UW CENTER FOR
PATTERN ANALYSIS AND MACHINE INTELLIGENCE

GRADUATE SEMINAR SERIES

Structural Similarity as the Optimization Criterion for Visual Communications

Speaker: Abdul Rehman

Date: December 21, 2011

Time: 4:00 pm – 4:30 pm

Place: E5 (5128) Refreshments will be served

Abstract :

Despite the ubiquitous usage in a wide variety of signal processing applications, the mean squared error (MSE) appears to be a poor measure when perceived image quality is our major concern. It is widely employed mostly because of its simplicity and good mathematical properties for optimization purposes. Among the recently proposed IQA approaches, the structural similarity (SSIM) index has emerged as a promising measure that shows superior performance as compared to MSE. Meanwhile, it is computationally simple compared with other state-of-the-art perceptual quality measures and has a number of desirable mathematical properties for optimization tasks. The objective of this research is to break this trend of using MSE as the optimization criterion for image and video processing algorithms and demonstrate that better performance can be achieved when SSIM is employed for the design and optimization of image/video processing algorithm. Specifically, we target several main problems in visual communication applications including video compression, image restoration and Reduced-Reference Image Quality Assessment (RRIQA).

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