When: **Wednesday 15:00 – 16:00**
Where: **ETB 1035**

Speaker: **Chung-Chi (Charles) Tsai**
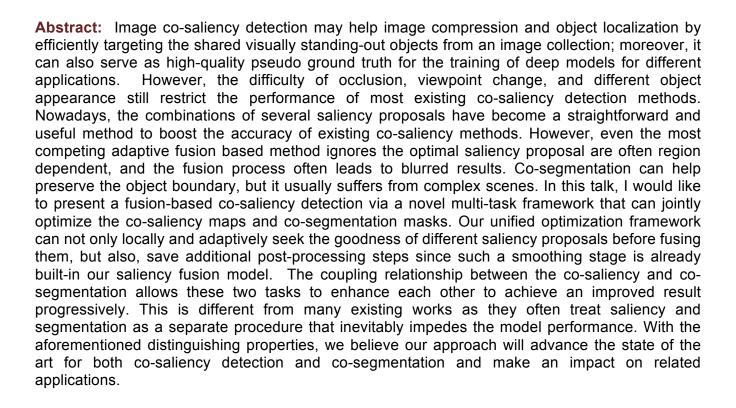
Graduate student
Department of Electrical & Computer Engineering
Texas A&M University

Title: **Co-Saliency Detection: Novel Approaches with Convex Optimization and Deep Neural Networks**

Date: **2-16-2018**

Abstract: Image co-saliency detection may help image compression and object localization by efficiently targeting the shared visually standing-out objects from an image collection; moreover, it can also serve as high-quality pseudo ground truth for the training of deep models for different applications.   However, the difficulty of occlusion, viewpoint change, and different object appearance still restrict the performance of most existing co-saliency detection methods. Nowadays, the combinations of several saliency proposals have become a straightforward and useful method to boost the accuracy of existing co-saliency methods. However, even the most competing adaptive fusion based method ignores the optimal saliency proposal are often region dependent, and the fusion process often leads to blurred results. Co-segmentation can help preserve the object boundary, but it usually suffers from complex scenes. In this talk, I would like to present a fusion-based co-saliency detection via a novel multi-task framework that can jointly optimize the co-saliency maps and co-segmentation masks. Our unified optimization framework can not only locally and adaptively seek the goodness of different saliency proposals before fusing them, but also, save additional post-processing steps since such a smoothing stage is already built-in our saliency fusion model.   The coupling relationship between the co-saliency and co-segmentation allows these two tasks to enhance each other to achieve an improved result progressively. This is different from many existing works as they often treat saliency and segmentation as a separate procedure that inevitably impedes the model performance. With the aforementioned distinguishing properties, we believe our approach will advance the state of the art for both co-saliency detection and co-segmentation and make an impact on related applications.

Biography: Chung-Chi "Charles" Tsai is a Ph.D. candidate in the Department of Electrical and Computer Engineering (ECE) at Texas A&M University. He received his M.S. degrees in ECE from University of California, Santa Barbara and B.S. from National Tsing-Hua University, Taiwan, in 2012 and 2009, respectively. During his senior year in college, he attended a one-year exchange program, at the University of New Mexico. He also participated summer internship with MediaTek in the summer of 2013/2015/2016. His primary research interests include image processing and computer vision.