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Survey On Energy Efficient Mobile Video Streaming Based On Buffer Memory Allocation Algorithms

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ABSTRACT

The issue of mobile network video streaming is quite well investigated. The increasing use of multimedia content and growing mobile platforms need support for reliable communication services. The communication device has different dynamical issues and also individual features. The transmission limit inclines data transmission to be taken out and the number of intermediate edge nodes. The growing network communication will also encounter an incredible increase in traffic levels and buffer pressures. Many potential customers have limited network connectivity and limited storage capacity. The management of high computational frameworks on resource-constrained users has currently become a reasonable concern. Mobile Edge Computing (MEC) is a great environment supported across the evolving 5G network and will optimize mobile infrastructure by managing reality apps. It displays the information data before sending it to the cloud by delivering Radio Access Network (RAN) cloud services resources to mobile users in the vicinity and delivering information networks with RAN knowledge. The novel Dynamic Buffer Memory Allocation (DBMS) and video streaming overall supported path allocation from user to server response for supported and reviewed. The transmission findings from realistic video systems validate the model's reliability. This framework serves as an important specification and configuration for implementing an appropriate sensory evaluation for distribution. By maintaining the buffers of different edge nodes, this method improves mobile video streaming in a mobile network.

Keyword: Dynamic Buffer Memory Allocation (DBMA), 5Gnetwork, Buffer Memory, Path Allocation, mobile video streaming, mobile network.

1. INTRODUCTION

The high-quality seamless algorithm of [1] adaptive streaming controls the mobile device energy consumption that exceeds the cost of the network status and heterogeneous wireless network. To defeat a single network request's low speed, the video clip is repeatedly transferred through the wireless network. Selected encryption is suggested in video streaming for efficient [2] multimedia content protection. In the Wireless Sensor Network (WSN), video quality, optimization of protection and communication energy-saving problems has not been fully resolved. The combined selected encryption and reserved allocation scheme have greatly improved the video transmission quality in the simulation experiment, which shows that content protection and energy efficiency can be ensured efficiently.

The Video on Demand (VOD) service [3] is expected to be the important services on the network in the future. For storage and video transport of Video-on-Demand system, huge energy consumption is an important consideration generated by the energy-saving design and operation. The numerical analysis of energy consumption patterns concludes that the web's energy efficiency is based on video streaming. It can improve the Video on Demand (VoD) service energy efficiency. Delayed Energy Quality Aware (DEQA) has been perceived as a solution to provide real-time video to ensure high energy efficiency. The performance has been confirmed in large-scale Exacta simulation and real-time streaming video. DEAM has achieved a significant improvement in mobile energy-saving, emission reduction and user-perceived video quality. Multipath [4] streaming transmission protocol energy saving helps in high-quality video streaming service by different access networks. Its purpose is to feed more energy to enable multiple wireless networks because they consume more energy to perform auxiliary decoding to decrease handheld devices' energy consumption. Providing Higher-Quality video streaming and a seamless network provides excellent service than the existing protocol, and the protocol will be able to achieve [5] excellent energy efficiency. High-speed caching on a mobile phone of the edge transcoding is performed by integrating the backhaul search, and the adaptive streaming media system is enabled. It is used to determine the bit-rate of the file cache and video request jointly, a comprehensive solution to dispatching in an energy-efficient way.

Code layer streaming media transmission is provided by the [6] Traffic Rate Adaptation (TRA) which is selected according to empirical dynamic channel state and Quality of Experience (Qo E) for minimizing the transmitting energy consumption. High computational factors make the TRA scheme implementation efficient for the real-life mobile system. Edge computing improves network performance for communication and caching system for caches in video-based streams. To avoid the problem, the edges of storage space constraints, the introduction of video compression. It was always re-pressed [7], and the corresponding change node parameters were requested. To save energy, quality assurance [8] analysis of video streaming allows characterizing the trade-off energy distortion and is used in a multi-pass video transmission through a heterogeneous wireless network. To [9] improve the quality of high-definition video and video benefits, the energy [10-11] consumption should be necessarily reduced.

The IP networks have become a major platform for multipath [12] video transmission. However, the bandwidth of the video contains a limitation to promote its network. Costs are high, and the viewing experience does not always meet user satisfaction. For video streaming in real-time, a centralized network should be selected for the video quality and cost reduction to afford a high definition video [13] quality.

The development of energy-efficient and quality assured real-time video stream in a [14] heterogeneous wireless access network is suggested. As the goal is to reduce energy consumption, it contains priority framework scheduling and unequal loss protection. At [15] energy efficiency optimization system level, the objective function is to consider the power consumption and video quality jointly at the same time. The introduction of scalable [16] multi-user video streams has a design and the complex interrelationships of the video stream. Wi-MAX networks use a scalable method for transmitting the video stream's encoded multiple to improve the video's quality using mobile receivers. A subsequent [17] multiple scalable video streams are introduced to generate a secondary stream selection. It will be broadcasted to the mobile receiver as a limited resource. An efficient block scheduling strategy for adaptive video streaming is strengthening all of the [18] power-data utility. Energy and scheduling are the effective blocks of data, and they increase the utility of the power data used for single-bit rate encoded video.

As each video clip has varying degrees of popularity, users will be able to cache some quality videos by requesting cache [19]. In the future, it will work as a playback delay buffer in the unstable wireless channel. In a downlink network

1.1. Single data stream

The channel capacity optimization is used to implement the transcoding procedure used[25], configuring and crossing the interpreted surface wettability by the application to comply with state data rates parameters, including its user. Enhancement in code is a useful feature to change from one channel to another [26]. The real disadvantage is that switching the compression ratio includes a distributed processing framework that improves the complexity of a process and found it challenging to modify nodes regularly.

