x^j + v_x^{j+1}$$

11.END FOR

3.2. MPSO algorithm

Provider resources are rented hourly, the user has to pay the hourly fee. If user do not use all their one-hour of hiring time, user also have to pay for a whole hour. At each point, each vendor has a lot of users rent resources. So if the user does not use up the amount of time, other users can take advantage of it. We call T_i is the set of requirements, this set includes requirements, which can take advantage time of request t_i. The requirements in T_i can share a virtual machine. The set T_i is defined as follows:

$$T_i = \{t_l | d_l \geq d_i \text{ and } a_l < d_i\} \quad (20)$$

Call t_{iljx} is effective time to calculate the request t_l after completing the request of $t_i \in T$ on$vm_{jx} \in VM_x$. The value of t_{iljx} depends on the workload, arrival time, speed of virtual machines and deadline of request$t_i \in T$ and request$t_j \in T$. $t_{iljx}$is calculated as follows:

$$t_{iljx} = \begin{cases} \min(D - U_{il},\ d_l - a_l) & if\ a_l - a_i \geq \frac{w_i}{s_{jx}} \\ D - U_{il} & if\ a_l - a_i < \frac{w_i}{s_{jx}}\ and\ d_l - a_i \geq D \\ d_l - (a_i + U_{il}) & if\ a_l - a_i < \frac{w_i}{s_{jx}}\ and\ d_l - a_i < D \end{cases} \quad (21)$$

where

$U_{il} = \frac{w_i}{s_{jx}} + \max(a_i - d_i,\ 0)$, $s_{jx}$the speed of$vm_{jx} \in VM_x$is mapped to request $t_j \in T$.

MPSO algorithm

Input:

S is output of SAPSO algorithms. Mapping in S contains the requests, these requests are accepted by the supplier

Output:

$ST = \{ t_i \rightarrow vm_{jx},\ t_i \in T,\ vm_{jx} \in VM_x \}$ *where* $t_i \rightarrow vm_{jx}$*:* each request $t_i \in T$ is mapped to the $vm_{jx} \in VM_x$

Description algorithm:

1. Sort all request in *S* accordingly to the provider, then all requests of the same provider will be in the same group;

2. FOR EACH provider *x* in *S* DO

3.PUSH(t_i);// *Save* t_i *into the stack,* t_i *is the first request of the provider x*

4.$ST := ST \cup \{ t_i \};; S := S \setminus \{ t_i \};$

5.FOR EACH request t_i in the provider *x* DO

6. t_i=POP(); *// Take* t_i *from stack*

7. Find T_i and calculate $t_{iljx}$for the requests in T_i as in formula (20), (21):

$$T_i = \{ t_l | d_l \geq d_i \ and \ a_l < d_i \}$$

$$t_{iljx} = \begin{cases} \min(D - U_{il},\ d_l - a_l) & if\ a_l - a_i \geq \frac{w_i}{s_{jx}} \\ D - U_{il} & if\ a_l - a_i < \frac{w_i}{s_{jx}}\ and\ d_l - a_i \geq D \\ d_l - (a_i + U_{il}) & if\ a_l - a_i < \frac{w_i}{s_{jx}}\ and\ d_l - a_i < D \end{cases}$$

9. Find max(t_{iljx}),t_l has the largest overlapping time as the next request;

10. Base on max(t_{iljx}) to find w_l reload all request status of t_l;

11. PUSH(t_l);

12. $ST := ST \cup \{ t_i \};S := S \setminus \{ t_i \};$

13.END FOR

14.END FOR

15.Base on ST to produce the mapped schedule onto the request of resources;

3.3. Correctness of the algorithms

M.Clerc [15] added the rate of convergence K to update the velocity for particle and has proved the correctness of the PSO algorithm. This ensures the correctness of the algorithm SAPSO.

The input of the algorithm SAPSO is Y independent provider, so we can create the Y thread which performed concurrently, each thread$th_x \in TH$ is an particle which searched on the set virtual machine of the corresponding provider. This will reduce the complexity of the algorithm and optimize the time schedule.

Each particle (Thread) just focuses on mappings request $t_i \in T$ into $vm_{jx} \in VM_x$ based on the fitness function as formula (16). So, when the lower $T_{ijx}$is, the higher the fitness function is, the probability of request $t_i \in T$choose $vm_{jx} \in VM_x$ is more. Therefore, when the required mapping into the virtual machine has a low time to implement, it will make the total execution time of all systems are reduced.

The resource rental provider with time is D-minute, therefore if user do not use all their D-minute of hiring time, user also have to pay for a whole D-minute. MPSOalgorithm takes advantage of this request to process the next request. The goal of the MPSO algorithm is to reduce the cost of the system, bringing the most benefit to the SaaS provider

3.4. Simulation and evaluation of the algorithms

This article uses NetBean 7.1.1, JDK 6 and CloudSim 2.1 (Simulation tool on cloud computing) [16] to install algorithms. In CloudSim 2.1, we use 4 Datacenter, 10 physical hosts, 150 virtual machines. Other parameters (users and resource providers) on CloudSim 2.1 are defined as follows:

User service side: Workload is a random number from $8*10^4$ MI to 10^5MI, after determining the workload, we can determine the corresponding budget for the requirements. The arrival time is a random number from 1 to 500, deadline is a random number between (d_l,d_u) minutes and the different values of d_l and d_u are limited from 10 to 1500, deadline is random but must be greater than the arrival time. Other parameters of user service are taken as implicit in CloudSim.

