Scene Gist Categorization by Pigeons

humans, but also with a degree of sophistication. Thus, rapid scene categorization is a process that is shared across pigeons and humans, but also with a degree of sophistication.

Keywords: scene perfTJ/Cs8cs1scn16.17890TD[(Bacon-Macé,)-232(Macé,)-232(Fabre-)]TJ-16.1789-1.2487TD[(Th

visual cognition (e.g., R. G. Cook, 2001

(Y7) was removed from the study because of chronic low response rates.

Apparatus. The pigeons were trained and tested in two 35 □ 32 □ 24 cm operant chambers housed inside of a sound- and

that the reinforcement contingency was neutral so that there was no reinforcement or punishment. Testing was conducted in blocks of four sessions, with two or more retraining sessions in between

with each of the stimulus durations until achieving a DR of 0.80

meet criterion, and some birds began to fail to meet criterion from the 0.35-s duration onward. A mixed analysis of variance (ANOVA) with the variables of stimulus duration (within-subjects) and group (between-subjects) was conducted on the sessions to criterion data for the five durations that all seven birds successfully mastered (4.00, 2.00, 1.00, 0.75, and 0.50 s). This revealed a near-significant effect of stimulus duration, $F(4, 20) = 2.8$, $p = .053$, $\eta_p^2 = .36$, power

exemplars of the categories. The generalization decrement was modest (5–10%), and performance to the novel images was well above chance. This indicates that the pigeons learned to categorize

beach category images were representative of both sandy and rocky shorelines. The bird’s eye and zenith mountain images were

discriminating natural images, and they are created when a wide range of spatial frequencies at a given orientation are in phase (i.e., aligned) at a given spatial location. Such phase alignment is measured by the phase-only second spectrum because, for example, a large value shows the presence of a significant interaction among a number of sinusoidal modulations by a particular offset. Thus, the phase-only second spectrum assesses the degree of edge strength in terms of phase alignment across all spatial frequencies in an image. To create different higher order feature spectra that would possess “edge-strength” information for each image, we

both second- and higher order BWDRs for each category, beach and mountain.

Furthermore, the observed viewpoint effect, wherein pigeons were better at discriminating the bird's eye (45°) and zenith (90°) viewpoints than the terrestrial (0°) viewpoint, in the first half of the intermixed discrimination training, was consistent with the image statistical discriminability of the categories from those views.

Cook, M., & Mineka, S. (1989). Observational conditioning of fear to fear-relevant versus fear-irrelevant stimuli in rhesus monkeys.

Morrone, M. C., & Burr, D. C. (1988). Feature detection in human vision: A phase-dependent energy model. *Proceedings of the Royal Society B: Biological Sciences*, *235*, 221–245. doi:10.1098/rspb.1988.0073

Morrone, M. C., & Owens, R. A. (1987). Feature detection from local energy. *Pattern Recognition Letters*, *6*, 303–313. doi:10.1016/0167–8655(87)90013–4