Improving Qos In Wireless Network Using Kernel Scheduling

Asma Anjum [1], Seema Rani [2]
Department of Electronics and Communication Engineering
[1]Kurukshetra university
[2]Assistant professor, Kurukshetra university

Abstract- *It was found that on varying demand size (small or large), delay, loss rate and load balancing problem exists in network. Variations of the new call blocking probabilities for the central main cell with the increasing offered load and the variations of the handoff call dropping probabilities for the central main cell with the increasing offered load is reduced to zero.To minimize the traffic congestion and improving network performance the traffic demand is split over multiple paths and also routing algorithm is proposed. The proposed approach performs better in reducing handoff blocks at the cost of increased new call blocks. This is due to the fact that the adaptive Gaussian kernel function scheme scheduled the channel in the inner tier of all the cells. As a result it utilizes channels effectively to decrease the call blocks in inner tier.*

Further, since dynamic numbers of guard channels are used, channel utilization is efficient. Due to this, observe more channel utilization in case of the proposed scheme.

Keywords- Kernel,QoS,Channel utilization.

I. INTRODUCTION

Cellular System

Cellular systems saw their conception in the 1940's. The concept of cellularradio stemmed from radio broadcasting which was used by police in the early 1920's.Extensive planning and development took place in the 1960's and the first analogsystem was deployed in the 1980's. With the deployment in the 1980's, the earlystage of mobile communications was a slow booming business.In today's market, mobile telephony is looked upon as one of the places forrapid investment and growth. However like any other business, mobile telephony hassuffered its share of ups and downs due to several major reasons such as:

- Multipath Fading
- Co-Channel Interference
- Limited System Bandwidth and Capacity

Cellular System Components

The concept of cellular mobile systems developed with the advent ofmobile radio systems. The cellular system consists of three main components:Mobile Switching Center (MSC), Cell Site (Base Station Equipment), and MobileUser Equipment. The three components work together to provide cellular service.The system can be visualized functionally as seen in figure 1(Walker, 1988).The MSC coordinates all cellular system activities between mobile users, cellsites and the Public Switched Telephone Network (PSTN). The MSC software controls the necessary signaling needed to perform theactivities which are sent to the cell sites and the mobile users. Cellular systemsoperate in the frequency region of 825-890 MHz with a difference of 45 MHzbetween transmitting and receiving frequencies. In the cellular system,the MSCprovides connection to the PSTN via land lines and to the cells sites and other MSC'svia land lines or microwave links.

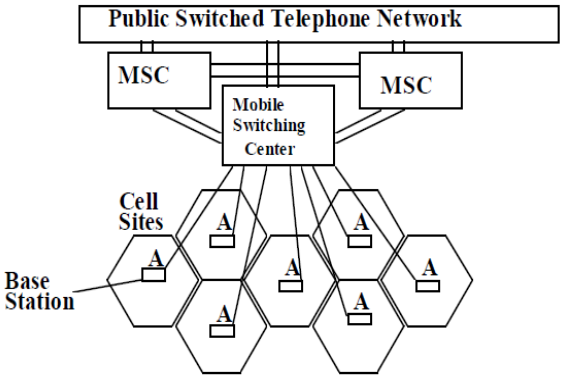


Figure 1.1: Cellular System Structure.

II. RELATED WORK

[4] In cellular networks, blocking occurs when a base station has no free channel to allocate to a mobile user, blocking can be new call blocking or handoff call blocking. One of the research challenges for cellular systems is the design of improved call admission control scheme which will reduce call blocking probability and improve the quality of service.

[3]The studies on the design issues are carried out using simulation, by generating LSP arrival-departure events over a specified time to determine the required number of router ports,

transceivers, optical switch ports and wavelengths for its IP/MPLS services. Design efficiency is assessed by evaluating LSP blocking probability in the network using the results of resource dimensioning.

[1]the Multi-Protocol Label Switching (MPLS) contributing high scalability in computer network. In this research paper, we first briefly analyze MPLS and then have a discussion about the working methodology of an MPLS system. Putting these simultaneously and then demonstrate the Traffic Engineering in MPLS.

[7] Quality-of-service (QoS) guarantees on wavelength-division- multiplexing (WDM) net- works is an important and challenging issue for the next generation Internet. One of the important performance metrics in a QoS-capable WDM network is the call blocking probability.

