HiWi Position

Adaptive Video Streaming Techniques

Rendering applications are gaining popularity in the computer graphics industry. A programmed rendering application is useful to interpolate an image with inputs such as mouse coordinates or view points. This enables a single image to be viewed at different view positions. However this technique exposes some challenges in terms of implementation and transmission over the IP network. The goal of the work is to investigate adaptive streaming methods for a rendering application to adapt for changing network conditions.

The focus of the work will be on exploring adaptive streaming techniques, estimate the bandwidth available at the client and program the encoder to encode at variable bitrate depending on the changing bandwidth. The existing test bed consists of three interfaces: rendering application, video streaming server (ffserver) and the websockets that send the mouse co-ordinates back to the rendering application. The work includes understanding the functionality of adaptive video streaming, bandwidth measurements at the client, exploring the HTML5 and Javascript libraries to estimate bytes decoded, signalling to the video server. The ideal tasks include:

1) Logging html5 video elements for the amount of data decoded in bytes
2) Exploring the adaptive streaming techniques
3) Programming the encoder to have adaptive bitrate encoding

Qualifications:
1) Good understanding of linux and familiarity with the bash shell.
2) Good knowledge on C/C++ programming; and debugging will be an advantage.
3) Good knowledge on HTML5 and Javascript
4) Basic knowledge on video codecs, and video processing.
5) Basic knowledge on ffmpeg framework will be an advantage.

Contact
M.Sc. Tilak Varisetty
Institute of Communications Technology (IKT)
Room: 1434, Appelstr. 9A
E-Mail: tilak.varisetty@ikt.uni-hannover.de
Tel: +49 (511) 762-2857