On the IaaS provider's side: In simulation, we use four IaaS providers; each IaaS provider has a number of different virtual machines, each virtual machines has speed, costs, and different bandwidth. In simulation installation, the Vm class of CloudSim is inherited to create a virtual machines with the parameters of speed and cost are calculated as follows: speed is a random number from from 10^3 to $5*10^3$ MIPS corresponding with the costs which are real numbers is a random number from from 0.001 to 0.01, other parameters of the virtual machine as bandwidth, initialization time of virtual machine, data center, brokers, etc. ... are taken as implicit in CloudSim.

Results in simulation is the result of the 10 tests and the average results are obtained.

3.4.1. Analyze the total cost, time and profit as fixed requests.

Figures 2,3 and 4 show the total time, cost and total profit of four algorithms: EDF, SAPSO, MPSO and Sequential, using 150 VMs and 1000 requests. Simulation results show that the total execution time of algorithms SAPSO and MPSO are almost as same as Sequential algorithms (as Figure 2), but the cost of MPSO is always lower than EDF, SAPSO and Sequential algorithms. Because the SAPSO algorithm is responsible for admission control, accepting its satisfied deadline and budget requests, so after the SAPSO algorithm has done processing, the accepted requests are got with less time consuming, this requesting set is the input data of MPSO scheduling algorithm. MPSO scheduling algorithm continues taking advantage of the advanced time interval of requests onto IaaS resource provider, which lead to the total of cost reduction as Figure 3 and total of profit increase as Figure 4.

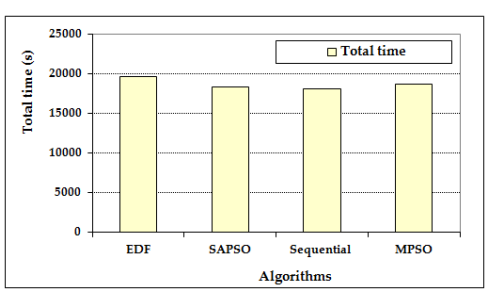

Fig 2. The total time of the algorithms when using 1000 requests.

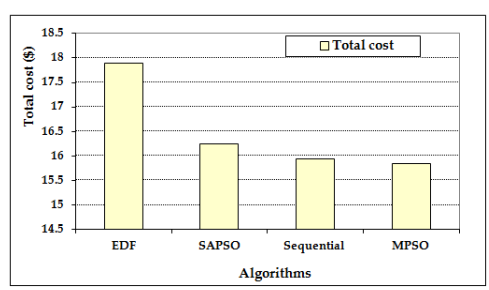

Fig 3. The total cost of the algorithms as fixed requests.

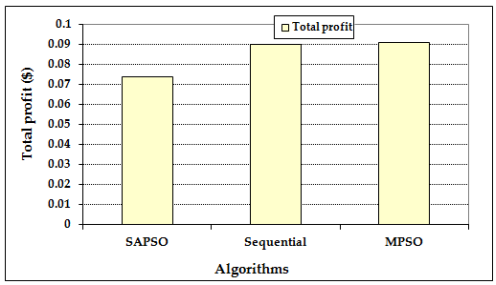

Fig 4. The total profit of the algorithms when using 1000 requests

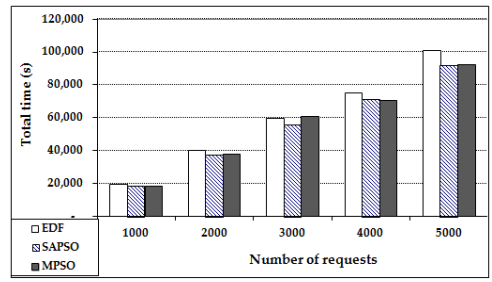

Fig 5. The total time of the algorithms when requests change.

Sequential algorithm does not take advantage of the time between requests, but uses exhaustive method to search the resource, so there will be many cases that the request can't use all the rental time, this will make the cost of the sequential algorithm increase and takes a very long time to schedule. For EDF algorithms, thisalgorithms only focus the ratio used: (where Ci is the execution time,Tiis deadline, m is is the number of virtual machines) [17] to map the request to the resource, so EDF algorithm but not focus in the budget of request. The advantage of the EDF algorithm is that all requests are always completed before the deadline,Therefore, to consider for the total profit for supplier, the paper doesn't consider to EDF algorithm.

3.4.2. Analyze total cost, total execution time and total profit of requests as a fixed number of virtual machines and changing number of requests.

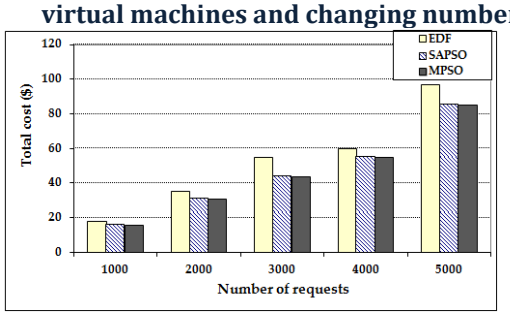

Fig 6. The total cost of the algorithms when requests change

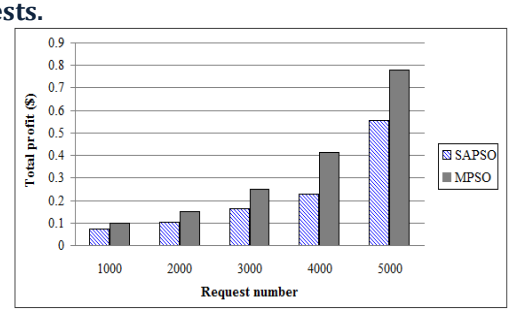

Fig 7. The total profit of the algorithms when requests change

This section presents the results of the total time, total cost and total profit when changing the number of requests from 1000 to 5000 and maintaining the fixed number of virtual machines as 150 VMs of the algorithms, as shown in Figure 5, Figure 6 and Figure 7.

