Perceptual Decision Making of Humans and Deep Learning Machines: a Behavioral Study

Ge Chen
Beihang University

Yuzhong Liu
Beihang University

Qiyang Zhao
Beihang University

Abstract: Human visual perception system is a key issue of the cognitive researches. It is also an inspiring prototype of the cutting-edge artificial intelligence researches - deep learning. It is interesting to investigate the behaviors of humans and deep learning machines on vision tasks. In this paper, we focus on the perceptual decision making and object recognition on distorted images. We found that in a wide range of distortion levels, the recognition rates of human subjects are smoothly increased along with the decreases of distortions. Although the deep learning machines perform obviously worse than human subjects, their recognition rates vary with the similar trends. It indicates that the deep learning machines make a good simulation to the human being on the perceptual decision making tasks.