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Efficient Mobile Service Delivery With Out Layer of Finite Networking Without Fading

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Abstract

In wireless networks, communication is one of the main elements in the system because network performance is limited by the load of users for common resources. When two nodes are communicating to each other in finite networks and sending some data to each other, that data is divided in to packets and that packet's are sent randomly through different channel to the receiver. So it controls the traffic of channel and data delivery is fast. In this paper, the communication statistics in mobile random networks are differentiated by incorporating the distance variation of mobile nodes to the channel which produce the fluctuation in the networks. The mean communication is calculated at the origin and at the border of finite mobile random networks. The network performance is calculated in the form of outage probability. The results show that it is important that routing, MAC (medium access control) and retransmission scheme need to be smart to avoid the burst type of transmission failures.

Introduction

In this paper, when two mobile nodes are communicating to each other in finite networks, they are sending some data to each other. We are going to divide the nodes in to packets and that packets are sent at randomly to the receiver. At the receiver side one power control node is there which re-arrange the packets in to serial manner as they sent by the sender. This will deliver the data fast because when the packets are sending randomly through different channel, so if one packet jammed in traffic then no need to worry about the other packets because they are going through different channels but not in serial manner so once all the packets reached at receiver side, the power control node is arrange the order of the packets. If any packets lost in the networks then retransmission scheme protocol will resend the lost packets.

There are four major source of random that affects the communication in the large networks. The first is the multipath fading. The second one is node placement. A well-defined model for node distribution in wireless networks is the homogeneous Poisson Point Process (PPP). The third one is power control node which helps in arrangement of nodes in to particular order **[1], [2], [3].** The fourth one is the channel access. **ALOHA [4]** and **CSMA [5]** are two random and distributed medium access control (**MAC**).

