Striving for Adaptive Representations in Neural Networks

Abstract:

Some sub-problems in visual recognition already enjoy very impressive performance. However, the
deep-learning solutions that underlie them require large training data, are brittle to domain shift and
incur a large cost in parameters for adapting to new domains - all in stark contrast to what is
observed in human beings. I will talk about my recent work on this area, including (1) introduce a new
dataset on which the strongest of learned representations perform very poorly in mimicking human
perceptual similarity (2) discuss recent results hinting that the parameters in neural networks are
under-utilized and show an alternative method for transfer learning without forgetting at a small
parameter cost and (3) show some recent work on conditional computation, inspired by the
psychophysical phenomena of visual priming in humans.