ASU Sensor, Signal & Information Processing (SenSIP) Center

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SenSIP Seminar Series

Intelligent control systems design and application to computer vision performance improvement

Presenter: Dr. Jorge Caviedes

Former Intel Scientist, Adjunct Professor, ECEE IVU Lab, ASU

November 24 (Tuesday), 2015, 2:00 PM / Room: GWC 487

Abstract

Most computer vision (CV) system designs consist of an open loop pipelined architecture, which does not have feedback mechanisms to control the processing stages of signal and images from the input sensors. As a result, when environment conditions change from those assumed in the initial design, real-life applications tend to break down and show very limited robustness. In this presentation we discuss intelligent control system design which uses performance data and a controller with knowledge of well-behaved cases to modify pre-processing parameters according to structural similarity metrics to the failing content to improve the measured signal/image quality as per the needs of CV algorithms. The results have shown significant reduction of false negative cases, and overall improved performance for gesture recognition and face recognition algorithms. The design has broad applicability to other systems and architectures that require robustness and self-learning.

Biography:

Jorge Caviedes (SM'09) was born in Colombia. He received the B.E. degree in EE from the Universidad de Los Andes in 1979, and the M.S. and Ph.D. degrees in biomedical engineering from Vanderbilt University, in 1982 and 1984, respectively. He has been Principal Scientist at Philips Research Labs and Principal Engineer at Intel Corporation. Currently he serves as adjunct professor in the School of ECEE, ASU. He has worked on AI and expert decision support systems for medical imaging systems including MRI, CT, and X-ray. He was the lead knowledge engineer and architect of award-winning, spinoff, knowledge engineering environment for field support of medical imaging systems. His research interests are digital image processing and computer vision R&D, consumer video applications, media interaction and system design for immersive user experience. Adaptive processing and intelligent control systems for video processing and applied computer vision.

Future Speakers

Dr. Linda Hinnov, Johns Hopkins, Jan . 2016; Signal Processing for Earth Systems
Dr. Shiv Sabesan, Cyberonics, Feb. 2016; Biomedical Signal Processing
Dr. Pan Georgiou, USC (date TBD);   Speech Processing

Refreshments

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