

Andrew's PhD Abstract

The traditional start-to-finish playback model is no longer suitable for all modern video streaming. Users expect support for higher level of interactivity, allowing them to seek within their media quickly and efficiently. By conducting user studies we have observed start-to-finish is not applicable to many genres of video, and that new playback models we developed fit better. We discuss how existing delivery techniques are impacted by these new observations.

Novel interactive controls such as bookmarks have also highly impacted user behaviour. This has lead to the segments within the media being accessed in a uneven fashion, with hotspots of interest forming; areas with orders of magnitudes more viewers than others. These hotspots typically began at the beginning of a bookmark, however not always, which lead us to design a dynamic bookmark positioning algorithm. As well as their position, determining the hotspot's length can be beneficial. This aids in autonomic techniques such as replication and pre-fetching as well as allowing the users to find what they want quicker.

Under high level of interactivity, delivery techniques lose some of their predictability, making the protocols less efficient. We however developed techniques which restore some of this predictability, allowing clients or servers to predict future actions based on past user actions. These technique proves exceeding useful for pre-fetching. However knowledge of past user needs to be gathered information from network, thus we develop techniques to do this in a distributed manner.