Mokset: A shared stimulus set for object vision research

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Presentation Abstract Summary Understanding biological object vision requires big-data visual response measurements and computational models that can perform object recognition in a biologically plausible way. Empirical research suffers from the problem that research groups use different sets of stimuli, making cross-lab accumulation of stimulus-consistent big data and comparisons between experiments and modalities of activity measurement difficult. Although deep convolutional neural network models now perform as well as humans at object recognition, they are poor models of the brain. We need models that perform like humans and compute like brains. Cognitive neuroscientists should work more closely together and collaborate with AI scientists to tackle object recognition. We propose a common stimulus set to combine our efforts, so that multiple labs record behavioral and neural signals from different brain-recording modalities, and computational scientists can test their models with the same stimuli – where both performance and internal representations can be compared with the brain to find a good model of the human object recognition. We present a stimulus set of ~1000 images and show the internal representations of AlexNet and VGG-16 using representational similarity analysis.

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