Sequential algorithm uses the exhaustive method to search the resource, therefore the larger the requests are, the more time used for scheduling the complexity of algorithm will be exponential, so the sequential algorithm is not considered in this section.

When the number of requests increases, it will have many requests that can't use all the rental time, while MPSO algorithm would be able to use all of such rental time. This will lead to the total cost of MPSO algorithm is much smaller than EDF and SAPSO algorithms as shown in Figure 6.And the total Profit gives to suppliers MPSO algorithm higher than SAPSO algorithm as Figure 7.

As shown in Figure 5, when the number of requests gets larger, the total of processing time will increase, the total processing time of both SAPSO and MPSO are nearly equal, while EDF algorithm only considers to use the ratio of U to find resources, not considering in finding the best resources, so that the total execution time of the EDF is often greater than the total execution time of SAPSO and MPSO.

4. Conclusion

In this article, we focus on the issue of admission control and the schedule for the requirements of users toward of multi-objective optimization. Based on the model of users and providers of IaaS of R.Buyya. The articles made the models of PaaS provider.From there, they apply the heuristic PSO to make calculations

fitness function, the local best position of each particle and the global best position of the entire swarm. To optimize time-to schedule, optimize the execution time for the request and bring benefits to the suppliers , the articles proposed SAPSO and MPSO algorithm. These algorithms used parallel processing techniques and heuristic PSO to identify the resources with high-speed; to leverage overlapping period between the request to save costs.

After analyzing and evaluating simulation results using the the same samples and using same simulations tool show that SAPSO and MPSO algorithms have impressive improvement of time and cost when compared with some other scheduling algorithms.

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Usage of the Big Data Idea in Associations Potential Outcomes, Obstructions and Difficulties

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Abstract

This research report the examination of the Big data's considered. It has seven zones. In the standard, the developing bit of information and facts and it's fast in-wrinkle in the new socio-quiet the truth, are talked about. Next, the likelihood of The Big data's is portrayed and the fundamental wellsprings of headway of information are delineated. In the running with bit of the research paper the most essential conceivable outcomes related with The Big data's are introduced and investigated. The going with part is focused on the consume factorization of contraptions, systems and the most steady information as for The Big data's works out. In the running with bit of the father per the achievement sections of The Big data's practices are dissected, afterwards an examination of the most essential issues and tests related with The Big data's. In the last piece of the research report, the most vital results and proposition are advanced. the present scenario life style became too fast and in this rushing life style shopping become hectic for everyone. In the era of technical achievement, there are multiple advanced ways available for shopping. In which window shopping, virtual shopping is few common names. Present paper elaborated about the advancement in virtual shopping via QR code over smart phone. we are creating a shopping system which is simple, fast, easily approachable and mutually supported by both customers and merchants. In view of the smartphone have become a highly used handheld device, a simple android /IOS application was given to design shopping system run on smart phones, with the help of QR code generation and recognition technology.

Keywords

Big Data,

Research Centric,

Facts,

Noteworthy,

Association

1. Introduction

Expanding measures of information are spilling into contemporary associations because of the quickly developing amount of information being created by the associations themselves as well as in the associations'

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business surroundings by both their partners and different elements working there. Along these lines, it is in this setting such articulations as "a facts centric world" have turned out to be increasingly normal [1].

The previously mentioned forms are critical components of the socio-practical changes occurring around the world, where the to a great degree dynamic advancement of progressively intense and inescapable facts innovation has an essential part to play. This new sort of economy, in the advantage measurement, is a facts based economy, where the hugest kind of capital is academic capital [2]. Under these conditions, from an association's perspective, the capacity to gather the correct information and facts and to trans-shape it successfully into helpful learning turns into an increasingly critical issue.

As of late, the field of facts innovation has started to go into another period, because of the escalation of the advance being made there. It is a period where handling force and information stockpiling have turned out to be for all intents furthermore, purposes free, while frameworks and cloud-based game plans outfit customers with overall access and unavoidable organizations. On account of these methodology.

Accordingly, the measure of information and facts accessible for associations for investigation is detonating [4]. This gives associations totally new working potential outcomes, while at the same time producing various new difficulties. In this setting the expression "Enormous Facts" has developed and is being utilized increasingly usually in the business.

2. Most Important Bases of the Development of Facts

The Big data's isn't all around comprehended and appeal with, inciting particular ways to deal with oversee dissecting it. From the LCIA, this word isn't right. it's a portrayal of the unending get-together of a broad assortment of information, its bigger part unstructured. It delineates illuminating records that are making exponentially and that are exorbitantly critical, irrationally unpleasant or superfluously unstructured for examination utilizing social Data base technique" [6]. Then again, New Vantage Partners delineates The Big data's as "a term used to depict instructive records so expansive, so mind boggling or that require such smart dealing with (once in a while called the Volume/Variety/Velocity issue), that they end up troublesome or difficult to work with utilizing standard database management or investigative devices" [8]. It's basic to note that The Big data's not just identifies with the utmost and utilization of intriguing substance yet despite the information related with this utilization

For the most part, there have been some huge patterns that have result an extensive increment in information age [7]. The main pattern, the development in conventional value-based information bases is primarily associated with the way that associations are gathering information with more prominent granularity and recurrence. This is because of different reasons, for example, the expanding level of rivalry, expanding commotion in the business world and the developing desires of clients. These components expect associations to respond quickly and with most extreme adaptability to the progressions occurring and afterward change in accordance with them. With a specific end goal to have the capacity to do this, they are compelled to direct increasingly nitty gritty investigation concerning deface replaces, rivalry and the conduct of purchasers [7].