1.2 Network Load Performance

A blends different video digital signal and a monitor always at complete user capacity [27] can be produced as provided as the frequency is accurate. As the significant increase in network load [28] is being implemented, this framework may not fix the situation of rapidly changing throughput, including the transfer of power procedures.

1.3 Drop frame

The mixed difference between the data transfer and the number of individuals achieves some specific constant penetration. The frame is reduced back to B frames (two-way frame) and from there to B frame (to the previous frame) and inevitably with a new request. The frame (independent

frame). Because both the law and the P I Frames [29, 30] exclude this protocol after legal acknowledgment, reliability can contribute to a challenge to a legal extension again.

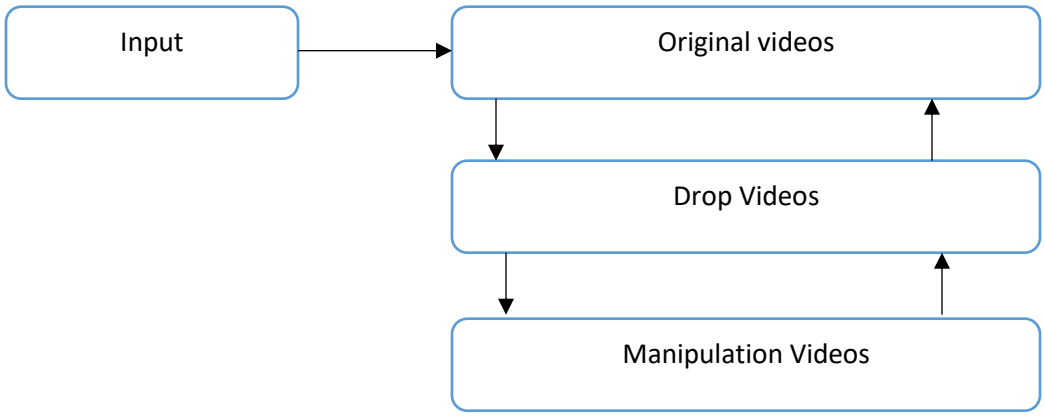

Figure 1 The Sliding Analysis of Identification of a Drop frame plugin system.

The video of frames and the sliding analysis of identification are shown in figure 1. The modified video is obtained after removing the middle of the element frame period, believing that there will be four separate frames in actual footage. An objective is to determine the frame drop location at the end of the frame sequence and the beginning of the bottom access to the performance.

1.4 Dynamic Buffer Memory Allocation Algorithm

(Hypertext Transfer Protocol HTTP-based responsive broadcasting) uses DBMAA (frequency range adaptation) with national average adaptation assistance. The preceding task's data stream is related to the current buffer utilization and the specified bit error rate information.

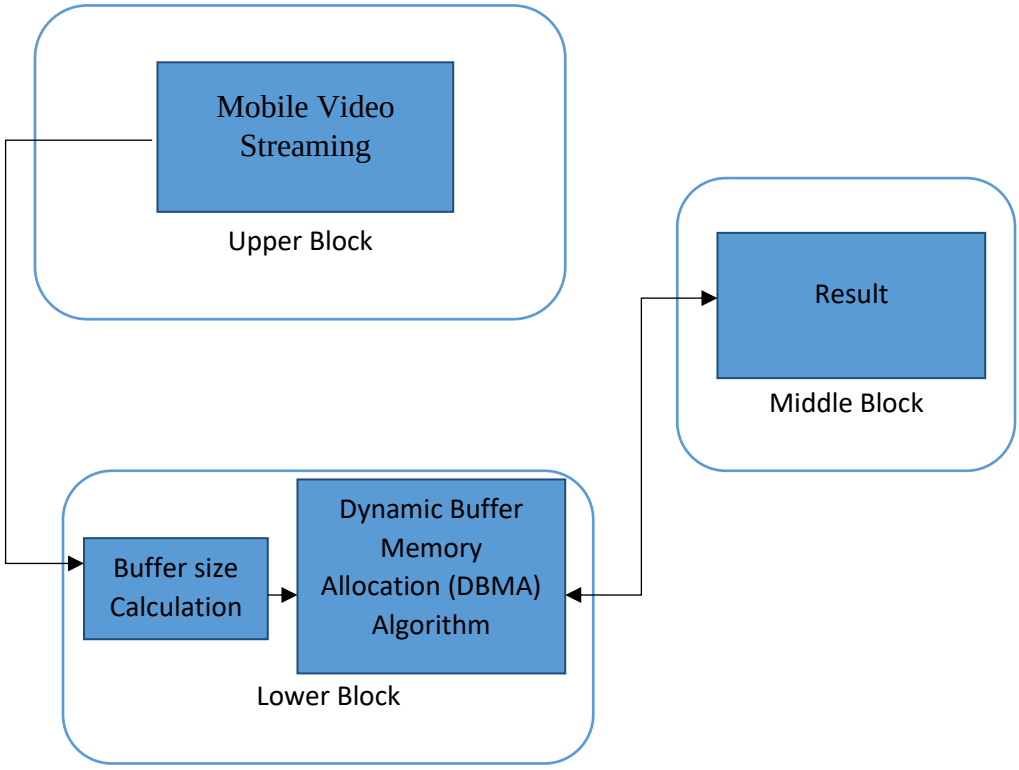

Figure 2 buffer size memory calculation overall structure.

