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VIDEO TRANSFERENCE OVER LOSSY CELLULAR NETWORKS: A CROSS TIER PERSPECTIVE

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Abstract—Video satisfied directly makes up practically half of the "fixed" Internet traffic and more than a third of the mobile service in North America, with most other domain showing similar trends. As mobile data proportions continue to development and more people rely on 802.11 wireless for domestic and commercial Internet access, the amount of video transmitted over at least one wireless hurdle will likely persist to development. In addition, as cameras continue to become smaller and cheaper, the request for video benefit in sensor and MANET networks will also development. The state of the art of wireless video transmission at each layer of the networking stack. Consider both existing and emerging automation at each layer of the protocol heap as well as cross-layer designs, and discuss how these solutions can development the video experience for the end user.

Keywords: *Video, video transmission, network, MANET, protocol, cross layer design.*

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1. INTODUCTION

Wireless transmission is the deportation of knowledge between two or more points that are not connected by an electrical supervisor. The most common wireless automation use radio. With radio waves distances can be short, such as a few meters for television or as deep as thousands or even millions of kilometers for deep-space radio transmissions. It encompasses different types of fixed, mobile, and lightweight applications, including two-way radios, cellular telephones, personal clone. Assistants (PDAs), and wireless networking. Other examples of applications of radio wireless technology contain GPS units, workplace door creation, wireless computer mice, keyboards and headsets, headphones, radio receivers, satellite television, newscast television and cord limited phones. Somewhat limited common methods of achieving wireless transmissions contain the use of other electromagnetic wireless automation, such as light, magnetic, or electric fields or the use of sound. The future growth of customer-based mobile and lightweight transmission systems will be tied more closely to radio spectrum distributions and regulatory conclusions which affect or support new or extended services, access, and network areas.

As low priced video-enabled mobile devices to become more common, video creation and consumption on mobile tools is increasing dramatically. Most of these paths are due to predicting video encoding algorithms and the recently finalize which enable extreme compression of video traffic with very little distortion. Its restrictions in data proportion, computational complexity, battery life, expense, and channel feature still restriction the accomplishment of wireless video streaming on ability- constrained devices.

2. VIDEO TRANSMISSION

The network scenarios that will be considered as a reference in the remainder of this article. The goal is to demons proportion how the received feature of wireless video is influenced by control conclusions taken at each and every layer of the protocol stack.

Sensor Networks

Sensor networks are similar to MANET networks in that they also form an infrastructure limited multi-hop wireless network. However, sensor networks are generally designed to be low expense, single purpose networks designed to impress and relay their local environment. This can be through the use of any number of sensing modalities, from simple light and temperature sensors to more complex audio and video collection.

Along with the network topology, the accomplishment of wireless video is also influenced by the nature of the video application. The specific application influences the tolerance to latency, distortion, and bandwidth, as well as constraints on privacy or security restrictions and format requirements. Below, we will introduce a number of common traffic paradigms.

Video On Demand

Unlike real-time video services, video on demand services transmit pre- recorded content based on the demands of the end user. Such services generally take advantage of a relatively large buffer as well as the availability of the entire video stream to deliver much higher feature video than more

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time-sensitive applications.

Interactive Video

By its traditional definition, interactive video is essentially video on demand in which the user can interact with the playback of the video. This contains traditional playback commands such as pause, fast forward, and rewind. With the huge demand for Internet video services such as Netflix and YouTube, interactive video has become the dominant source of Internet traffic in many countries.

Multimedia Surveillance

Video surveillance networks use video applications to monitor an area, usually to attempt to detect unauthorized or unexpected activity. While they often deliver real-time video content to an end user, video surveillance applications may also deliver a high-feature version of the video to a *storage device* for later forensic requirements.

3. TRANSPORT PROTOCOLS

Streaming video has traditionally relied on user datagram protocol (UDP) at the transport layer. This was a direct result of the delivery guarantee requirement for TCP. For file transfer applications, it is essential that every packet is delivered. Because of this, TCP will increase the latency in order to deliver lost packets. However, as we discussed above for real-time streaming video, latency is the critical parameter in many video streaming applications.