The second pattern, the expansion of sight and sound substance, is associated with the quick increment in the utilization of mixed media in the different businesses of the contemporary economy, for example, the medicinal services part where more than 95 % of the clinical information made is in video organize. All things considered, blended media facts al-arranged records for over segment of Web spine action and it is expected that this offer will create to 70% preceding the complete of the year 2013 [7].

Online long range interpersonal communication is the accompanying to an extraordinary degree enormous wellspring of the development of facts. Facebook customers alone deliver colossal measures of facts.. Research headed toward the start of 2012 demonstrated that if just messages are considered, clients get a conventional of appropriate around twelve messages for every month, and send nine [3]. By virtue of YouTube, reliably 24x7 of video is up-stacked, while over a similar time traverse Twitter customers send 98000 tweets [7][2]. Moreover, propelled cells are expecting an unyieldingly crucial part in casual associations. Regardless of the way that the passage of casual groups is growing for the two PCs and mobile phones, it is by and large higher for PDAs. This has result a snappy addition in versatile facts movement which do leaked between the second from last quarter of 2011 and the second from last quarter of 2012. It is expected that flexible facts development will grow twelve overlay by 2018 [3].

3. Prospects and Advantages Concerned To The Big Data Use

With case that has result headway in the measure of information is the difference in the phenomenon called "The IOT". Where the measure of physical things or contraptions that discussion with each other with no human obstruction is stretching out at a quick pace. They interface with each other in a wired or remote way, once in a while utilizing IP customs. By 2015 the measure of data passed on from the IOT' will grow at a rate of over 30% dependably [7].

Online individual to individual correspondence is the going with to a magnificent degree tremendous wellspring of the expansion of realities. Facebook clients alone make gigantic measures of actualities. Following a year the measure of Facebook clients achieved 1 billion. Research headed toward the start of 2012 demonstrated that if just messages are considered [9]. By goodness of YouTube, constantly 24 hours of video is up-stacked, while over a relative time explore Twitter customers send 98000 tweets [7], [12]. Also, pushed cells are expecting an unbendingly enter part in nice affiliations. Despite the way that the area of nice social affairs is creating for the two PCs and mobile phones, it is all around higher for PDAs [7]. This has result a quick extension in versatile convictions advancement which doublespeak between the second from last quarter of 2011 and the second from last quarter of 2012.

a) As demonstrated by the Global Institute, five key conducts by which The Big data influences a motivation for relationship to can be perceived [7]:

b) creating straightforwardness by planning data and making everything the all the more easily accessible to each and every germane accomplice,

empowering experimentation to discover needs, reveal variability, and improve execution, separating peoples remembering the ultimate objective to adjust exercises ,supplanting or supporting human fundamental authority with robotized figuring's, progressing new plans of activity, things and organizations

The looked into authorities affirm that The Big data's exercises have improved the execution of their relationship over the span of late years by around 26%. At the same time they expect that such exercises will upgrade execution by an ordinary of 41% all through the accompanying three years [8]. Additionally, it justifies seeing that as demonstrated by the eventual outcomes of the investigation of [7][8]., firms where fundamental authority relies upon facts and business examination have some percent higher yield and benefit. As because of BI exercises The Big data's structures have been utilized for two purposes - human choice help and choice mechanization. As indicated by the deferred results of the in advance said ask in regards to composed by the EIU, The Big data's is utilized, for the most part talking, for choice help 58%of the time and for choice computerization around 29% of the time, in light of the level of hazard related with the decision[4].

4. Procedures and Useful Facts for the Big Data Initiatives

The compelling utilization of The Big information's exercises requires an endeavour of proper authoritative activities, including guaranteeing affiliations are equipped with all the vital advantages for engage examination of the reliably creating enlightening accumulations to which they approach. In this particular circumstance, the utilization of suitable strategies and advances is one of the major cause. Before long, affiliations use various diverse frameworks and headways to add up to, control, analyse, and picture The Big data's. They begin from various fields such bits of knowledge, programming designing, associated science, and money related issues. Some of them have been made intentionally and some of them have been balanced consequently. Farsighted illustrating, supposition examination, spatial examination, re-enactment or time game plan examination. Increasingly, there is different new precise tool stash for the examination of The Big pieces of information.

Additionally, a basic segment of The Big information's drives is suitably arranged people. In this one of a kind condition, a specific sort of master is appeared, known as data researchers, who are genuinely masterminded to work with The Big data's. After a short time, it proposes that they ought to be individuals who know how to dis-cover the responses to an association's key demand from enormous social occasions of unstructured data. These individuals ought to be a flavour of operator, data engineer, communicator and trusted guide [10]. In spite of legitimate points of confinement and gigantic and innovative IT aptitudes, they ought to be near the things and procedures inside the association [9]. As the acquisition of completely domain picking up from data analysts usually takes years [3], most affiliations manufacture plat-structures to

close the opening between the comprehensive group who settle on decisions and data pros, for example, that made by Walmart - the Social Genome Platform. It enables bolster among purchasers, merchandisers, thing directors and distinctive individuals who have worked in retail for a noteworthy long time and data analysts [2]. In spite of authentic techniques, contraptions and individuals, the fundamental asset required for The Big reports practices is suitable data. As was said previously, a lot of data from various sources is at the present time gushing into contemporary affiliations however few out of every odd Big Datum sets are comparably beneficial,. Business ventilating data, for instance, bargains, purchases, expenses et cetera is verifiably the most basic wellspring of data. Office documentation is the second key wellspring of data, about took after by online long range informal communication. In particular parts, for instance, human administrations, pharmaceutical, and biotechnology, enlightening lists from online person to person communication are more imperative that those from office documentation. The other essential sorts of enlightening lists include: reason for offer data, Web-site click stream data, Aiming RFID/coordination's data, Geo spatial data, media correspondences data, telemetry data [8].

