UW CENTER FOR
PATTERN ANALYSIS AND MACHINE INTELLIGENCE

GRADUATE SEMINAR SERIES

GRADIENT-BASED SURFACE RECONSTRUCTION COMPRESSED SENSING

Speaker: Mohammad Rostami
Date: April 11, 2012

Time: 4:30 pm – 5:00 pm

Place: E5 (5128) Refreshments will be served

Abstract :

Photometric stereo and shape-from-shading are standard reconstruction problems in computer vision, in which a surface of interest is recovered from the measurements of its spatial gradient. Due to hardware limitations of image acquisition devices, situations are possible in which the available sampling density might not be sufficiently high to allow for recovery of essential surface details. In this presentation, the above problem is resolved by means of derivative compressed sensing (DCS). DCS can be viewed as a modification of the classical compressed sensing (CS), which is particularly suited for reconstructions involving image/surface gradients. We demonstrate that using DCS results in substantial data savings as compared to the standard (dense) sampling, while producing estimates of higher accuracy and smaller variability, as compared to CS-based estimates. The results of this study are further supported by a series of numerical experiments.

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