There are no more different modulation format constructors to improve the buffers, as demonstrated in figure 2. Virtual processing between all the servers and the channel buffer partition is used for the Flexible buffer. The seasonal algorithm (optimism, accurate, stable, acceptable) re-streams the framework to a limited region called DBMAA, which employs immediate forecasting and transforms random planning.

2. Video Streaming Based on Buffer

A challenging task is provided in Internet streaming variable bit rate. To ensure the quality of multimedia applications' appearance, packet loss rate and bandwidth, latency, and media service level requirements must be met. In normal conditions, the video transmission requires high bandwidth and low delay and packet loss will not find a certain amount.

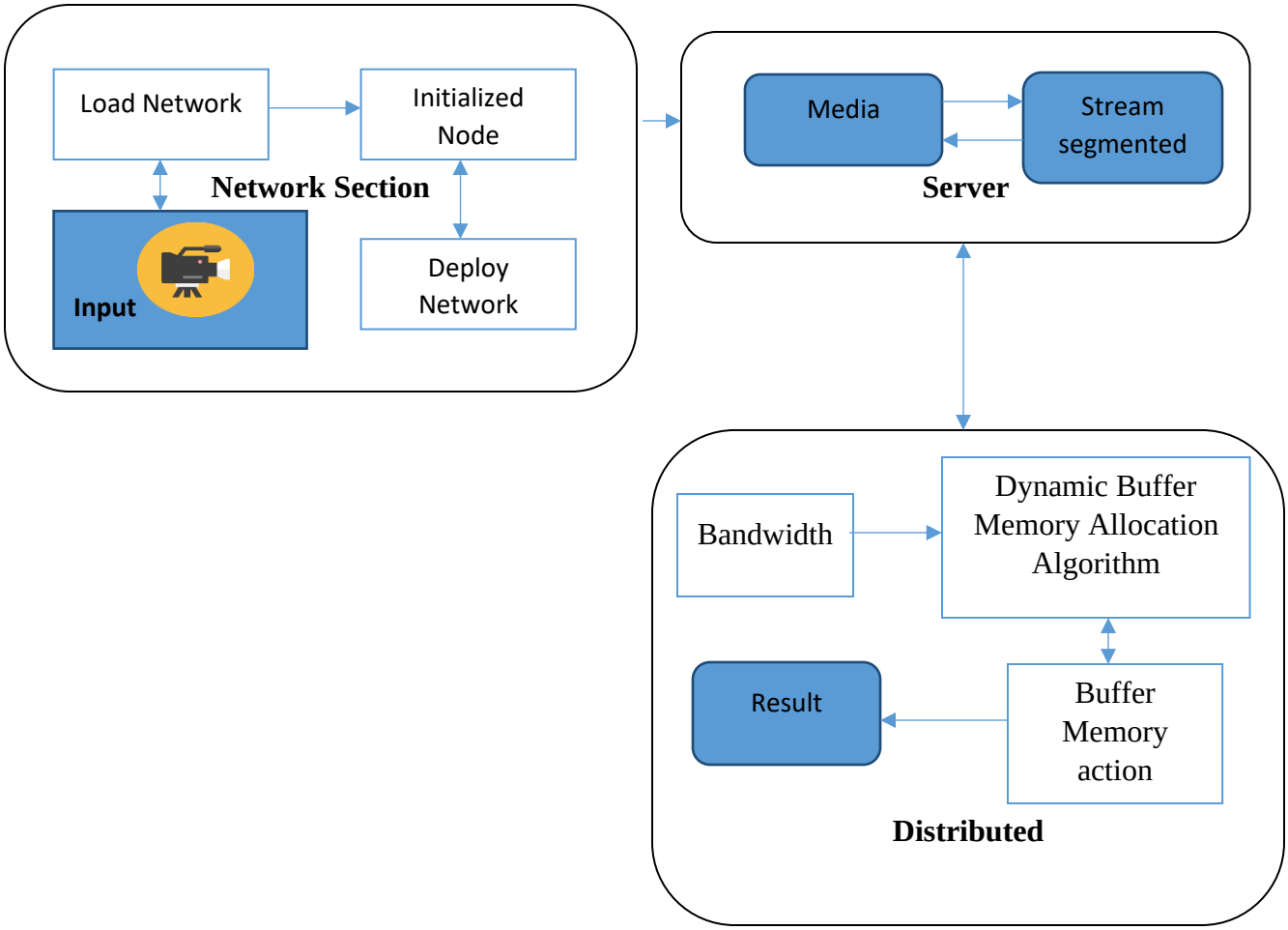

Figure 3 Video Streaming Based block diagram.

Figure 3 shows the dynamic buffer memory allocation algorithm, which typically represents the types of methods to enhance communication structures' performance, including wireless local area networks. Video broadcasting is no exception.

From this observation and report, it is very clear that almost all failures occur only at the communication source, but they are not valid at the checkpoint from the internal network. The following results provide different cache management solutions used in the Communication Center. Assembling the solution response and deleting the time-sensitive connections is proportional to the preferred frame rate. This task has used the H.26L video controller and powerful client media video software developers at the specialized vector distributed network system level. Most frames are distributed, and buffer management operations are implemented with a positive attitude, and efforts are made to improve retrieving videos from received packets.

2.1. Network Selection

The Hardware configuration in the MPEG structure affords a continuous buffer analysis stream in real-time. After the buffer filling level has become invalid, the real-time error flag is generated; and Also, this architecture enables the flow of real-time buffer analysis of the system.