5. Achivement Aspects of the Big Datas Wits

Over an examination of executed The Big information's activities, different achievement sections can be settled, each with their own particular arrangement of proposals. Researchers have seen five essential standards for the accomplishment of The Big pieces of information meander. They join [2]:

a) Employing persons at the centre of the big data's inventiveness.

b) Highlighting info use as the best method to deal with open an impetus from information development.

c) Equipping IT envisions bunches with scholarly and behavioural specialists.

d) Aiming on knowledge.

e) Perturbing more about doing what needs to be done issues than about passing on advancement.

In their contributions snatched from speculation with relationship from actualities rich endeavours, Barton and Court, obviously, accomplished the result that full mishandle of realities and examination requires three limits [5]:

a) Selecting the correct facts. In these setting two perspectives are basic: imaginative sourcing of inside and outside facts and updating IT plan and establishment for basic facts solidifying.

b) Highlighting info use as the best way to deal with open a motivating force from converted raw facts advancement. In these setting two perspectives are basic: aiming on the best drivers of execution and building dummies that change difficulty effortlessly of usage.

c) Kitting IT expects bunches with mental and behavioural analysts. In these setting two edges are important: making clear, legitimate mechanical assemblies for individuals on the front lines and invigorating business frames and developing capacities to engage instruments utilize.

According to researchers, affiliations which are preferred standpoint from The Big data's develop their activities as for three ultimate concerns [9]:

a) Having mindfulness with respect to facts stream instead of stocks.

b) Trusting on facts analysts and thing and process designs rather than facts negotiators

c) Affecting examination a long way from the IT work, into focus business, with operational and creation limits.

6. The Greatest Noteworthy Hurdles and Tests Associated With the Big Datas

Additionally as with other IT activities, The Big pieces of information also has their specific arrangement of issues and inconveniences. The Commercial Intelligence Unit investigates said before shows a piece of the hindrances to the powerful usage of The Big reports for choice age [6]. "Dynamic storerooms" were the most noteworthy obstacle (55,7%), which result from the way that actualities related with specific

complete breaking points (i.e. courses of action, scattering and so on.) are gathered in "work storerooms "instead of pooled for the benefit of the entire alliance. The second, however no less goal, issue is the nonattendance of suitably talented individuals composed to break down certainties. The third perspective is the nonsensically extended timespan it appreciates relationship to relief down colossal illuminating records. As was said beforehand, affiliations intend to be able to look at and follow up on certainties constantly. The fourth hindrance is the challenges worried over the examination of routinely developing measures of unstructured certainties. At long last, the weakness of senior association to see The Big pieces of information in an adequately imperative manner (34.9%) is the fifth key impediment [6]. McAfee and Brynjolfsson display five association challenges which shield relationship from getting the full rewards of The Big facts use. They are: action, limit association, improvement, fundamental activity, affiliation culture. While thinking about action, having continuously or better certainties does not ensure achievement. The pioneers still need a dream of the association's progress, describe clear targets, comprehend the market, and whatnot. Huge Facts changes the way associations settle on monstrous amounts of their choices. Limit association is connected with the need of giving the alliance the favourable individuals, (for example, certainties experts) who are pre-pared to work with immense courses of action of actualities. The going with test identifies with the issue of guaranteeing the realities examiners have the best contraptions to deal with The Big pieces of information. Despite the way that the innovation alone isn't sufficient to win in The Big pieces of information works out, it is a key piece of it. The going with test is connected with the issue of guaranteeing there are systems set up to ensure that the data and the significant chiefs are in a near domain. It is fundamental to ensure that the comprehensive group who value the issues can utilize the correct realities and to work with individuals who have the essential thinking aptitudes. The last test is associated with changes related to finish culture. The key issue in this setting is to settle on decisions as sureness's driven as could be permitted, rather than making them in light of hunches and motivation [4]. It legitimizes saying that the criticalness of such social change is also mentioned in other research e.g. that concerning sectoral The Big reports winds [3]. Additionally, the distinctive inconveniences related with certainties and lawful rights ought to be noted. They identify with such an extraordinary measure of issues as copyright, database rights, security, exchange marks, contract law, conflict law [1]. There is another vital test additionally associated with true blue perspectives. It identifies with the straightforwardness in actualities gathering hones. A further vital hazard is around the use of The Big pieces of information to develop the computerization of key organization. There are a few illuminations behind this i.e. inclines in actualities social occasion, avoidances or holes in realities signals or the predictable essential for con-message in conclusions [26]. Then, existing pre-The Big pieces of information difficulties and dangers are 'in the not too distant past creating, for example, the issue of securing gathered actualities and data. These issues fundamentally identify with the issue of how to ensure strongly sensitive certainties and actualities that ought to be kept private by affiliations (e.g. various sorts of customer certainties) [7]. In like way, the issues related with the comprehensively depicted security of the IT structure of affiliations and assertion against different strikes changes into an in a general sense more fundamental issue than already [5].

