

Title: Dynamic Predictive Streaming of 360 Degree Video

Abstract: Virtual Reality (VR) and Augmented Reality (AR) are expected to be the next-generation Killer-Apps on the Internet. 360 degree video compression and streaming is one of the key components to enable VR/AR applications. In 360 video streaming, a user may freely navigate through the captured 3D environment by changing her desired viewing direction. Only a small portion of the entire 360 degree video is watched at any time. Streaming the entire 360 degree raw video is therefore unnecessary and bandwidth-consuming. On the other hand, only streaming the video in the user's current view direction will introduce streaming discontinuity whenever the user changes her view direction. In this work, a two-tier 360 video streaming framework with user Field-of-View prediction and prioritized buffer control is proposed to effectively accommodate the dynamics in both network bandwidth and user viewing direction. Through simulations driven by real network bandwidth and viewing direction traces, we demonstrate that the proposed framework can significantly outperform the conventional 360 video streaming solutions.