Security Analysis of Smartphone and Cloud Computing Authentication Frameworks and Protocols

ABSTRACT

Interactive multi-view video streaming (IMVS) services permit to remotely navigate within a 3D scene with an immerse experience. This is possible by transmitting a set of reference camera views (anchor views), which are used by the clients to freely navigate in the scene and possibly synthesize additional viewpoints of interest. From a networking perspective, the big challenge in IMVS systems is to deliver to each client the best set of anchor views that maximizes the navigation quality, minimizes the view-switching delay and yet satisfies the network constraints. Integrating adaptive streaming solutions in free view point systems offers a promising solution to deploy IMVS

INTRODUCTION

In large and heterogeneous scenarios, as long as the multi-view video representations on the server are properly selected. We therefore propose to optimize the multi-view data at the server by minimizing the overall resource requirements, yet offering a good navigation quality to the different users. We propose a representation set optimization problem for multi-view adaptive streaming systems and we show that it is NP-hard. We therefore introduce the concept of multi-view navigation segment that permits to cast the video representation set selection as an integer linear programming problem with a bounded computational complexity. We then show that the proposed solution reduces the computational complexity while preserving optimality in most of the 3D scenes. We finally provide simulation results for different classes of users and show the gain offered by an optimal multi-view video representation selection compared to recommended representation sets (e.g., Netflix and Apple ones) or to a baseline representation selection algorithm where the encoding parameters are decided a priori for all the camera views.

EXISTING SYSTEM

- This is possible by transmitting a set of reference camera views (anchor views), which are used by the clients to freely navigate in the scene and possibly synthesize additional viewpoints of interest.
- From a networking perspective, the big challenge in IMVS systems is to deliver to each client the best set of anchor views that maximizes the navigation quality, minimizes the view-switching delay and yet satisfies the network constraints. Integrating adaptive streaming solutions in free viewpoint systems offers a promising solution to deploy IMVS in large and heterogeneous scenarios, as long as the multi-view video representations on the server are properly selected.

DISDVANTAGES

- Each representation is then decomposed into temporal chunks (usually 2s long) and then stored at the server. When a client requests a specific multi-view video, it receives a media presentation description (MPD) file from the server, which contains information about the available representations for each anchor view.

PROPOSED SYSTEM

- We propose a representation set optimization problem for multi-view adaptive streaming systems and we show that it is NP-hard. We therefore introduce the concept of multi-view navigation segment that permits to cast the video representation set selection as an integer linear programming problem with a bounded computational complexity.
- We then show that the proposed solution reduces the computational complexity while preserving optimality in most of the 3D scenes.

ADVANTAGES

We then show that the proposed solution reduces the computational complexity while preserving optimality in most of the 3D scenes. We finally provide simulation results for different classes of users and show the gain offered by an optimal multi-view video representation selection compared to recommended representation sets (e.g., Netflix and Apple ones) or to a baseline representation selection algorithm where the encoding parameters are decided a priori for all the camera views.

CONCLUSION

- To the best of our knowledge, this paper is the first study about optimal encoding parameters for representation sets in free-viewpoint adaptive streaming. We have defined an optimization problem for the selection of the representation set that maximizes the average satisfaction of interactive users while minimizing their view-switching delay. We define a novel variable, namely the multi-view navigation segment, and formulate an optimization problem that can be solved as a tractable ILP problem. We characterize the satisfaction of interactive users as the quality experienced by the user during the navigation. This function is able to take into account both coding and view synthesis artifacts. We finally measure the performance of representation sets based on content provider recommendations and show the suboptimality of baseline algorithms that do not adapt the coding parameters to the video and users characteristics. We therefore highlight the gap between existing recommendations and solutions that maximize the average user satisfaction. In particular, we show that an unequal allocation of the storage capacity among different video types as well as camera views is essential to strike for the right balance between storage cost and users satisfaction in interactive multi-view video systems.

REFERENCES

- [1] “Google cardboard,” https://www.google.com/get/cardboard.
- [2] “Oculus rift,” https://www.oculus.com/en-us/rift.
- [3] “Lytro immerge,” https://www.lytro.com/immerge.
- [4] “BBC ressearch,” http://www.bbc.co.uk/rd/projects/iview.
- [5] D. Tian, P.-L. Lai, P. Lopez, and C. Gomila, “View synthesis techniques
- for 3D video,” in SPIE Optical Engineering Applications, vol. 7443,
- 2009.
- [6] K. Calagari, K. Templin, T. Elgamal, K. Diab, P. Didyk, W. Matusik,
- and M. Hefeeda, “Anahita: A system for 3D video streaming with
- depth customization,” in Proc. ACM Int. Conf. on Multimedia, Orlando,
- Florida, November 2014.

CONTD..

[7] Z. Gao, S. Chen, and K. Nahrstedt, “Omniviewer: Enabling multi-modal 3D DASH,” in Proc. ACM Int. Conf. on Multimedia, Brisbane, Australia, October 2015.

[8] M. Zhao, X. Gong, J. Liang, J. Guo, W. Wang, X. Que, and S. Cheng, “A cloud-assisted DASH-based scalable interactive multiview video streaming framework,” in Proc. Picture Coding Symposium, Cairns, Australia, June 2015.

[9] T. Su, A. Javadtalab, A. Yassine, and S. Shirmohammadi, “A DASHbased 3D multi-view video rate control system,” in Proc. Int. Conf. On Signal Proc. and Commun. Systems, Gold Coast, Australia, June 2014.

[10] T. Su, A. Sobhani, A. Yassine, S. Shirmohammadi, and A. Javadtalab, “A DASH-based HEVC multi-view video streaming system,” Journal of Real-Time Image Processing, pp. 1–14, 2015.