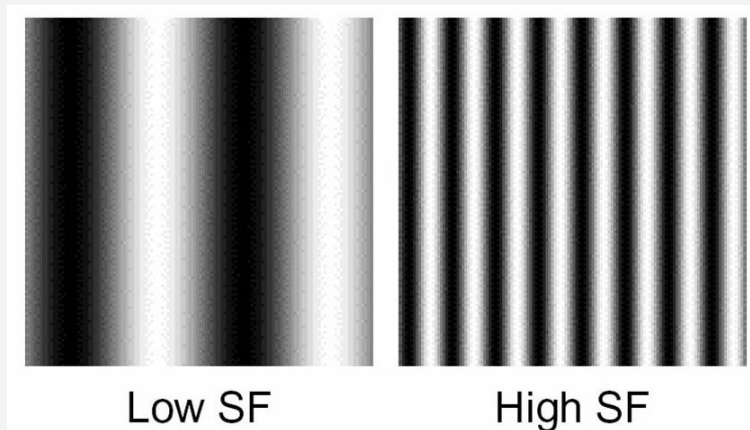


Do the presumed mechanisms underlying  
human edge perception translate to  
natural images?

# Background



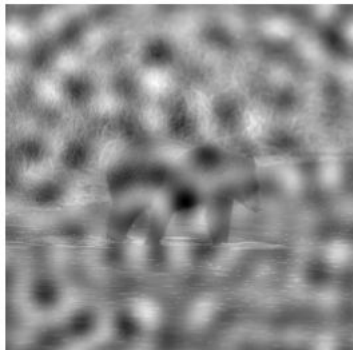
Spatial Frequency [1]

