

## ***Dr Vineeth N Balasubramanian***

### **Solving the Next Generation of Machine Learning Problems: Learning from Limited Labeled Data**

Machine learning methods have become ubiquitous across application domains over the last few years, thanks to the proliferation of digital data generation. However, the success of machine learning has largely been defined (and restricted) by the supervised learning setting, which requires the availability of very large amounts of labeled data. With the growing need for machine learning-based intelligence in various applications, it becomes imperative to develop methods that can learn effectively, although from limited labeled data. This talk will introduce the audience to the different state-of-the-art settings and efforts around the world in this direction, as well as present our (very) recent research efforts to solve problems in such challenging settings: (i) Active Learning for Object Detection - where we leverage a weaker form of supervision to annotate datasets with minimal human effort (to be presented at BMVC 2019, a top-tier conference); (ii) Zero-shot Task Transfer - where we automatically predict a machine learning model itself for new tasks (presented as an Oral at CVPR 2019, a top-tier conference); and more recently, (iii) Manifold Mix-up for Few-shot Learning - where we devise a simple but effective strategy to learn models that can predict classes with very few labeled data samples (to be presented at WACV 2020).