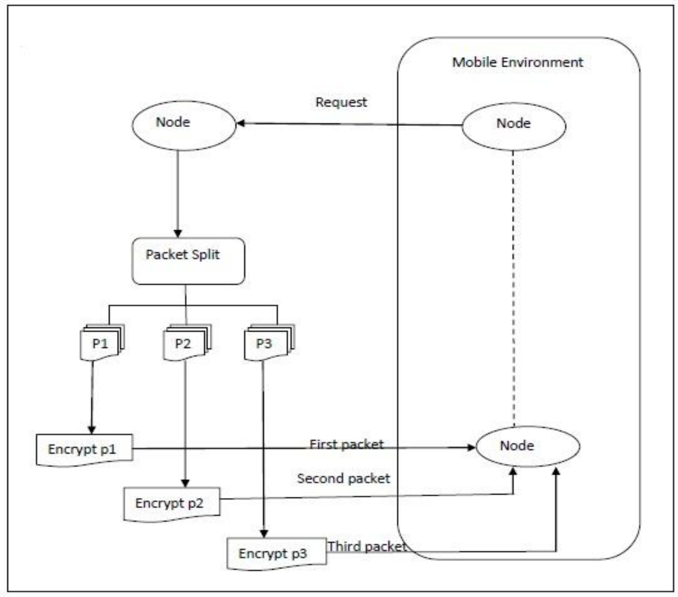


Figure 1: Existing System Architecture

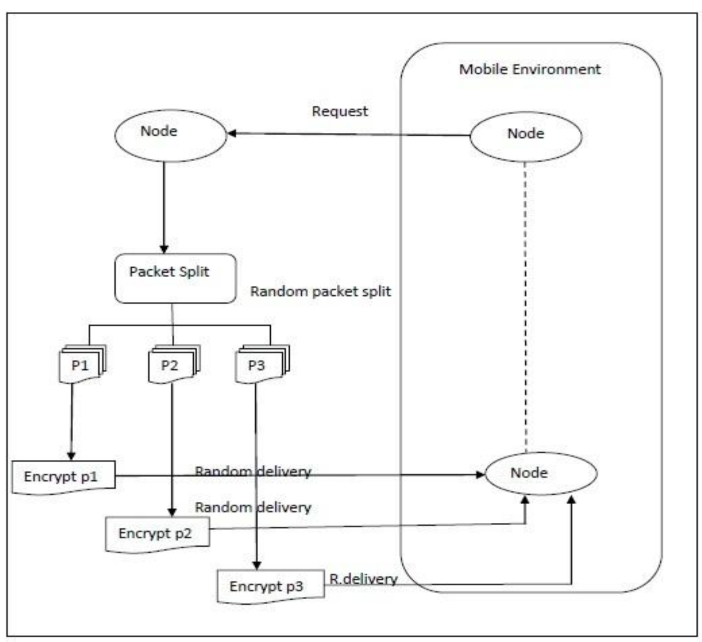


Figure 2: Proposed System Architecture

Related Work

There is a large literature above the nodes which are randomly distributed in the random networks. Converting point process theory, random geometric graph and coverage processes, this introduction to model geometry will enable you to get the strong, simple work and limit of random wireless network performance and protocol that efficient manages the communication between the nodes **[6].**

This paper provides and explain the mathematics behind network graph theory, which studies the property of the graph that consist of nodes placed in random networks so that edges can be added to connect the nodes that’s are communicating to one other **[7].**

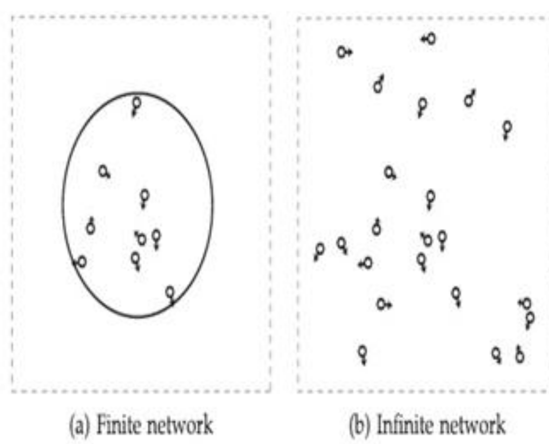
In this paper, when user which communicates with destination, we consider that networks are communication and limited by users which are distributed ad Poisson Point Process in random networks, in this case upper outage probability and lower probability are calculated **[8].**

In this paper we are going to discuss about when the packets are sending to the receiver our main objective is to obtain to optimum transmission in the random networks without loss. **[9].**

In wireless networks, when determining distance in random networks we found that each nodes are not dependent to each other but they are independent to each other and it will cause the uniformly in the node distribution **[10].**

The throughput of wireless networks is calculated when the number of users grows. When the users are growing channel is going to very busy so it causes the traffic in the networks and it can be controlled when the nodes are sending through different channel and at random **[11].**

This paper addresses the routing problem for large wireless networks of randomly distributed nodes without loss. First distance between the nodes is calculated in Poisson point process. Based on this result end-to-end packet delivery is done, energy benefits of routing are calculated and trying to best delivery of packets to the receiver **[12].**



Illustrations of finite and infinite mobile networks. The small circles denote mobile nodes and the arrows show the directions in which they will move in the next time slot. (a) The nodes bounce back when they reach the boundary. (b) All nodes move freely.

Figure 3: Finite and Infinite Networks

Our Contribution

The contributions are as follows.

1. We calculate the mean communication at the origin and at the border of the finite networks under different mobile model such as Random walk (RW), Brownian motion (BM) and Random way point (RWP).
2. We calculate the network performance under different mobility models and check for the effects.

3. We identify the temporal correlation of the communication and outage in mobile random networks with final result on the correlation.
4. We will use the different types of transmission protocols.

System Model

Network Model

We consider the link between transmitter-receiver pair in a wireless network when the receiver at origin o, without any loss of data. The initial nodes placement follows a Poisson Point Process $\Phi(0)$ on a domain $\mathbb{D} \subseteq \mathbb{R}^2$ with intensity λ_0. The nodes move independently by updating their position at the beginning of each time slot. In finite networks $\mathbb{D} = B(o, R)$, where $B(o, R)$ is a disk of radius R centered at

o. The number of nodes M inside $B(o, R)$ with mean $\lambda_0 \pi R^2$. But in infinite network $\mathbb{D} = \mathbb{R}^2$.

