Announcing the Final Examination of Yang Zhang for the degree of Doctor of Philosophy

Time & Location: March 20, 2020 at 3:00 PM in Research 1 103
Title: Learning Transferable Representations for Visual Recognition

In the last half-decade, a new renaissance of machine learning originates from the visual convolutional neural network. It is believed a combination of growing data availability and novel deep learning techniques contributes the most. However, the increasingly large training data is still a drop in the ocean compared with scenarios in the wild. In this literature, we focus on learning transferable representation in the neural network to ensure the model stays robust even facing different data distributions. We present three exemplar topics in three chapters: Zero-shot learning, domain adaptation, and generalizable adversarial attack. Zero-shot learning predicts labels not seen in the training phase. Domain adaptation migrates source model to target scenario without target annotation. Generalization adversarial attack focus on learning an adversarial attack pattern that ideally would work in every possible scenario. Despite sharing the same transfer learning philosophy, each of the proposed topics poses a unique challenge requiring a unique solution. In each individual chapter, we introduce the problem as well as present our solution to the problem. We also showcase some other researcher's approaches and compare our solution to theirs in the experiments.

Major: Computer Science

Educational Career:
Bachelor's of Communication Engineering, BS, 2013, Chongqing University of Posts and Telecommunications
Master's of Computer Science, MS, 2016, University of Central Florida

Committee in Charge:
Hassan Foroosh, Chair, Computer Science
Wei Zhang, Department of Computer Science
Liqiang Wang, Department of Computer Science
Boqing Gong, Google/ICIS, Berkeley

Approved for distribution by Hassan Foroosh, Committee Chair, on February 21, 2020.

The public is welcome to attend.