7. Conclusion

The quickly making measure of realities which affiliations have available to them and the open passages related with its utilitarian activity are consistently modifying the expertness' identifying with settling on resolutions at multitudinous dynamic levels. Affiliations are starting at now endeavouring to use to a stunningly more basic degree the openings and chances that are making.

By the by, if practices went for the balanced utilization of The Big facts sets are to be effective at giving an association a centred favoured edge and be of respect, it isn't satisfactory to simply assemble and have the sensible edifying collections. To be perfectly honest, this is just the beginning period of each The Big pieces of information activity. Help essential parts are fitting decisive models, instruments, gifted individuals, and complete points of confinement. Nonappearance of these central parts can incite a condition whereby. Overall, though The Big reports courses of action have an enormous.

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Multidimensional Performance analysis for Packet delivery and routing overhead in AODV and AOMDV

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Abstract

A Mobile Ad-hoc Network is characterized as a system that is remote and dynamic. It can be outlined with no need for earlier framework where each hub goes about as switch. A versatile Ad hoc Network is a self-arranging arrangement of portable hubs that are associated remotely. Each hub capacities as a sink and in addition a switch to send packets. These hubs can move unreservedly and freely toward any path and ready to get sorted out into a system. Thus, they change their positions as often as possible. In this study, a correlation is made between Ad-hoc On Demand Distance Vector convention and Ad-hoc On Multipath Demand Distance Vector convention utilizing system test system NS2.35.

Keywords

MATLAB,

hybrid echo,

power off spectrum,

phase delay,

impulse delay

AODV is reactive gateway discovery algorithm where a MANET mobile device connects only on-demand. AOMDV was basically made for highly dynamic ad-hoc networks to respond to link breakages and failures in network. It deals with managing ways for the goals and utilizations goal arrangement numbers to define the fresh routing to guarantee circle flexibility consistently and to stay away from issues. It is a protocol based on timer that finds ways for the mobile nodes to respond to breakages in links and changes in topology. The result demonstrates that the AODV is superior to AOMDV when the number of node increases. Then again, the AOMDV has better performance when the simulation increases.

1. Introduction

In the course of recent decades, there is an exponential development in the field of data handling and remote information transmission for tolerant checking framework [23]. Remote Body Area Network (WBAN) is a system which utilizing remote sensor innovation that structures a framework to ceaselessly screen the patient circumstance. Particular sensors for each physiological information are put close to the human body, yet it restrains the patient portability. The remote system is important to outline for checking the portable patient inside indicated region. This offers opportunity to the patient to move without medicinal

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expert inside the grounds. This system is a remote sensor organize that gives the patient observing to anybody inside scope zone. Portable patient are moving and makes less unsurprising topology and connection insecurity that is make directing a vital assignment for versatile patient checking [30].

On account of medicinal applications, the primary necessity is to diminish the control overhead and dependable therapeutic information transmission. A portable patient observing system show is composed, and its execution has been broke down in view of end-to-end defer and throughput utilizing WLAN IEEE 802.11 standard under various steering conventions. Outlining of system begins from the comprehension of remote systems and concentrate the idea of IEEE models 802.11 WLAN and 802.15.4 WPAN, which can be utilized on the system. This section depicts the remote system and IEEE guidelines [18]

The remote system is the system which utilizes radio recurrence for transmitting and accepting information on air. The most critical advantage when contrasted with wired systems is to wipe out the issue of overwhelming links and remote system can be made effortlessly and quick where we can't wire the association. This kind of system gives greater adaptability and effortlessly adjusts the adjustments in the system setup. However, remote system is more powerless to impedance because of other radio recurrence gadgets, and obstacle. Add up to throughput is additionally diminished when there are numerous associations [1]. The remote system offers flexibility to the gadgets, for sending information and partakes in correspondence without systems administration links, which increment the portability yet diminish the scope of correspondence. The remote system structure is delineated in the figure 1.1.

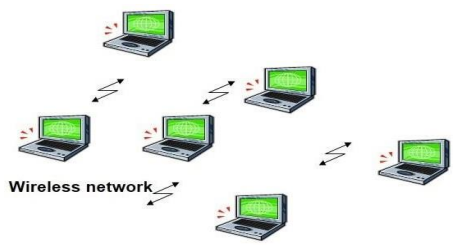

Fig. 1: wireless network

2. Background

A portable specially appointed system is an accumulation of versatile hubs shaping an Adhoc system without the help of any unified structures. These systems present another specialty of system foundation and can be appropriate for a situation where either the framework is lost or where a framework isn't exceptionally financially savvy. T can be arranged to the complete life sysle is typically selected as main, alternative as well as the third era Adhoc system frameworks. Exhibit specially appointed devices protocols were thought to be the territary era.

The first retreats to 1972. Around particular point, treated as PRNET. conjunction by ALOHA and CSMA, ways for access control as well as it is a kind for detachment angle guiding PRNET used on a estimation commence for giving unmistakable frameworks organization capacities in a fight circumstance. The second period of uniquely named frameworks ascended in the 1980s when the Adhoc framework structures were also developed as well as realized by a bit of Survivable Adaptive Radio Networks program which gave package changed the framework to the versatile battle zone in a space without a system. This program wound up being useful to developing radios execution which makes humbler, more affordable, along adaptable to computerised strikes.