Mobility Model

In this section we introduce the different well-accepted model.

Random Walk

Under this model, mobile nodes select new direction and speed randomly and independently in each time slot hence the distribution remains uniform. $x_i(t+1) = x_i(t) + \bar{v}w_i(t)$.

Random Way Point

This model is only defined in finite region where each node chooses a destination in the region and moves towards with randomly selected speed. The new direction and speed chosen only after the nodes reached to the destination otherwise it keeps same direction and speed for several time-slots.

Different Tables

As we know that small mobility causes the fluctuation in the network. When the nodes are communicating to each other they are also moving from one place to another and this types of moving is called mobility in the networks. in the proposed method when the nodes are moving they are also updating their position on each and every time slot. There are four types of mobility in the random networks.

TABLE 1
Four Types of Mobility Models

Models	d	$f_{w_1}(z)$	Scaling property
The 1st model	2	$0.2\delta(z)+0.8\tilde{f}(z)$, where $\tilde{f}(z)=\begin{cases}\frac{1}{\pi R_1^2} & \lVert z\rVert \leqslant R_1\\ 0 & \text{otherwise,}\end{cases}$ where $R_1=15/8$	$\rho_1 \sim \frac{0.2p}{\mathbb{E}[h^2]}$
The RW model	2	$\tilde{f}(z)=\begin{cases}\frac{1}{\pi R_{RW}^2} & \lVert z\rVert \leqslant R_{RW}\\ 0 & \text{otherwise}\end{cases}$	$\rho_1\bar{v}^2 \sim \frac{p\delta\epsilon^{\delta}\pi}{\mathbb{E}[h^2](1-\delta)R_{RW}^2\sin(\pi\delta)}$
The 3rd model	2	$\tilde{f}(z)=\begin{cases}\frac{4}{3\pi R_3^2} & R_3/2 \leqslant \lVert z\rVert \leqslant R_3\\ 0 & \text{otherwise,}\end{cases}$ where $R_3=9/7$	$\rho_1 \in o\left(\bar{v}^{-2}\right)$
The 4th model	1	$\tilde{f}(z)=\begin{cases}\frac{1}{4} & \lvert z\rvert \leqslant 2\\ 0 & \text{otherwise}\end{cases}$	$\rho_1 \in \Theta\left(\bar{v}^{-1}\right)$

Figure 4: Mobility Tables

Channel Access Scheme

When the communication started between two nodes and data transmission started at the beginning of each time slot and each transmission finished within one time slot. The next transmission starts in next time slot. **ALOHA** and **MAC** protocol is used for channel access. If the channel is free from traffic then only next transmission will starts otherwise it waits for the channel free from the traffic.

Channel Model

In channel model we are going to find the path-loss in large scale and small path loss component.

The path loss function g(x) is $$g(x)=\frac{1}{\epsilon+\lVert x\rVert^{\alpha}}, \qquad \epsilon \geq 0,$$ where α path loss exponent is. In channel model two types of models are usually considered: **singular path loss** model and **non-singular path loss** model.

Interference Randomly Mobile Network

Interference In Finite Network Without Fading

We calculate the communication at the origin, since the interferer density decreases with the distance to the origin, which show the lower bounds of the performance. In RWP model we will calculate the different mobility in the mobile nodes and according to that result we will check the outage probability of the data. This refers that how much we sent and how much we receive at receiver side and this is called fading.

Interference in finite Network with fading
When channel are subject to multipath fading, the communication power to the nearest node is calculated and the communication power to the far node is calculated and the simulation of results shows the communication between the nodes in finite networks with fading.

Interference in Infinite Networks
In infinite networks, random way point (RWP) model cannot define properly. So it is not possible to calculate the outage probability in infinite networks.

