**Description:**

Prior to the presentation of each scene stimuli, a white fixation cross is displayed at centre-screen for 0.5 sec. Each scene is presented as a square image of 600 x 600 pixel resolution against a black background screen.

At encoding, participants are presented with 24 coloured images of scenes (12 indoor and 12 outdoor scenes), each for 3 sec., followed by 3 sec. for a response judgement of the scenes as either *‘indoor’* (via ‘i’ key press)or *‘outdoor’* (via ‘o’ key press) to facilitate incidental learning of the stimuli.

At retrieval, participants are presented with the identical scenes that are repeated from encoding (as **24 *targets***) in random order and inter-mixed with never before studied scenes that are either completely brand new (as **24 *foils***), or visually similar but not identical to the studied scenes (as **24 *lures***); a total of 3 counterbalances are needed for each probe type. Each scene is shown for 3 sec. followed by another 3 sec. to judge whether each scene is either “**Old**” (via ‘s’ key press), that is if it’s repeated at retrieval, or “**New**” (via ‘d’ key press), that is if it’s shown for the first time at retrieval. The participants are then asked to rate their **confidence** in their decision on an interval between 1 (not very confident) to 5 (very confident).

Per image degradation, we applied the function of “AdditiveGaussianNoise” from the “imgaug” python library to degrade each scene image with white noise at 33% (scale = 1/3) and 66% (scale = 2/3). Therefore, for each probe type (eg., target) shown at retrieval, 8 images are presented at 100% completeness, 8 at 66% completeness, and 8 at 33% completeness; a total of 3 counterbalances are need for degradation presentation.

There are a total of 4 block pairs of encoding and retrieval in the experiment.

**Pseudocode:**

Fixation = text(“+”)

Wait\_response = text(“Press ‘I’ for indoor or press ‘O’ for outdoor”)

Wait\_response1 = text(“Press ‘S’ for old or press ‘D’ for new”)

Confidence = text(“How confident are you?

1 2 3 4 5

Not confident very confident”)

*# counterbalancing*

Subject = input()

Subj\_num = 1:30

if Subject = random(10 out of Subj\_num)

Targets = read\_directory(‘stim/A\*.png’) *# including 12 indoor, 12 outdoor*

Foil = read\_directory(‘stim/B\*.png’)

Lure = read\_directory(‘stim/C\*.png’)

if Subject = non\_repeated\_random(10 out of Subj\_num)

Targets = read\_directory(‘stim/B\*.png’)

Foil = read\_directory(‘stim/C\*.png’)

Lure = read\_directory(‘stim/A\*.png’)

else

Targets = read\_directory(‘stim/C\*.png’)

Foil = read\_directory(‘stim/A\*.png’)

Lure = read\_directory(‘stim/B\*.png’)

if Subject = random(10 out of Subj\_num)

A1, B1, C1 = non\_degraded *# 8 images in each subset*

A2 , B2, C2 = 33%\_degraded

A3, B3, C3 = 66%\_degraded

if Subject = non\_repeated\_random(10 out of Subj\_num)

A1, B1, C1 = 33%\_degraded *# 8 images in each subset*

A2 , B2, C2 = 66%\_degraded

A3, B3, C3 = non\_degraded

else

A1, B1, C1 = 66%\_degraded *# 8 images in each subset*

A2 , B2, C2 = non\_degraded

A3, B3, C3 = 33%\_degraded

shuffle(Targets)

Retrieval\_stim = Targets + Foil + Lure

shuffle(Retrieval\_stim)

response\_keys = [‘I’, ‘O’, ‘S’, ‘D’, ‘1’, ‘2’, ‘3’, ‘4’, ‘5’]

*# 4 different pairs of encoding and retrieval with non-overlapping stimuli across blocks*

for block in range(4)

encode\_trials = []

retrieval\_trials = []

shuffle(trials) *# randomize trials*

for trial in encode\_trials

en\_response, en\_rt = get(response\_keys, time)

display(“Fixation”, dur = 500)

display (“Targets”, dur = 3000)

display(“Wait\_response”, dur = 3000)

save(en\_response, en\_rt, trial)

for trial in retrieval\_trials

re\_response, re\_rt, conf\_rating = get(response\_keys, time)

display(“Fixation”, dur = 500)

display(“Retrieval\_stim”, dur = 3000)

display(“Wait\_response1”, dur = 3000)

display(“Confidence”, dur = 3000)

save(re\_response, re\_rt, conf\_rating, trial)