# Motivation

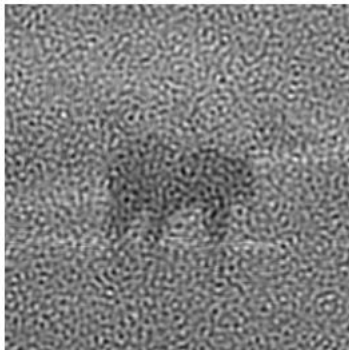


# Stimuli - Noise Variations

2(a): NB of 0.5 cpd



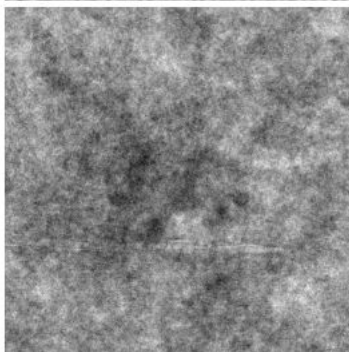
2(b): NB of 3 cpd



2(c): NB of 9 cpd



2(d): Brown noise

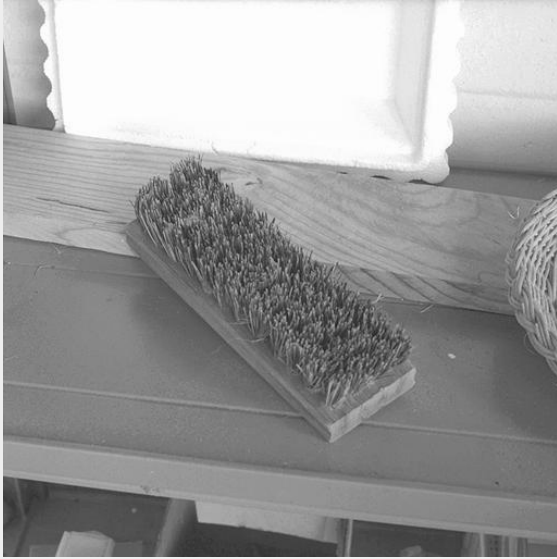


2(e): Pink noise



2(f): White noise

