

UNIVERSITY OF CENTRAL FLORIDA & THE SCHOOL OF EECS

present the Spring 2009

EECS Distinguished Seminar Series



Dr. Jim Rehg

Associate Professor, School of Interactive Computing, Georgia Tech

“Towards a Theory of Cascaded Detectors”

Friday, March 20, 2009 • 2:00 p.m. • Harris Center (HEC) 101

Cascades of boosted ensembles have become popular in the object detection community following their introduction in the face detector of Viola and Jones. Since then, researchers have sought to improve upon the original approach by exploring alternative boosting methods, feature sets, etc. Nevertheless, key decisions about the most basic aspects of the original cascade classifier, such as how many hypotheses to include in an ensemble and the appropriate balance of detection and false positive rates in the individual stages, have not been studied systematically. Choices which have a significant effect on the cascade’s performance are usually made with heuristics or through trial and error.

We propose a novel method for training cascade classifiers, which exploits the shape of the ROC curve for a cascade in ways that have been previously overlooked. We present a new mathematical characterization of the space of possible cascade operating points. The results of our approach are cascade detectors with significantly-improved testing speeds in comparison to other automatic training methods. We automatically produce cascades whose detection speeds match those of the best hand-tuned detectors. This is joint work with S. C. Brubaker, J. Sun, and M. D. Mullin.

DR. JIM REHG

Dr. Jim Rehg is an Associate Professor in the School of Interactive Computing at Georgia Tech. He is co-Director of the Computational Perception Lab and a member of the Center for Robotics and Intelligent Machines, where he serves as Associate Director of Research. He received his Ph.D. from CMU in 1995 and worked at the Cambridge Research Lab of DEC (and then Compaq) from 1995-2001, where he managed the computer vision research group. His research interests include computer vision, robotics, machine learning, and computer graphics. He is currently serving as a General Chair for CVPR 2009.