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## HTTP-based real-time HD to SD adaptive video streamer for mobile devices

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Real-time video streaming in mobile devices such as smartphones and tablets is used in a wide variety of applications, and it has become very popular in the present era. Because of their smaller screen resolutions and sizes, mobile devices are usually expected to stream video in Standard Definition (SD). However, there is an increased need for streaming real-time High-Definition (HD) video on them. Difficulties associated with streaming HD video on regular mobile devices can be due to limitations of HD video decoding hardware, unavailability of HD video software on specific devices, and unreliability of mobile internet speeds. To resolve these problems, an HTTP-based HD to SD adaptive video streamer has been proposed, developed, and tested. In the proposed method real-time HD video is played on a server, video & audio are captured, converted in real-time into SD resolutions, and adaptively streamed using HTTP Live Streaming (HLS) protocol with HTML5 to multiple mobile devices. The server software needed for these implementations was developed using the open-source FFmpeg libraries. When HD videos were attempted to be streamed directly on the tested regular mobile devices, special streaming software had to be installed. Yet, the videos were unwatchable in real-time due to limitations of the device hardware and buffering of the videos, especially when the connected 4G mobile network was congested. In contrast, when the newly developed streamer was used, HD videos were properly streamed in real-time SD without buffering on the tested mobile devices in their standard web browsers, even when the mobile network was congested.

**Keywords:** Adaptive, HLS, Real-time Capture, FFmpeg

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