UW CENTER FOR
PATTERN ANALYSIS AND MACHINE INTELLIGENCE

GRADUATE SEMINAR SERIES

Objective Quality Assessment of Tone Mapped Images With Applications

Speaker: Hojat Yeganeh

Date: November 9, 2011

Time: 4 pm - 5 pm

Place: E5 (5128) Refreshments will be served

Abstract :

Tone mapping operators (TMOs) that convert high dynamic range (HDR) to low dynamic range (LDR) images provide practically useful tools for the visualization of HDR images on standard LDR displays. Different TMOs create different tone mapped images, and a natural question is which one has the best quality. Without an appropriate quality measure, different TMOs cannot be compared and further improvement is directionless. Subjective rating may be a reliable evaluation method, but is expensive and time-consuming, and more importantly, is difficult to be embedded into optimization frameworks. The purpose of this research is to propose a framework for objective quality assessment of tone mapped images by combining 1) a multi-scale signal fidelity measure based on a modified structural similarity (SSIM) index; and 2) a naturalness measure based on intensity statistics of natural images. Furthermore, we aim to apply the quality measure to extended applications including - parameter tuning for TMOs, adaptive fusion of multiple tone mapped images and visualization enhancement of medical images.

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