Proposed System Methods
The proposed system follows the **random distribution in mobile networks.** In this model the nodes are randomly distributed in the networks and when they are trying to communicate to each other they will send and receive some data. But in this model data is not going to deliver directly to the receiver instead of this that data is divided in to packets. Packets are now going through random speed and through the random networks. So it will decrease the traffic of the channel and data reached fast to the receiver. If any packets lost in the networks the different ARQ (Automatic Repeat request) protocol is used to resend the only lost packet. At the receiver side one power control node is there which arrange the order of the packets as they sent by the sender. This methods help in fast delivery of data to the receiver. In existing system they follow the serialization transmission of the packets. It causes the slow delivery of packet because in this model packets are sent in serial manner only that means if any packet jammed in the traffic then remaining will also not delivered to the receiver side. If packet lost in network then whole packets will be resend.

Results And Discussion
In this, we brief the results that we obtained.

Microscopic Mobility
We consider microscopic mobility from large scale fading. Fluctuation of the path loss induced by mobility cause another types of fading in wireless networks.

Mean Interference and Outage Probability
The mean communication at the origin under RWP model is twice the communication under UMM model, while the communication at the border is lower.

Temporal Correlation of Interference
The mobility models affect the correlation coefficient of the communication. Multipath fading and MAC also reduce the correlation coefficient of the communication.

Temporal correlation of Outage
Outage probability for next several time slots is calculated. If it is low then need to be retransmission of the packets. And if it is found higher then no need to retransmission of the packets. For example if transmission is successful then node will transfer more data for several successive time slots.

User Interface Design
In this module we design windows for the project. These windows are used to send the message from one node to another. The user will directly interact with this module. This module includes the user registration and user login. In user login the username and password will be asked. Then only the user can access the database.

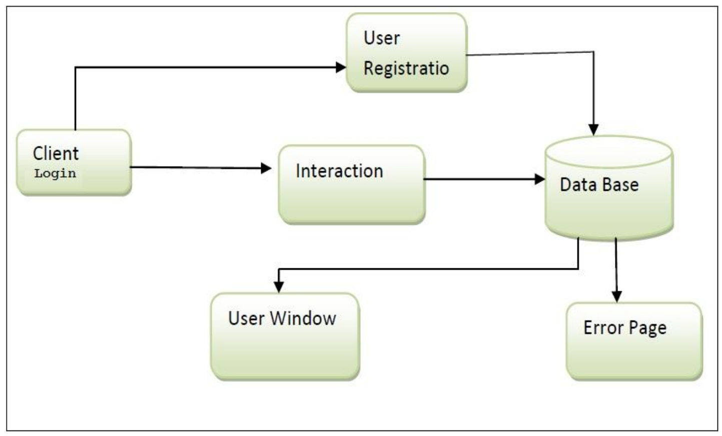


Figure 5:

Server Implementation
If you observe any of the interaction in mobile environment means clients always requesting the server regarding the data and information which is under the control of the server. Here we are going to create the server node which is most responsible in mobile environment.

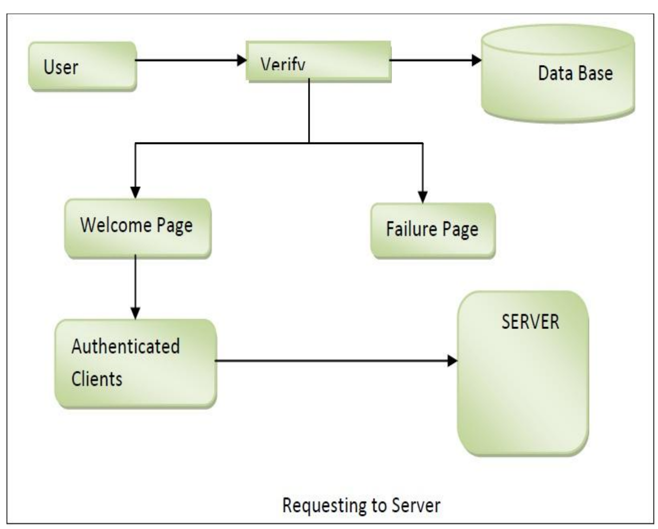


Figure 6:

Client Requests
Here we are going to create the number of clients in environment and each and every clients is independent of each other. These clients are created under the circumstances of the server. Clients always request for data and information.