This led to video being streamed over the potentially loss UDP protocol, while the reliability responsibilities were transferred up the protocol stack to protocols such as RTP with RTCP.

Congestion Control for Wireless Video

The restriction capacity of wireless networks requires that specific functionalities need to be defined to control the video proportion when the offered traffic exceeds the network capacity. Therefore, to begin, we will first examine the applicability of standard well-known protocols to the congestion control problem for streaming video.

This approach requires a centralized control point in the network that has the ability to prevent new video streams from joining the network. Again, this may be challenging especially in MANET networks where there is by definition no central coordinating node. In addition, in video streams where a router cannot intelligently drop frames (i.e., due to encryption) the call-manager approach may be the only possible solution.

Congestion Control Based on Standard TCP

If the latency constraints of a real-time streaming system can be relaxed, it is possible to implement video streaming services based on standard TCP protocols. Recently, this approach has become more prevalent as the need for congestion control of video streams is becoming more important. For TCP-based video streaming services to be able to deliver acceptable accomplishment, however, a few requirements need to be observed:

- **Sufficient buffers:** Capacity in wireless networks is highly variable. Ensuring that the receive buffers are large enough to "smooth over" capacity fluctuations allows for an uninterrupted user experience.

- **Sufficient channel feature:** TCP will dramatically underestimate the capacity of a wireless network that has a high packet loss proportion. For video streaming to work with TCP, the packet loss proportion needs to be very low, or some accomplishment enhancing proxy (PEP) must be utilized to maintain high enough throughputs. In order to understand the operation of the proprietary YouTube video streaming server protocol, the authors investigate

application flow control of streaming YouTube video.

4. ROUTING PROTOCOLS

Transmitting video streams over networks with multiple wireless hops is more challenging, where routing, aka path selection, plays a critical role. Different from traditional application-agnostic routing policies, the state-of-the-art video-application-centric routing schemes need to consider user-perceived video feature, playback deadlines, and energy consumption rather than hop count and throughput as design metrics. In this section, we will discuss the state-of-the-art video- specific routing protocols that are suitable to the following three types of video applications: video on demand, real-time video services and multimedia surveillance.

Minimum-Distortion Routing

Video on Demand as discussed in Section II is usually delay tolerant. This is because video frames are pre-coded at the server end and may be buffered before being played out at the receiver. However, because of the ever-increasing high entertainment demands of users, routing protocols with assured minimum distortion are needed. Some existing routing schemes have been proposed to maximize the received video feature for video transmission over multi- hop wireless networks. We start the discussion by looking at the Minimum Distortion Routing (MDR) scheme, where an existing proportion-distortion model is used to evaluate the impact of packet loss proportion on end-to-end video feature.

Adaptive video-centric routing

As the amount of video content increases in wireless networks, there still does not exist an ideal routing protocol that can help effectively improve the perceived feature by jointly considering the application-specific requirements, such as timeliness, end-to-end feature, and energy consumption. To cater for the explosion of video-based content in wireless networks, recently, a clean architecture approach named as Information-Centric Networking (ICN) has drawn significant attention which aims at providing a general infrastructure that provides in-network caching so that content is distributed in a scalable, expense- efficient manner. Therefore, developing a more efficient routing scheme for video transmission in information-centric networks may be another possible future direction of research.

Routing for CS-based video

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The routing protocols discussed above are designed for wireless video transmission adopting traditional video encoding paradigms. Christo Ananth et al. [7] discussed about creating Obstacles to Screened networks. In today's technological world, millions of individuals are subject to privacy threats. Companies are hired not only to watch what you visit online, but to infiltrate the information and send advertising based on your browsing history. People set up accounts for facebook, enter bank and credit card information to various websites. Those concerned about Internet privacy often cite a number of privacy risks events that can compromise privacy which may be encountered through Internet use. These methods of compromise can range from the gathering of statistics on users, to more malicious acts such as the spreading of spyware and various forms of bugs (software errors) exploitation.