# Stimuli - Natural images

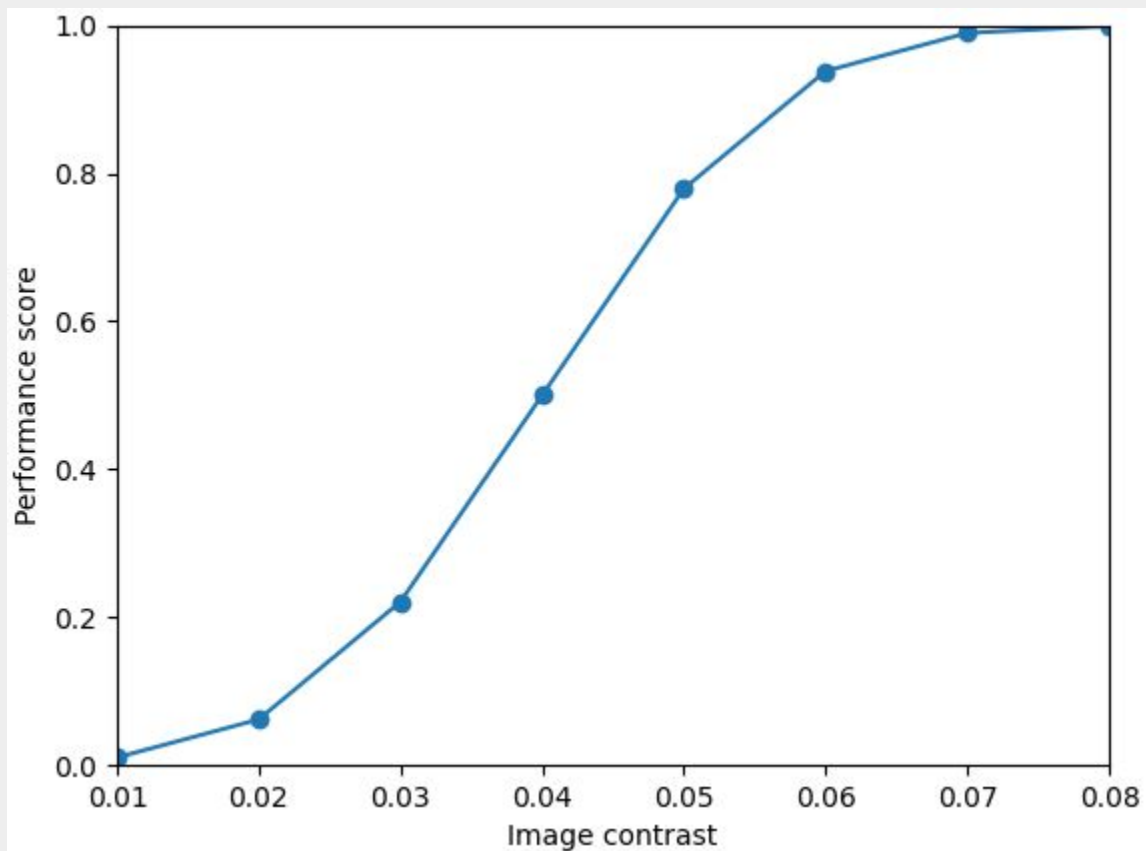


## Stimuli - Contrast Variations

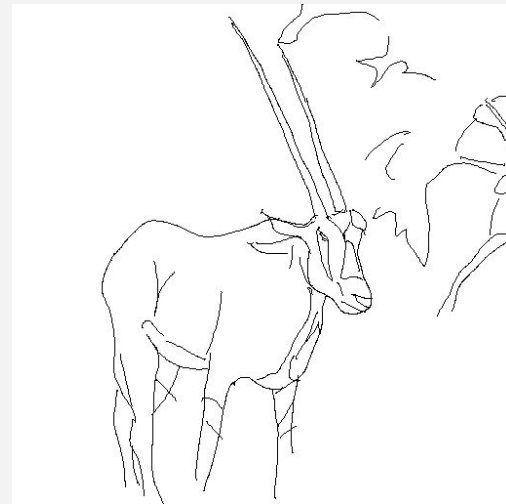


Different RMS image contrasts on an image with white noise of RMS=0.10

## Motivation - Contrast Variation

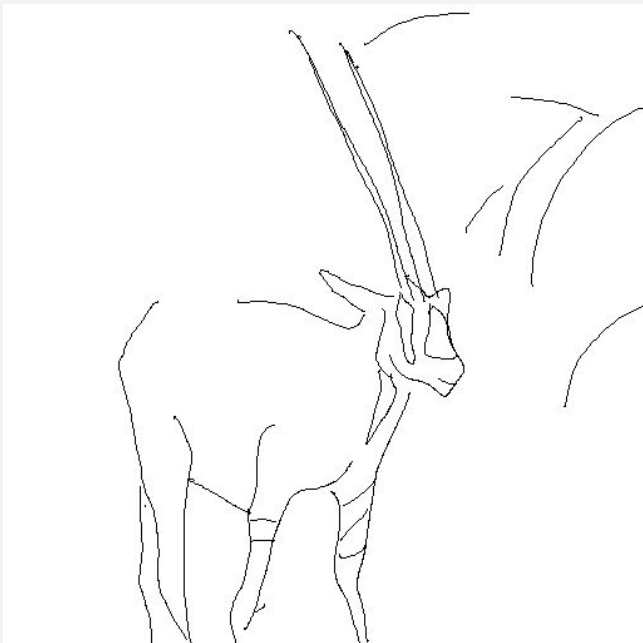