Remote Ad hoc organizes sent on 90’s has been generally inquired about long time. WANet’swere gathering of least pair of remote specialized gadgets with which organizing ability. These remote gadgets can speak with different hubs instantly inside their radio range .after that, hubs ought to send a middle hub to switch to course the parcel from starting against the Objective. The WANet’s don't accept entryway; each hub able to go about by the door. After all 1990s, parcel scholars have been or s completed in remote correspondence mode. Thus at 1990s, idea for business specially appointed systems touched base with scratch pad PCs and other suitable correspondences gear. In the meantime, the possibility of the accumulation of portable hubs was proposed at a few research gatherings.

At territory position for innovation, limited positions were presented by the IEEE. The IEEE 802.11 sublimate has received an expression "specially appointed systems" and the exploration group [Brad 2000, Matthias 2001, Royer 1999] has begun into investigate likelihood for conveying Adhoc systems in different zones of utilization. In the mean time, the work was going ahead to propel the already manufactured Adhoc systems. GloMo along nearest-term proportion were portion for consequences by endeavors. It via give a place. A domain with Internet-form mixed media network anyplace and whenever in handheld gadgets. A Wireless exceptionally designated framework is a collection of heterogeneous framework center point surrounding the short lived frameworks out the guide for structure . Thus a circumstance, might be critical for 1 remote server to lost out the guide for various has sending bundle to objective; such an immediate after effect of the limited extent for every remote server transferring. Remote Adhoc systems (WANETs) Figure 1.0 don't depend on any settled framework yet convey in own-composed manner.

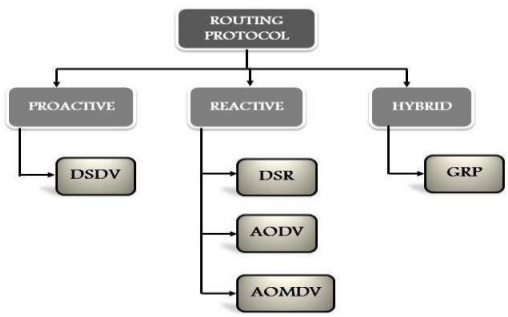

Fig. 2 : Routing Protocol

3. Simulation and Results

In audio teleconferencing or hands-free mobile call it is highly needed to cancel the acoustic echo while maintaining the full-duplex transmission. Since acoustic echo happens due to poor voice coupling between loudspeaker and microphone. In this scenario the microphone signal which is to be transmitted to the channel is combination of two signals. One is near-end speech signal which is desirable and other is reflected copy of far-end speech signal which is going to be heard as echo at the far end receiver. For the transmission of echo free signal, the far-end speech signal which is present at microphone input along with the near-end speech signal is to be removed using echo canceller algorithm.

The simulation action can be authentic as:

Cancellation of echo by considering both the high pass filter and low pass filter.

The noise ratio is also intended to reduce by the proposed method to prove the algorithm accuracy.

4. Problem Formulation and Proposed Solution

The AODV routing protocol is defined as a reactive routing protocol. This reactive routing seeks routes when the node sends data. Thus, routes are designed when there is a need. The AODV routing protocol contains four control packets: hello messages, route replies (RREPs), route error messages (RERRs), and route requests (RREQs). These are used in two protocol mechanisms, which are discovery of route and route maintenance [3].

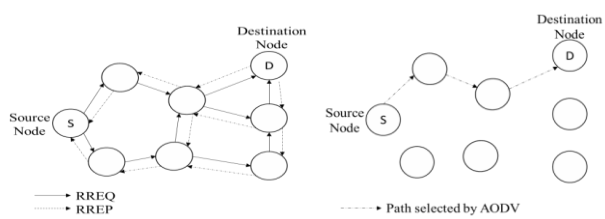

Fig. 3: Represent the flooding of RREQ

A routing table is maintained by all the nodes in the AODV protocol in order to store information concerning active routes from source to destination. The stored information includes number of hops, destination sequence number, next hop, active neighbors for a route, and the destination of a route table entry and its expiry time. Update of route entry timeouts is done whenever used. In order to stop looping in distance vector routing, a sequence number is sent with RREQs and RREPs. Both of RREQs and RREPs are saved in the routing table. When there are multiple replies for the node, the reply that has the higher sequence number is used. Mechanism of AODV determines that when two routes have the same sequence number, the use of the shorter route is required [5]

4.1. Performance metrics for comparison

There is different performance metrics used to evaluate the protocol. These metrics use to calculate the amount of data that received by destination, the number of packets drop, the require time to send data, and the energy consumption for the nodes in the network. In this paper we used five performance metrics that shown below:

Packet Delivery Ratio: The percentage of data packets that is received by destinations over the percentage of data packets sent by the source. It determines the rate of packet loss, which creates limits to the network's maximum throughput.

End-to-end Delay: This metric defined as summation of time spend to send data from source node to destination node. There are different types of delay such as packet wait in queue, processing, propagation.

Throughput is defined as an actual data packet that received by the destination node. The most significant for best-effort traffic are the first two metrics. The routing load metric gives an evaluation to the routing protocol's efficiency. It is noteworthy, however, that these metrics are not independent.

Routing Overhead Ratio The metric of routing overhead ratio is the total number of routing packets. The number is divided by the overall number of data packets that were delivered. Hence, this metric offers an idea about the extra bandwidth that is consumed by the overhead for the sake of delivering data traffic. Routing overhead has an effect on the network's robustness in terms of the bandwidth utilisation and battery power consumption of the nodes.

