SenSIP Seminar Series

Blur Detection and Image Enhancement

Presenter: Juan Andrade
PhD Student in ECEE
November 2, 2018, 3:00 PM / Room: GWC 487

Abstract

The depth richness of a scene translates into a spatially variable defocus blur. Automatic blur detection is an important element for several computer vision tasks. A sharpness metric based on the quotient of high- to low-frequency bands of the log-spectrum of the image gradients is proposed. We also propose a simple yet effective method to segment out-of-focus regions using a global threshold which is defined using weak textured regions present in the input image.

Radial distortion (RD) is a non-linear problem usually solved using iterative algorithms. We proposed the use of two cost functions, one tailored to define the RDCs and another for the CoD. The optimization according to the two cost functions is alternated to use the last up-to-date values of CoD and RDC.

Blur is one of the causes of visual discomfort in stereopsis. The application of 2D image sharpening algorithms to the left and right view can produce an interdifference which causes eyestrain and visual fatigue for the viewer. Additionally, it has been shown, through subjective tests, that the perception of sharpness is affected by depth. To propose a novel sharpness enhancement method for stereo images incorporating binocular vision cues as well as depth information.

Biography:

Juan Andrade received his B.E. degree from School of Engineering, University of Cuenca, Cuenca-Ecuador, 1997. He received his Master in Mobile Communications from Polytechnic University of Catalonia, Barcelona-Spain, in 2000. He received his M.Sc. from Arizona State University in 2005 thanks to a Fulbright Scholarship. He is currently a graduate student in the School of Electrical, Computer and Energy Engineering at ASU, Tempe, AZ. His research interests include blur detection, image deconvolution and image enhancement.

Sponsored by the SenSIP Center and NSF I/UCRC
Technical Co-Sponsorship by the IEEE Signal Processing and Communications Chapter, Phoenix Section

http://engineering.asu.edu/sensip