SEMINAR

Monday, March 12th, 11 am to Noon

Building 406, Room 216

Off-line foveated video: Effects on compression and perception

Marcus Nyström

Visiting Ph.D. Student, ViVoNets Lab, UCSB
and
Department of Information Technology, Lund University, Sweden

Abstract

Off-line foveation is a technique to improve the compression efficiency of digitized video. The general idea behind off-line foveation is to blur video regions where no, or a small number of previewers look without decreasing the subjective quality for later viewers. It relies on the fact that peripheral vision is degraded compared to central vision, and the observation that during free-viewing humans' gaze positions generally coincide when watching video. In this talk, we investigate in two experiments the perceptual effects off-line foveation has on 15 subjects when free-viewing, and on 17 subjects when evaluating the quality of six different video clips. The perceptual parameters describe how off-line foveation affects where the subjects gaze, the inter-subject dispersion, fixation duration, saccade amplitude, and experienced quality after one, two and three consecutive viewings. Results show that, despite large data reductions when encoded with H.264, off-line foveated videos essentially do not influence the subjective quality of the tested video clips, nor do they change subjects' viewing behavior. In view of these results, we discuss the usage of off-line foveated video in practical applications.

Biography: Marcus Nyström received his M.Sc. in Vehicle engineering from the Royal Institute of Technology, Stockholm in 2003. Since then he has been pursuing a PhD at the Department of Information Technology at Lund University, Sweden. His research interests span image and video coding, eye-movements and scene perception.

Department Host: Jerry D. Gibson