2.2. Server Data Stream Segmented

Adaptive media is a client-side technology introduced to reduce the interruption of the buffering requirements and avoid buffer. Data digital video is becoming ubiquitous to increase communication and video storage. Prediction processing technology that is used seriously will be complicated for backward playback operation. Direct forward or backward playback is decoded and stored. Then the decoded frame buffer sends the video to play the decoded frame in the reverse order. The more stringent customer expects the video stream with high quality to change a mobile network state. For that reason, the video content providers and network operators are intended to provide the customer's requirements. In traffic generation and quality assessment models, Scalable Video Coding (SVC) applications are accelerated in various cases, relying on the stream's approximate performance rather than a real trace.

Table 1 Scalable Video Coding format

Configuring	Stratum	Reduction of a level (%)
Random access	Single-layer	42.6

Table 2 Details Of The Existing Methods Energy-Efficient Mobile Video Streaming Problems.

Author	Technique	Purpose of technique	Drawbacks
Renjie Huang et al. (2020)	Quality of Experience (Qo E) Determination across key markers [42]	Video playback and UAV total energy budget, which consists of both resource correspondence and The steam of UAV acceleration.	The problem identified is non-convex And difficult.
Y. Qian, et al. (2016)	The collaborative improvement of the process level method [44]	An efficient method of configuration to determine mobile interaction and resource allocation in heterogeneous networks for multimedia communications.	The problem is presented as a challenge by mixing time-varying simulations.

J. Lee et al. (2016)	Markov decision process [45]	A heuristic algorithm that approximates the equation of the maximum. The factors influencing, The implementation over Video on YouTube trails of long-run relationship graphs to evaluate the performance of classification approaches.	The problem is with the prototype and planning.
Z. Chou et al.,(2016)	The mobile Worldwide Interoperability For Microwave Access (WiMAX) system to maximize the production of multichannel resources [46]	This proposed solution is called Energy-Efficient Multicast Scheduling With Adaptive Modulation And Coding (EEMS-AMC). This consists of three main components: online enrollment command, SQL data planning, and inform planning for the improvement level.	This problem has never been seriously studied as it is assumed that the different multichannel classes may partly converge.
C. E. Luna, et al. (2003)	The energy-efficient transmission of a model of video frame [43]	Transfer a frame buffer within pause and performance risk, and use the required minimum transmit power. Research investigations that highlight the advantages of the approach proposed are presented.	It has difficulty transmitting. Some attention is being given towards video over unreliable channels, The environment for cellular connections presents challenges.
S. Almowuena et al. (2016)	Combination of multicast -unicast streaming and resource management [47]	The state-of-the-art method of data packets is a far more complex mobile device.	The integer linear challenge is with computing.

3. Frame Level To Estimate the Video Parameters

The scheduling analysis of unequal frame levels is performed to estimate the video parameters and feedback channel state. It is based on the total distortion model function through the wireless access

network in parallel video transmission. During video streaming service, the video quality is necessary to evaluate connected user equipment, and it evaluates the user's subjective state at the same time. It estimates the video's high definition quality in Quality of Experience (Qo E). These experiments explained that the quality in video experience function is supported towards adjusting the quality of video value of the results obtained by video quality performance at the end-user equipment.

3.1. Bandwidth of simultaneous video transmission

To improve the quality of high-definition video and video benefits, energy consumption reduction is necessary for video quality. IP networks have become a major platform for video transmission. However, as the video's bandwidth contains a limitation to promote its network, costs are increased for the company, and the viewing experience does not always meet user satisfaction. For a streaming video in real-time streaming, a centralized network should be selected to afford a high definition quality video. Technological evolution during wireless communication has suggested a bandwidth of simultaneous video transmission to mobile devices to be aggregated.

Table 3 Video Storage and Buffer Memory allocation

Author	Technique	Purpose of technique	Drawbacks
J. Luo (2020)	The time-varying channel is a Markov chain of irregular intervals [48]	The proposed scheme can achieve the Goal of Energy-saving and Qo E Improvement only with the requirements reached.	This causes the same configuration issues portrayed as a restricted selection process for Markov.
G. Huang, (2020)	The issue would then be developed by using Existing optimization methodology into a set of realistic problems. [49]	The suggested methodology does have a very limited runtime, near maximum efficiency, and can achieve a reasonable trade among improving Qo E and reducing data inefficiency.	The Demonstrating in coefficients of a challenge of the per efficiency find the problem
F. Wang (2017)	The Buffer-Driven Resource Management (BDRM) [50]	The BDRM needs to take advantage of cross and multi-rate functionality via the buffers and multiple times demand systems. Demonstrating the coefficients of a challenge of the per efficiency	The user breaks down the system performance zoom issue into ground station segments by the BRM process.

J. Yum. (2016)	Acceptance of the monitoring of artifacts, systematic activities [51]	The suggested structures and the storage space decrease in numbers	Previous research on accelerated SIFT equipment was using a considerable amount of storage space.

4. Result and discussion

The simulation tools and some of the buffer management scheme's specified input variables have been introduced in this section. The DBMA method is implemented for assessing the quality listed in this section. The same virtual environment has been considered in all the steps in the previous sections. This section has addressed the problems and tasks associated with the video stream from the buffer memory, and the design of the network interface system takes service center routing protocol. The planned method is to use a distributed storage and computing infrastructure in a wireless communication system. For example, generation of technology and Wi-Fi access point user-managed devices can automatically run special data calculated as required, and it can release the cached information with the devices used for storage and computing such as multi-purpose CPU (Central Processing Unit), GPU (Graphics Processing Unit), storage, non-volatile memory. It is possible to incorporate a cognitive training advanced software configuration with the Base Station (BS), Access Point (AP), fixed wireless switch, and adapter. Service providers, to provide network access services, use dedicated micro server and cloud resources.

