UNIVERSITY OF CENTRAL FLORIDA

CENTER FOR RESEARCH IN COMPUTER VISION

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"From Saliency to Camouflage Analysis"

Tuesday, March 23, 2021 · 11:00AM · CRCV Faculty Candidate

Meeting URL: https://ucf.zoom.us/j/95160075668?pwd=TW93MUdpK3dLeURvQzNtT2VrQlZUQT09&from=addon



ABSTRACT

This talk will introduce two research directions, salient object detection and camouflaged object segmentation.

In the first part of the talk, I will introduce a novel framework for salient object detection. Here, salient object detection aims to detect the main objects in the given image. The proposed framework integrates semantic priors into the salient object detection process. It first obtains an explicit saliency map that is refined by the explicit semantic priors learned from data. Then an implicit saliency map is constructed using a trained model that maps the implicit semantic priors embedded into superpixel features with the saliency values. Next, the fusion saliency map is computed by adaptively fusing both the explicit and implicit semantic maps. Experimental results have demonstrated the effectiveness of the proposed framework on three benchmark datasets.

In the second part of the talk, I will present my research work on camouflaged object segmentation. In particular, a new image dataset of camouflaged objects, CAMO, is collected for benchmarking purposes. I then introduce a general end-to-end network, called the Anabranch Network (ANet), that leverages both classification and segmentation tasks. Different from existing networks for segmentation, the proposed network possesses the second branch for classification to predict the probability of containing camouflaged object(s) in an image, which is then fused into the main branch for segmentation to boost up the segmentation accuracy. Extensive experiments conducted on the newly built dataset demonstrate the effectiveness of ANet using various fully convolutional networks.

BIOGRAPHY

Dr. Tam Nguyen is currently an Assistant Professor in the Department of Computer Science at the University of Dayton (UD). He has been the director of Vision and Mixed Reality Lab since 2016. Dr. Nguyen received his PhD degree in National University of Singapore under the guidance of Prof. Shuicheng Yan in 2013. His research topics include computer vision, machine learning, multimedia content analysis, and mixed reality. His research works have been published in IJCV, IEEE T-IP, IEEE T-MM, IEEE T-CSVT, CVIU, Journal of Neurocomputing, Journal of VR, to name a few. His research has been funded by various agencies including National Science Foundation (NSF), Lam Research, NVIDIA, UD Research Institute, UD STEM Catalysts, National Research Foundation Singapore (NRF), and Singapore Ministry of Education.