[9] Blocking occurs when a base station has no free channel to allocate to a mobile user. There are two kinds of blocking. New call blocking refers to blocking of newly originated calls and the handoff dropping refers to blocking of ongoing calls due to the mobility of the users. From the user's point of view, the service of a handoff request is more important, as the forced termination of an ongoing call is more annoying than the blocking of new calls. An adaptive guard channel based call admission control scheme is proposed which also deals with the problem of non-uniform traffic demand in different cells of the cellular network.

III.PROPOSED WORK

Traffic Engineering Technique in MPLS System

Traffic engineering uses statistical techniques such as queuing theory to predict and examine the behavior of telecommunications networks such as telephone network and the internet.

Congestion Control

Congestion occurs when a node or a link carries so much data that it may decline the network service quality. The primary cause of the network congestion is the unbalanced distribution of the network traffic. Second is the longer path are underutilized. Due to congestion the data packet loss, blocking of new connection and delay in packets occurred in the network. It may slow down the network performances.

Kernel Density Estimation

This talk is divided into three parts: first is on histograms, on how to construct them andtheir properties. Next are kernel density estimators {how they are a generalization andimprovement over histograms. Finally is on how to choose the most appropriate, `nice 'kernels so that we extract all the important features of the data. A histogram is the simplest non-parametric density estimator and the one that is mostly frequently encountered.

IV. EXPERIMENTAL SETUP

MATLAB is an interactive software package which was developed to perform numerical calculations on vectors and matrices. At first, it was essentially a Matrix-Laboratory. In any case, today it is considerably more capable:

- It can do entirely modern illustrations in two and three measurements.
- It contains an abnormal state programming dialect which makes it very simple to code entangled calculations including vectors and lattices.
- It can numerically tackle nonlinear beginning quality common respectful conditions.
- It can numerically explain nonlinear limit esteem common respectful conditions.
- It contains a wide assortment of tool stash which permit it to perform an extensive variety of uses .from science and building. Since clients can compose their own tool stash, the expansiveness of use is entirely astonishing.

Arithmetic is the fundamental building square of science and designing, and MATLAB makes it simple to handle a large portion of the calculations included.

V. RESULTS

In this section, the proposed system is evaluated via computer simulation using MATLAB simulator. All simulation results are obtained by using adaptive gaussian kernel methodFigure 5.1 show the clusters/cells area distribution for cellular network using adaptive gaussian kernel method.

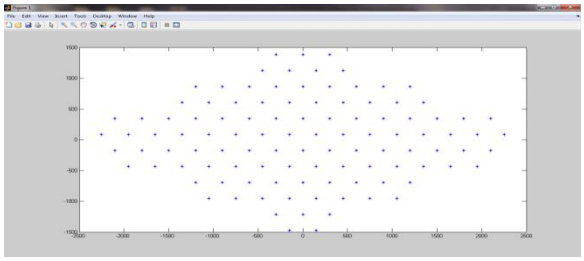


Figure 5.1:Kernel Method for Cluster/Cells Area Distribution.

Figure 5.2 show the intensity and histogram gaussian kernel distribution of network based on adaptive gaussian kernel scheduling requests.

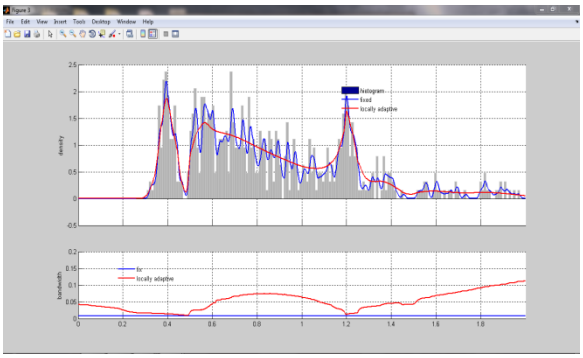


Figure 5.2:Adaptive Request Scheduling.

Figure 5.3 show the bandwidth blocking probability versus traffic load of 3 and 4 relay based scheduling and proposed adaptive gaussian kernel function.