5. Results

In NS2, the means for getting follow and NAM documents after the reproduction are as per the following:

a) Writing of the program in Object Oriented Tool Command Language (OTCL) dialect. OTCL is utilized to compose the program for create a system, arrange condition, and direction of portable hubs.

b) Run the .tcl record on the terminal under the Linux mint stage.

c) NS2 follow analyser is use to investigations follow document got amid reenactment and as per follow record create the particular charts

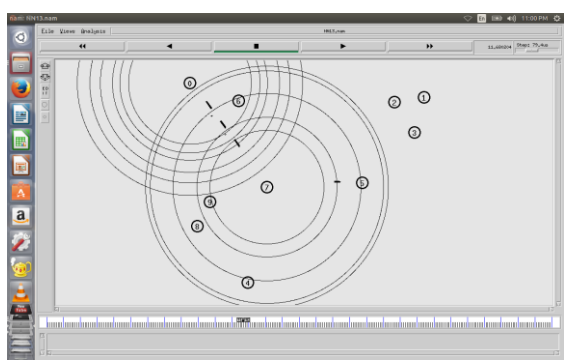

Fig. 4 :10 movable nodes AODV through which data transfer

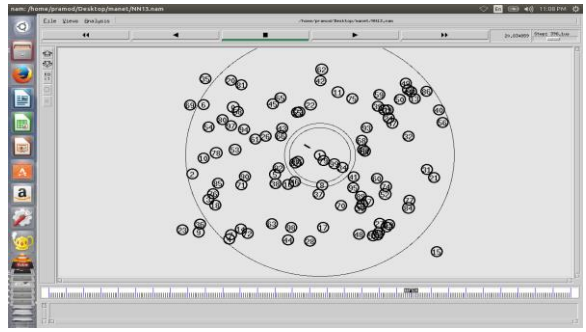

Fig. 5 : 50 movable nodes AODV through which data transfer Routing Protocol

The ratio of Packet delivery, end to end delay, routing overhead and throughput are calculated for AODV and AOMDV. Below is the analysis of the results and their corresponding graphs.

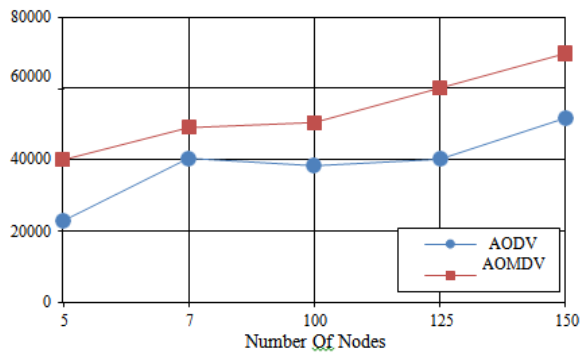

Fig. 6: Number of nodes Vs Throughput

The varied throughput for AODV and AOMDV is representing in figure (4). The throughputs of both protocols are increase when the number of nodes increase due to the connection between source and destination be faster and easier.

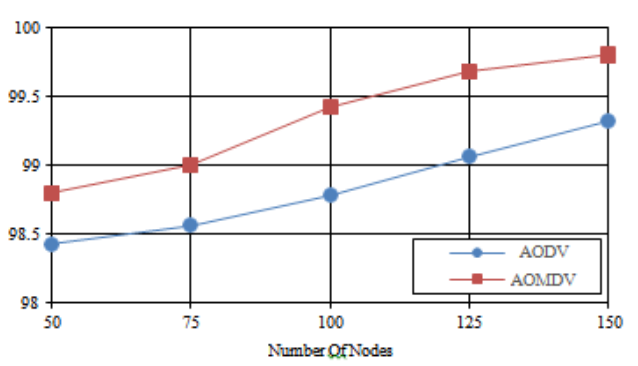

Fig. 7: Number of nodes Vs Throughput

The study of the figure 5 for PDF shows that when the number of nodes increases the AOMDV has a better PDF when compared to AODV because the AOMDV have different route between source and destination nodes.

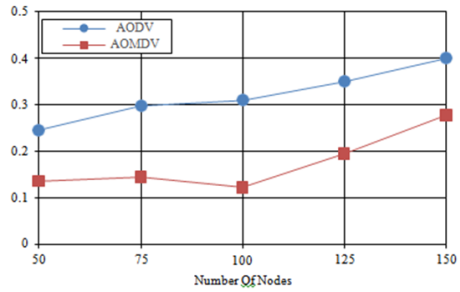

Fig. 8 : Number of nodes Vs Throughput

Figure: 6 for E2E delay, we note that when the number of nodes increase the delay increase in AOMDV and AODV. But The AOMDV has a less end-to-end delay than AODV. In general the end-to-end delay is caused by route failure so the source needs to initiate a RREQ to find other routes to the destination, queuing in the interface queue and many other reasons

6. Conclusion and Future Work

This Paper works on the evaluation of the performance of AODV and AOMDV via the use of ns-2.35 simulator. The comparison depended on the number of nodes and simulation time. Thus, we conclude that these parameters have a significant impact on the performance metrics of the routing protocols analyzed in this study. The results shown the AODV has better performance than AOMDV when the number of nodes increased. But AOMDV has better performance when simulation time increased except the overhead. The overhead ratio for AOMDV is higher than AODV in both scenarios that mean the AOMDV consume energy more than AODV. Future studies would involve the study of optimization algorithms like local search or the global search algorithms, or even involve a hybrid between the two algorithms which would enable tackling the problem of overhead ratio in the AOMDV routing protocols.

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