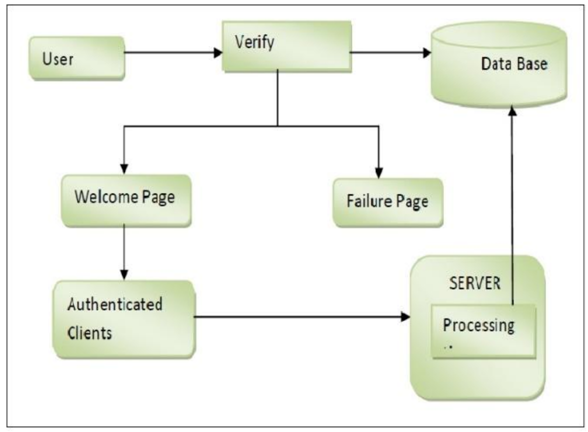


Figure 7:

Efficient Search Mechanism
In this module we are going to search for the best result for resources which client request for information.

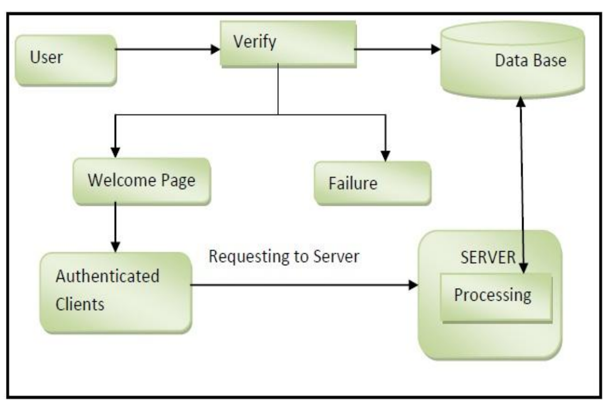


Figure 8

Response Generation
This is the final module for the project. in this section the response is sent to the nodes which are requesting for the information. Server is responsible for this type of all task and it done in good manner.

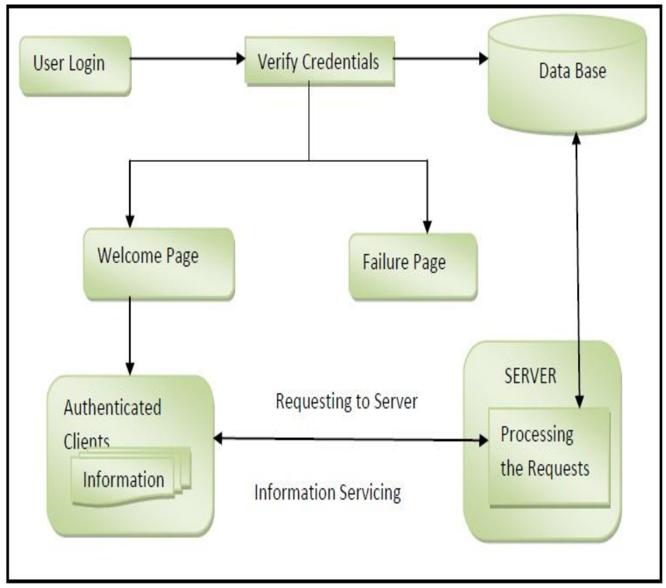


Figure 9:

Conclusion

In this paper, the communication statistics in mobile random networks are characterized by incorporating the distance variation of mobile nodes to the channel gain fluctuation. The mean communication is calculated at the origin and at the border of finite mobile random networks. The network performance is calculated in the form of outage probability. The results show that it is essential that routing, MAC (medium access control) and retransmission scheme need to be smart to avoid the burst type of transmission failures.

Future Enhancement

In the design of retransmission scheme in wireless networks, it is often assume that output events are independent across the time. In future the multiple nodes can be created and at a time multiple nodes can communicate at a time without any collision of the data in the networks.

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