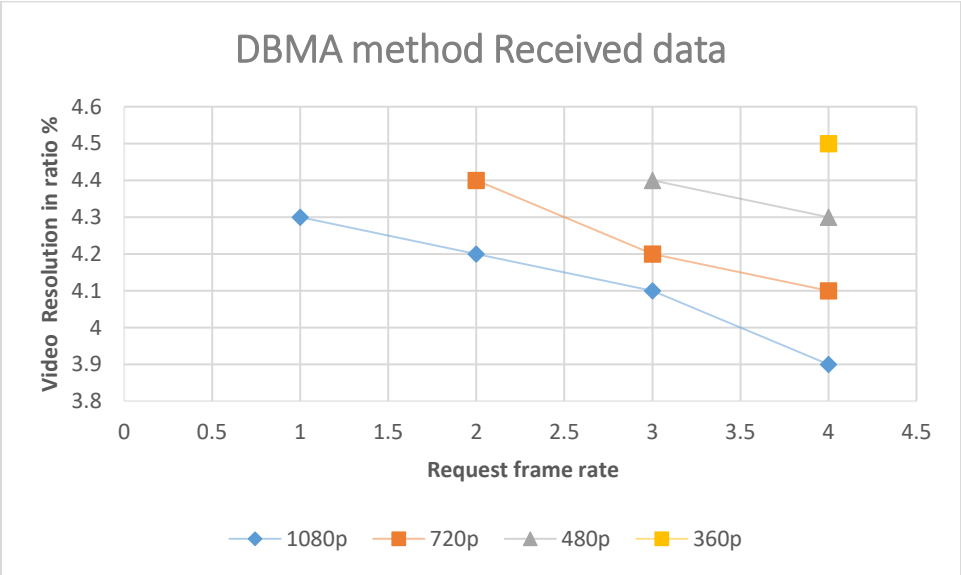

Figure 4 Request Frame Rate

Figure.4 defines the input video request frame rate compared to various video quality analyses. The DBMA method has a 1080p taken to the best video resolution in a ratio of 4.3 p. The previous

live broadcast problem protocol has a frame rate up to 4.3 /p for 720p taken, has a frame rate up to 4.5 /p for 480p taken, and has a frame rate of up to 4.5 /p for 360p taken.

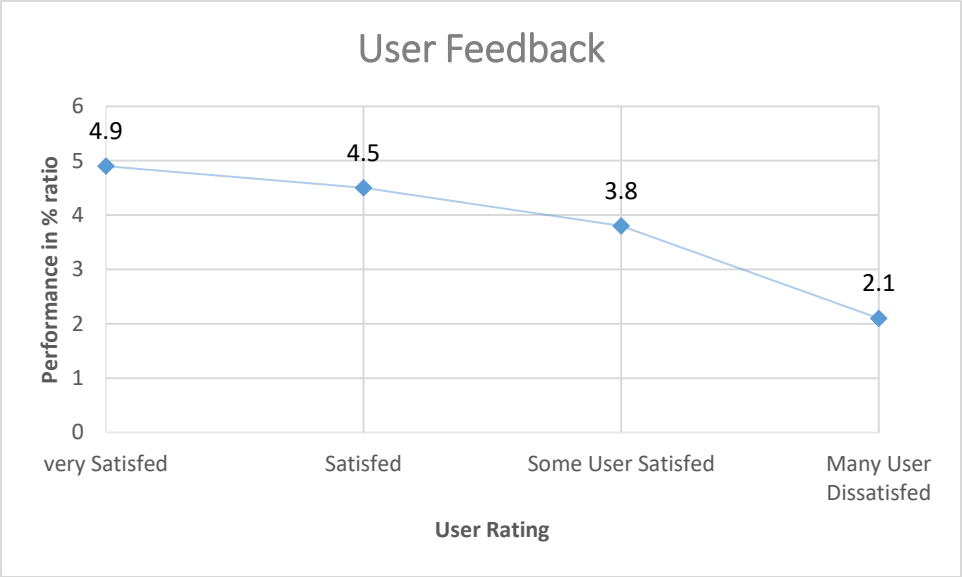

Figure 5 User feedback performance.

Figure 5 shows that user feedback analysis in mobile video live streaming on overall user performance is very satisfying ratio is 4.9%, a satisfying ratio is 4.5%, satisfied user rating level is 3.8%, and many users dissatisfied rate low-level rate is 2.1%.

5. Conclusion

The DBMA-based system for streaming video through the caching-enabled RAN with MEC combination has reviewed several strategies in this analysis. To optimize the Qo E statistics and power efficiency that have developed a live broadcast problem and recollection problem. To collectively recognize and perform outer layer buffers, video streaming, video resizing and layer optimization. The DBMA has been adopted to solve related problems to verify. The results of the experiment effectiveness of and the implementation of DBMA. Thus finally, Dynamic Buffer Memory Allocation (DBMA) verifies a larger performance compared to existing methods. The DBMA method receives data and achieves 1080 pixel access of video quality and efficient user Feedback, which meets the very satisfying performance from the users.