# Task

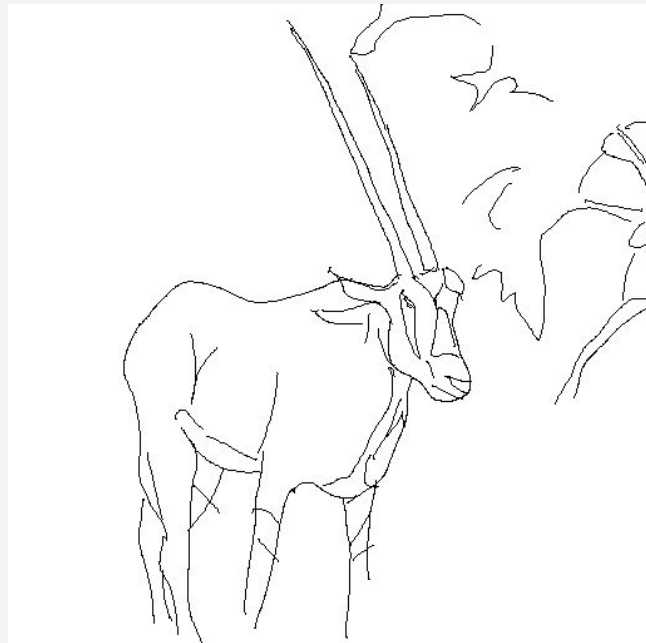




# Task

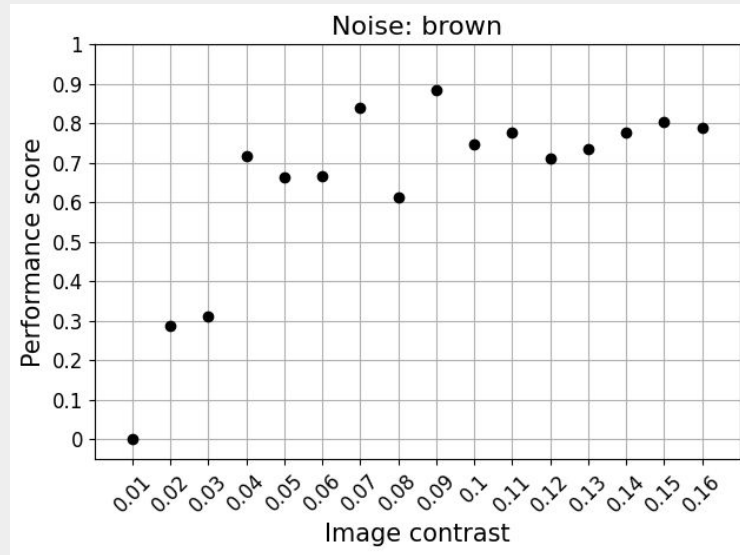
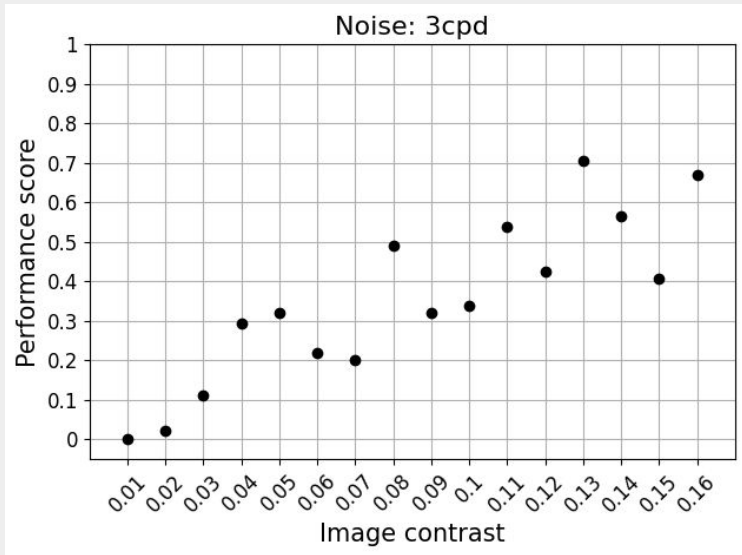


Segmentation of image masked  
with noise (3cpd, RMS=0.8)

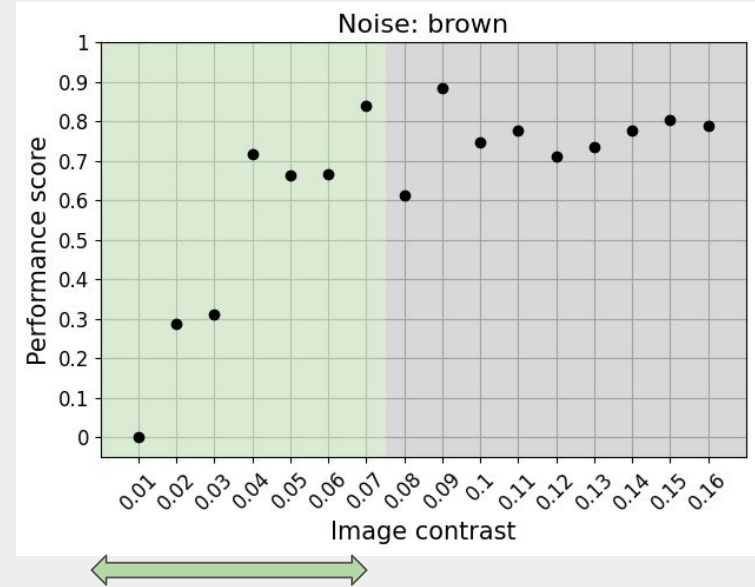
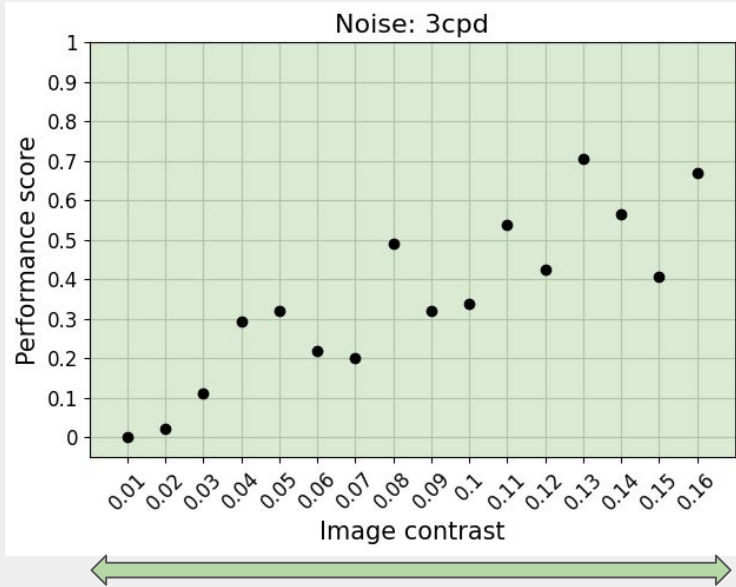