Cross-layer design for energy-efficient 3D video streaming

3D/Multi-view/Stereo in this video applications have recently emerged as services with a potential to offer a higher Feature of Experience (QoE) compared with conventional 2D video. The computational complexity of encoding 3D multi-view video and transmitting the encoded data may result in a high energy burden for mobile devices, which ultimately leads to short operational lifetime. It is therefore essential to design novel transmission schemes in cross-layer manner, and clean slate network architectures with higher energy efficiency by integrating compressive sampling technology.

Cloud-assisted mobile video streaming

Another potential direction is to interproportion mobile cloud computing (MCC) automation with wireless video streaming. Then, mobile devices can continuously offload their computationally-intensive tasks to a remote cloud server, hence potentially extending the battery lifetime. On the other hand, by optimizing the streaming stproportiongies using the powerful cloud server, this may enable real time, network-friendly and scalable video streaming. Through cloud-enabled mobile networks, we envision that high feature mobile video streaming will be supported without considerably increasing the energy consumption.

5. CONCLUSION

In this work, state-of-the-art video encoders and networking protocols for wireless video streaming. The emerging video encoders, and discussed how compressed sensing and distributed systems could help enhance video systems where the video was created by ability constrained wireless devices. Then application-centric routing protocols for video applications including on-demand video streaming, real- time interactive video services and video surveillance in WSN. In MAC layer, channel access policies for high-volume video data transmission are examined. In physical layer, we discussed error-resilient video streaming, to highlighting soft video encoding/decoding and cooperative streaming. Finally, to examined cross layer solutions, by paying attention to newly emerging service architectures like DASH- based and cloud-assisted wireless video streaming.

REFERENCES

[1] X. Cheng, J. Liu, and C. Dale, “Understanding the characteristics of internet

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short video sharing: A YouTube-based measurement study," *IEEE Trans. Multimedia*, vol. 15, no. 5, pp. 1184–1194, Aug. 2013.

[2] S. Pudlewski and T. Melodia, "Compressive video streaming: Design and proportion-energy-distortion analysis," *IEEE Trans. Multimedia*, vol. 15, no. 8, pp. 2072–2086, Dec. 2013.

[3] S. Pudlewski, T. Melodia, and A. Prasanna, "Compressed-sensing-enabled video streaming for wireless multimedia sensor networks," *IEEE Trans. Mobile Comput.*, vol. 11, no. 6, pp. 1060–1072, Jun. 2012.

[4] V. Adhikari, Y. Guo, F. Hao, M. Varvello,V.Hilt, M. Steiner,and Z.-L. Zhang, "Unreeling Netflix: Understanding and improving multi-CDN movie delivery," in *Proc. IEEE Conf. Comput. Commun. (INFOCOM)*, Orlando, FL, USA, Mar. 2012, pp. 1620–1628.

[5] A. Rao, A. Legout, Y.-S. Lim, D. Towsley, C. Barakat, and W. Dabbous, "Network characteristics of video streaming traffic," in *Proc. Conf. Emerging Netw. EXper. Technol. (CONEXT)*, Tokyo, Japan, Dec. 2011, pp. 25:1–25:12.

[6] S. Pudlewski and T. Melodia, "A distortion-minimizing proportion controller for wireless multimedia sensor networks," *Comput. Commun. (Elsevier)*, vol. 33, no. 12, pp. 1380–1390, Jul. 2010.

[7] Christo Ananth, P.Muppidathi, S.Muthuselvi,P.Mathumitha, M.Mohaideen Fathima, M.Muthulakshmi, "Creating Obstacles to Screened networks", International Journal of Advanced Research in Biology, Ecology, Science and Technology (IJARBEST), Volume 1,Issue 4,July 2015, pp:10-14

[8] S. A. Jadeep and S. Shamai, "Degrees of freedom region of the MIMO X channel," *IEEE Trans. Inf. Theory*, vol. 54, no. 1, pp. 151–170, Jan. 2008.

[9] I. F. Akyildiz, T. Melodia, and K. R. Chowdhury, "A survey on wireless multimedia sensor networks," *Comput. Netw.*, vol. 51, no. 4, pp.921–960, Mar. 2007.

[10] T. Wiegand, G. J. Sullivan, G. Bjøntegaard, and A. Luthra, "Overview of the H.264/AVC video coding standard," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 13, no. 7, pp. 560–576, Jul. 2003.