Reference

1. Y. Go, O. C. Kwon and H. Song, "An Energy-Efficient HTTP Adaptive Video Streaming With Networking Cost Constraint Over Heterogeneous Wireless Networks," in IEEE Transactions on Multimedia, vol. 17, no. 9, pp. 1646-1657, Sept. 2015, doi: 10.1109/TMM.2015.2451951.
2. W. Wang, M. Hempel, D. Peng, H. Wang, H. Sharif and H. Chen, "An Energy-Efficient Encryption for Video Streaming in Wireless Sensor Networks," in IEEE Transactions on Multimedia, vol. 12, no. 5, pp. 417-426, Aug. 2010, doi: 10.1109/TMM.2010.2050653.

3. C. Jayasundara, A. Nirmalathas, E. Wong and C. Chan, "Improving Energy Efficiency of Video on Demand Services," in IEEE/OSA Journal of Optical Communications Networking, vol. 3, no. 11, pp. 870-880, November 2011, doi: 10.1364/JOCN.3.000870.
4. J. Wu, R. Tan and M. Wang, "Energy-Efficient Multipath TCP for Quality-Guaranteed Video Over Heterogeneous Wireless Networks," in IEEE Transactions Multimedia, vol. 21, no. 6, pp. 1593-1608, June 2019, doi: 10.1109/TMM.2018.2879748.
5. O. C. Kwon, Y. Go and H. Song, "An Energy-Efficient Multimedia Streaming Transport Protocol Over Heterogeneous Wireless Networks," in IEEE Transactions Vehicular Technology, vol. 65, no. 8, pp. 6518-6531, Aug. 2016, doi: 10.1109/TVT.2015.2475281.
6. L. Li, D. Shi, R. Hou, R. Chen, B. Lin and M. Pan, "Energy-Efficient Proactive Caching for Adaptive Video Streaming via Data-Driven Optimization," in IEEE Internet of Things Journal, vol. 7, no. 6, pp. 5549-5561, June 2020, doi: 10.1109/JIOT.2020.2981250.
7. Q. Jiang, V. C. M. Leung, H. Tang and H. Xi, "Energy-Efficient Traffic Rate Adaptation for Wireless Streaming Media Transmission," in IEEE Transactions on Circuits and Systems for Video Technology, vol. 28, no. 11, pp. 3313-3319, Nov. 2018, doi: 10.1109/TCSVT.2017.2735444.
8. G. Zhou, L. Zhao, Y. Wang, G. Zheng and L. Hanzo, "Energy Efficiency and Delay Optimization for Edge Caching Aided Video Streaming," in IEEE Transactions on Vehicular Technology, vol. 69, no. 11, pp. 14116-14121, Nov. 2020, doi: 10.1109/TVT.2020.3029742.
9. J. Wu, B. Cheng, M. Wang and J. Chen, "Quality-Aware Energy Optimization in Wireless Video Communication With Multipath TCP," in IEEE/ACM Transactions on Networking, vol. 25, no. 5, pp. 2701-2718, Oct. 2017, doi: 10.1109/TNET.2017.2701153.
10. L. Zhou, R. Q. Hu, Y. Qian and H. Chen, "Energy-Spectrum Efficiency Tradeoff for Video Streaming over Mobile Ad Hoc Networks," in IEEE Journal on Selected Areas in Communications, vol. 31, no. 5, pp. 981-991, May 2013, doi: 10.1109/JSAC.2013.130516.
11. Y. Liu, J. Liu, A. Argyriou and S. Ci, "3DQoE-Oriented and Energy-Efficient 2D plus Depth Based 3D Video Streaming Over Centrally Controlled Networks," in IEEE Transactions on Multimedia, vol. 20, no. 9, pp. 2439-2453, Sept. 2018, doi: 10.1109/TMM.2018.2806221.
12. J. Wu, C. Yuen, B. Cheng, M. Wang and J. Chen, "Energy-Minimized Multipath Video Transport to Mobile Devices in Heterogeneous Wireless Networks," in IEEE Journal on Selected Areas in Communications, vol. 34, no. 5, pp. 1160-1178, May 2016, doi: 10.1109/JSAC.2016.2551483.
13. X. Li, Y. Huo, R. Zhang and L. Hanzo, "User-Centric Visible Light Communications for Energy-Efficient Scalable Video Streaming," in IEEE Transactions on Green Communications and Networking, vol. 1, no. 1, pp. 59-73, March 2017, doi: 10.1109/TGCN.2016.2646820.
14. S. Sharing, R. Krishnamurti and M. Hefeeda, "Energy-Efficient Multicasting of Scalable Video Streams Over WiMAX Networks," in IEEE Transactions on Multimedia, vol. 13, no. 1, pp. 102-115, Feb. 2011, doi: 10.1109/TMM.2010.2076799.