**Ground truth:**  
Segmentation of image without  
noise

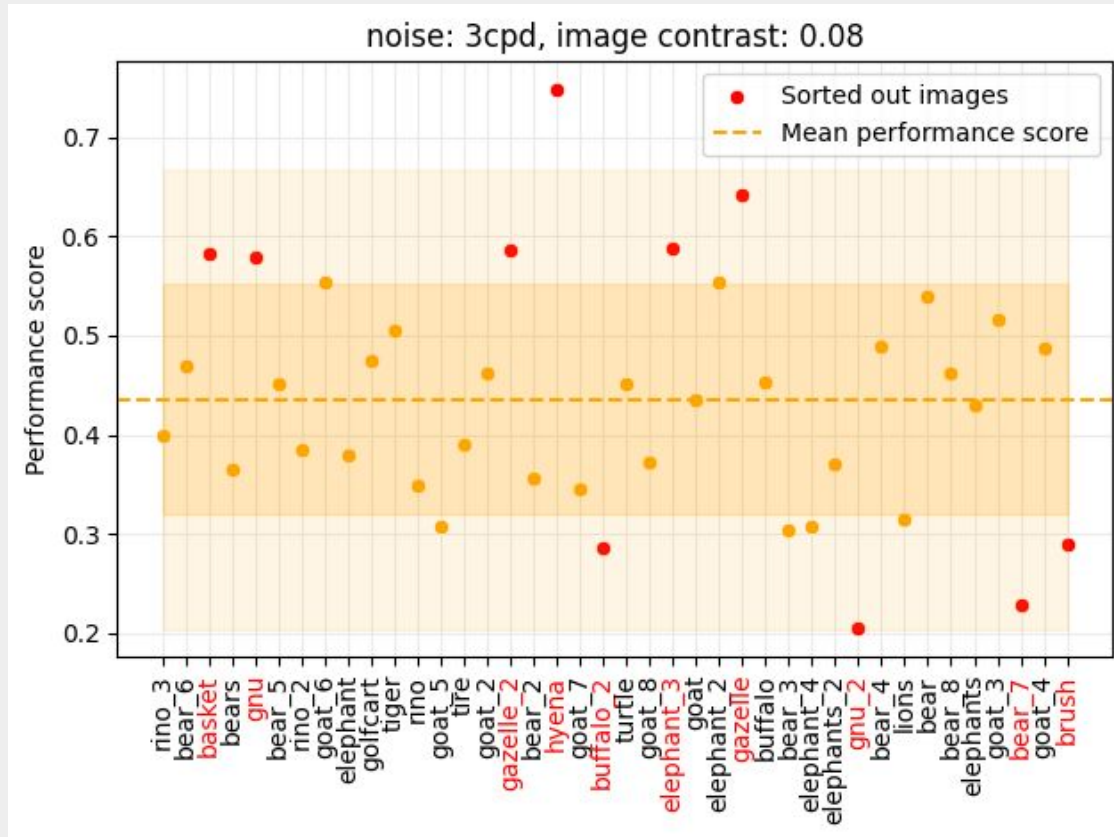
# Pilot 1 - Image Contrasts



# Pilot 1 - Image Contrasts

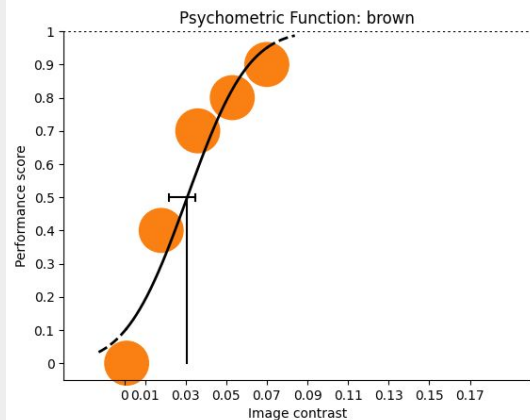
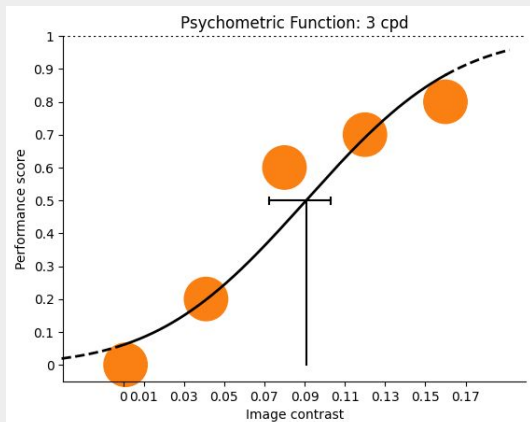


## Pilot 2 - Decision on Sorted out Images

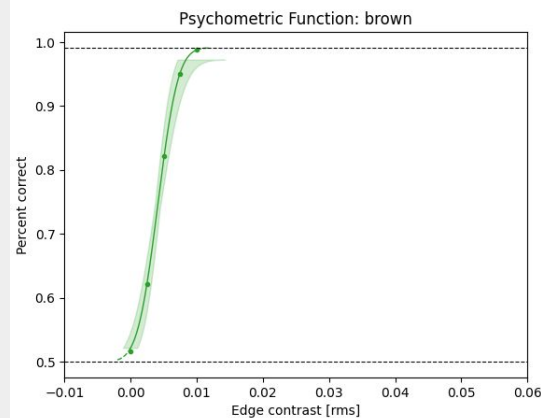
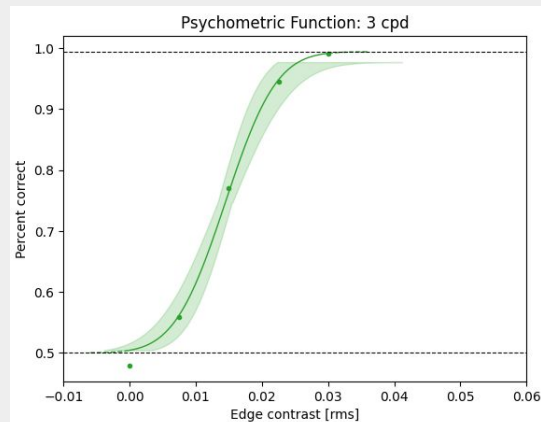


# Experiment

## Natural images



## Edges



# Citations

1. Landy, M. (n.d.). Spatial Frequency Channels [Lecture notes]. NYU. <https://www.cns.nyu.edu/~david/courses/perception/lecturenotes/channels/channels.html>
2. Schmittwilken, L., Wichmann, F. A., & Maertens, M. (2024). Standard models of spatial vision mispredict edge sensitivity at low spatial frequencies. Vision Research, 222, 108450. <https://doi.org/https://doi.org/10.1016/j.visres.2024.108450>
3. Grigorescu, C., Petkov, N., & Westenberg, M. A. (2003). Contour detection based on nonclassical receptive field inhibition. IEEE Transactions on Image Processing, 12(7), 729–739. <https://doi.org/10.1109/tip.2003.814250>