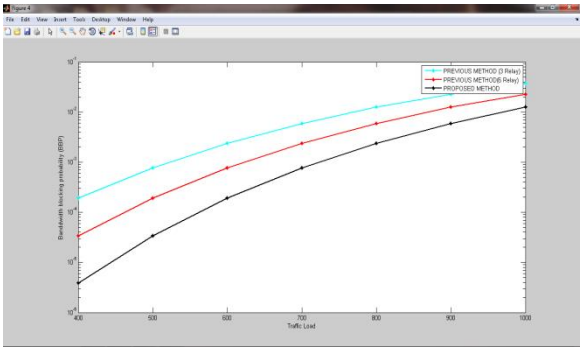
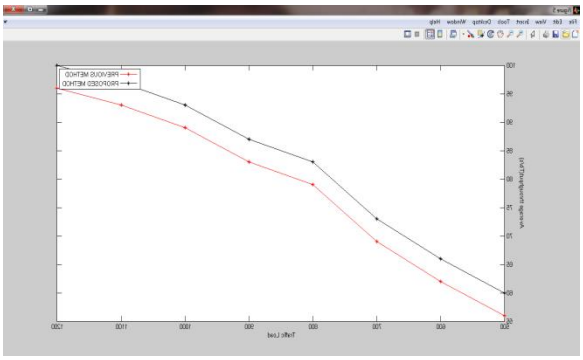


Figure 5.3:Comparison between Relay and Kernel Method on the basis of Bandwidth BP versus Traffic Load.

Figure 5.4show the average throughput versus traffic load of 3 and 4 relay based scheduling and proposed adaptive gaussian kernel function.



VI. CONCLUSION AND FUTURE WORK

The proposed approach performs better in reducing handoff blocks at the cost of increased new call blocks.Further, the unused channels of the least congested neighbour cells are also utilized to serve the call requests originated in main cell, if needed. Hence, it can serve more call requests than the total number of available channels.Further, since dynamic numbers of guard channels are used, channel utilization is efficient. Due to this, observemore channel utilization in case of the proposed scheme.

FUTURE WORK

For further extent of work, an efficient Artificial Intelligence (AI) can be utilized for channel utilization and call blocking probability in cellular network. Even more parameter can be used for new algorithm to improve handoff probability.

REFERENCES

[1] Abhijit Sharma, Suvendu Konai and Uma Bhattacharya, "New Call and Handoff Call Management Scheme for Reuse Partitioning Based Cellular Systems," IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE-2014), May 09-11, 2014, Jaipur, India.

[2] Fenglin Li, Jianxun Chen "MPLS Traffic Engineering Load Balance Algorithm Using Deviation Path". International Conference on Computer Science and Service System, 2012.

[3] Shalini Tripathi "A Survey on Blocking Probability in MPLS" International Journal of Advanced Research in Computer Science and Software Engineering. Volume: 4 Issue: 11, November 2014.

[4] Mrs.Mahalungkar Seema "Improved Call Blocking Probability Reducing Technique Using Auxiliary Stations" International Journal of Scientific & Engineering Research Volume: 4, Issue: 3, March 2013.

[5] Mrs.Mahalungkar Seema "A survey on call block probability reducing techniques" International Journal of Scientific and Research Publications, Volume: 2, Issue: 12, December 2012.

[6] Fang Ya Quin , Wang Lin-Zhu, "An Algorithm of Static Load Balance based on Topology for MPLS Traffic Engineering". WASE International Conference on Information Engineering, 2009.

[7] Rana Ejaz Ahmed, "A Channel Allocation Algorithm for Hot-Spot Cells in Wireless Networks" journal of advances in information technology, vol. 1, no. 3, August 2010.

[8] Poonam B Bhilare, "Seamless handoff in Next Generation Wireless System" (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 2 (6), 2011.

[9] Antonio Capone, Fabio Martignon, "Analysis of Dynamic QoS Routing Algorithms for MPLS Networks" IEEE Communications Society, 2004.
[10] M.L.S.N.S. Lakshmi1 "An insight to call blocking probabilities of Channel assignment schemes" International Journal of Advances in Engineering & Technology, May 2012.
[11] Moshe Sidi and David Starobinski "New call blocking versus handoff blocking in cellular networks" Wireless Networks 3, 1997.
[12] Jon M. Peha and Arak Sutivong "Admission Control Algorithms for Cellular Systems" ACM/Baltzer Wireless Networks, 1999.
[13] Sridharan and K. N. Sivarajan, "Blocking in All-Op-tical Networks," IEEE/ACM Transactions on Networking, Vol. 12, No. 2, 2004, pp. 384-397.
[14] Sridharan and K. N. Sivarajan, "Blocking in All-Op-tical Networks," IEEE/ACM Transactions on Networking, Vol. 12, No. 2, 2004, pp. 384-397.
[15] R. Guerin, "Queueing-blocking system with two arrival streams and guard channels," IEEE Transactions on Communications 36 (2) (1998) 153-163.