15. S. Kim, H. Oh and C. Kim, "eff-HAS: Achieve higher efficiency in data and energy usage on dynamic adaptive streaming," in Journal of Communications and Networks, vol. 20, no. 3, pp. 325-342, June 2018, doi: 10.1109/JCN.2018.000045.
16. J. Hong and W. Choi, "User Prefix Caching for Average Playback Delay Reduction in Wireless Video Streaming," in IEEE Transactions on Wireless Communications, vol. 15, no. 1, pp. 377-388, Jan. 2016, doi: 10.1109/TWC.2015.2473171.
17. C. Tanougast, M. Janiaut, Y. Berviller, H. Rabah, S. Weber and A. Bouridane, "An Embedded and Programmable System Based FPGA for Real Time MPEG Stream Buffer Analysis," in IEEE Transactions on Circuits and Systems for Video Technology, vol. 19, no. 2, pp. 237-249, Feb. 2009, doi: 10.1109/TCSVT.2008.2009254.
18. J. Ridenour, J. Hu, N. Pettis and Y. Lu, "Low-Power Buffer Management for Streaming Data," in IEEE Transactions on Circuits and Systems for Video Technology, vol. 17, no. 2, pp. 143-157, Feb. 2007, doi: 10.1109/TCSVT.2006.888025.
19. P. Zhao, W. Yu, X. Yang, D. Meng and L. Wang, "Buffer Data-Driven Adaptation of Mobile Video Streaming Over Heterogeneous Wireless Networks," in IEEE Internet of Things Journal, vol. 5, no. 5, pp. 3430-3441, Oct. 2018, doi: 10.1109/JIOT.2017.2763166.
20. Y. Su, Y. Yang, M. Lu and H. H. Chen, "Smooth Control of Adaptive Media Playout for Video Streaming," in IEEE Transactions on Multimedia, vol. 11, no. 7, pp. 1331-1339, Nov. 2009, doi: 10.1109/TMM.2009.2030543.
21. C. Fu, Y. Chan, T. Ip and W. Siu, "New Architecture for MPEG Video Streaming System With Backward Playback Support," in IEEE Transactions on Image Processing, vol. 16, no. 9, pp. 2169-2183, Sept. 2007, doi: 10.1109/TIP.2007.902330.
22. N. Eswara et al., "Streaming Video QoE Modeling and Prediction: A Long Short-Term Memory Approach," in IEEE Transactions on Circuits and Systems for Video Technology, vol. 30, no. 3, pp. 661-673, March 2020, doi: 10.1109/TCSVT.2019.2895223.
23. P. Wydrych, K. Rusek and P. Cholda, "Efficient Modelling of Traffic and Quality of Scalable Video Coding (SVC) Encoded Streams," in IEEE Communications Letters, vol. 17, no. 12, pp. 2372-2375, December 2013, doi: 10.1109/LCOMM.2013.110613.132163.
24. G. Gualdi, A. Prati and R. Cucchiara, "Video Streaming for Mobile Video Surveillance," in IEEE Transactions on Multimedia, vol. 10, no. 6, pp. 1142-1154, Oct. 2008, doi: 10.1109/TMM.2008.2001378.
25. J. Wu, C. Yuen, M. Wang and J. Chen, "Content-Aware Concurrent Multipath Transfer for High-Definition Video Streaming over Heterogeneous Wireless Networks," in IEEE Transactions on Parallel and Distributed Systems, vol. 27, no. 3, pp. 710-723, 1 March 2016, doi: 10.1109/TPDS.2015.2416736.
26. D. Z. Rodríguez, R. L. Rosa, E. A. Costa, J. Abrahão and G. Bressan, "Video quality assessment in video streaming services considering user preference for video content," in IEEE Transactions on Consumer Electronics, vol. 60, no. 3, pp. 436-444, Aug. 2014, doi: 10.1109/TCE.2014.6937328.

27. N. Carlsson, D. Eager, V. Krishnamoorthi and T. Polishchuk, "Optimized Adaptive Streaming of Multi-video Stream Bundles," in IEEE Transactions on Multimedia, vol. 19, no. 7, pp. 1637-1653, July 2017, doi: 10.1109/TMM.2017.2673412.
28. C. G. Bampis, Z. Li, I. Katsavounidis and A. C. Bovik, "Recurrent and Dynamic Models for Predicting Streaming Video Quality of Experience," in IEEE Transactions on Image Processing, vol. 27, no. 7, pp. 3316-3331, July 2018, doi: 10.1109/TIP.2018.2815842.
29. B. Görkemli and A. M. Tekalp, "Adaptation strategies for streaming SVC video," 2010 IEEE International Conference on Image Processing, Hong Kong, 2010, pp. 2913-2916, doi: 10.1109/ICIP.2010.5652838.
30. Z. Duanmu, K. Zeng, K. Ma, A. Rehman and Z. Wang, "A Quality-of-Experience Index for Streaming Video," in IEEE Journal of Selected Topics in Signal Processing, vol. 11, no. 1, pp. 154-166, Feb. 2017, doi: 10.1109/JSTSP.2016.2608329.
31. Z. Duanmu, K. Ma and Z. Wang, "Quality-of-Experience for Adaptive Streaming Videos: An Expectation Confirmation Theory Motivated Approach," in IEEE Transactions on Image Processing, vol. 27, no. 12, pp. 6135-6146, Dec. 2018, doi: 10.1109/TIP.2018.2855403.
32. C. Lin and G. Wang, "Balanced Dynamic Buffering for Scalable Peer-to-Peer Video-on-Demand Streaming with Multiple Description Coding," 2011 International Conference on Complex, Intelligent, and Software Intensive Systems, Seoul, 2011, pp. 371-376, doi: 10.1109/CISIS.2011.60.
33. M. Seufert, S. Egger, M. Slanina, T. Zinner, T. Hoßfeld and P. Tran-Gia, "A Survey on Quality of Experience of HTTP Adaptive Streaming," in IEEE Communications Surveys & Tutorials, vol. 17, no. 1, pp. 469-492, Firstquarter 2015, doi: 10.1109/COMST.2014.2360940.
34. W. Shi, Y. Sun and J. Pan, "Continuous Prediction for Quality of Experience in Wireless Video Streaming," in IEEE Access, vol. 7, pp. 70343-70354, 2019, doi: 10.1109/ACCESS.2019.2919610.
35. Y. Zhang, W. Huangfu, J. Xu, K. Li and C. Xu, "Integrated Rate Control and Buffer Management for Scalable Video Streaming," 2007 IEEE International Conference on Multimedia and Expo, Beijing, 2007, pp. 248-251, doi: 10.1109/ICME.2007.4284633.
36. Z. Duanmu, A. Rehman and Z. Wang, "A Quality-of-Experience Database for Adaptive Video Streaming," in IEEE Transactions Broadcasting, vol. 64, no. 2, pp. 474-487, June 2018, doi: 10.1109/TBC.2018.2822870.
37. D. Zegarra Rodríguez, R. Lopes Rosa, E. Costa Alfaia, J. Issy Abrahão and G. Bressan, "Video Quality Metric for Streaming Service Using DASH Standard," in IEEE Transactions on Broadcasting, vol. 62, no. 3, pp. 628-639, Sept. 2016, doi: 10.1109/TBC.2016.2570012.
38. M. A. Yazici, "Buffer design for modular-quality video playout without prebuffering in cellular networks," 2018 26th Signal Processing and Communications Applications Conference (SIU), Izmir, 2018, pp. 1-4, doi: 10.1109/SIU.2018.8404839.
39. A. Elgabli, K. Liu and V. Aggarwal, "Optimized Preference-Aware Multi-Path Video Streaming with Scalable Video Coding," in IEEE Transactions on Mobile Computing, vol. 19, no. 1, pp. 159-172, 1 Jan. 2020, doi: 10.1109/TMC.2018.2889039.

