

Accepted Manuscript

Performance Evaluation of High Definition Video Streaming over
Mobile Ad Hoc Networks

Muhammad Usman, Mian Ahmad Jan, Xiangjian He,
Muhammad Alam

PII: S0165-1684(18)30086-0
DOI: [10.1016/j.sigpro.2018.02.030](https://doi.org/10.1016/j.sigpro.2018.02.030)
Reference: SIGPRO 6754



To appear in: *Signal Processing*

Received date: 31 July 2017
Revised date: 22 January 2018
Accepted date: 26 February 2018

Please cite this article as: Muhammad Usman, Mian Ahmad Jan, Xiangjian He, Muhammad Alam, Performance Evaluation of High Definition Video Streaming over Mobile Ad Hoc Networks, *Signal Processing* (2018), doi: [10.1016/j.sigpro.2018.02.030](https://doi.org/10.1016/j.sigpro.2018.02.030)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Highlights

- To the best of our knowledge, our proposed approach is the first one to combine both the QoS and QoE in MANETs. The existing studies discuss QoS and QoE separately and consider non-multimedia data. Our proposed approach is unique because it combines QoS and QoE in MANETs from multimedia (i.e., HD videos) data perspective.
- A QoS-aware routing scheme at network layer is proposed to minimize the loss of data packets and efficiently utilize the available bandwidth during HD video streaming over MANETs. The proposed routing scheme follows feedback-based multi-path transmission. In the existing routing schemes, there is no feedback involvement, and as a result, data communication relies on path scheduling only. Unlike existing schemes, data scheduling decision is made on intermediate hops in our proposed approach. If the intermediate nodes are busy or sufficient bandwidth is not available during the video transmissions, the sender of video packets is immediately informed to choose an alternate path to avoid the end-to-end delay.
- An efficient EC technique at application layer is applied to recover the lost video frames. Although, the existing EC techniques are efficient, they cannot support real-time processing. In our proposed approach, the EC technique is based on a multi-threading-based parallel processing. The concept of parallel processing is adopted to support real-time processing. First, motion vectors of lost video frames are estimated by performing a motion estimation between successfully received video frames. Unlike existing EC techniques, the EC technique in our proposed approach utilizes only two video frames to perform the motion estimation. The motion vectors are estimated at a block level and predicts the motion of pixels in the consecutive video frames to recover the lost video frames in real-time.
- To test the performance of the applied EC technique, objective evaluation is performed on the recovered video frames using various standard

Download English Version:

<https://daneshyari.com/en/article/6957696>

Download Persian Version:

<https://daneshyari.com/article/6957696>

[Daneshyari.com](https://daneshyari.com)