40. W. Zou, F. Yang, J. Song, S. Wan, W. Zhang and H. R. Wu, "Event-Based Perceptual Quality Assessment for HTTP-Based Video Streaming With Playback Interruption," in IEEE Transactions on Multimedia, vol. 20, no. 6, pp. 1475-1488, June 2018, doi: 10.1109/TMM.2017.2769449.
41. S. Kumar and S. Chand, "A New Method for Reverse Prediction of MPEG frames in Video Streaming," 2009 IEEE International Advance Computing Conference, Patiala, 2009, pp. 1119-1123, doi: 10.1109/IADCC.2009.4809171.
42. Giovanni Iacovelli, Pietro Boccadoro, Luigi Alfredo Grieco, "On the Interplay Between Energy and Memory Constraints in Optimized UAV Communications", Networking Letters IEEE, vol. 2, no. 4, pp. 203-206, 2020.
43. C. E. Luna, Y. Eisenberg, R. Berry, T. N. Pappas and A. K. Katsaggelos, "Joint source coding and data rate adaptation for energy-efficient wireless video streaming," in IEEE Journal on Selected Areas in Communications, vol. 21, no. 10, pp. 1710-1720, Dec. 2003, doi: 10.1109/JSAC.2003.815394.
44. Y. Xu, R. Q. Hu, Y. Qian and T. Znati, "Video Quality-Based Spectral and Energy Efficient Mobile Association in Heterogeneous Wireless Networks," in IEEE Transactions on Communications, vol. 64, no. 2, pp. 805-817, Feb. 2016, doi: 10.1109/TCOMM.2015.2503760.
45. J. Lee, K. Lee, C. Han, T. Kim and S. Chong, "Resource-Efficient Mobile Multimedia Streaming With Adaptive Network Selection," in IEEE Transactions on Multimedia, vol. 18, no. 12, pp. 2517-2527, Dec. 2016, doi: 10.1109/TMM.2016.2604565.
46. Z. Chou and Y. Lin, "Energy-Efficient Scalable Video Multicasting for Overlapping Groups in a Mobile WiMAX Network," in IEEE Transactions on Vehicular Technology, vol. 65, no. 8, pp. 6403-6416, Aug. 2016, doi: 10.1109/TVT.2015.2471302.
47. S. Almowuena, M. M. Rahman, C. Hsu, A. A. Hassan and M. Hefeeda, "Energy-Aware and Bandwidth-Efficient Hybrid Video Streaming Over Mobile Networks," in IEEE Transactions on Multimedia, vol. 18, no. 1, pp. 102-115, Jan. 2016, doi: 10.1109/TMM.2015.2502067.
48. J. Luo, F. R. Yu, Q. Chen and L. Tang, "Adaptive Video Streaming With Edge Caching and Video Transcoding Over Software-Defined Mobile Networks: A Deep Reinforcement Learning Approach," in IEEE Transactions on Wireless Communications, vol. 19, no. 3, pp. 1577-1592, March 2020, doi: 10.1109/TWC.2019.2955129.
49. G. Huang, W. Gong, B. Zhang, C. Li and C. Li, "An Online Buffer-Aware Resource Allocation Algorithm for Multiuser Mobile Video Streaming," in IEEE Transactions on Vehicular Technology, vol. 69, no. 3, pp. 3357-3369, March 2020, doi: 10.1109/TVT.2020.2966701.
50. F. Wang, Z. Fei and J. Wang, "HAS dynamic buffer-driven resource management to enhance QoE in a mobile network," in China Communications, vol. 14, no. 7, pp. 1-14, July 2017, doi: 10.1109/CC.2017.8010972.
51. J. Yum, C. Lee, J. Kim and H. Lee, "A Novel Hardware Architecture With Reduced Internal Memory for Real-Time Extraction of SIFT in an HD Video," in IEEE Transactions on Circuits and Systems for Video Technology, vol. 26, no. 10, pp. 1943-1954, Oct. 2016, doi: 10.1109/TCSVT.2015.2489458.