Stat 271. Fall 2015. Homework 1

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Due on Tuesday 27/Oct. 2015. Email pdf file to qiuwch@gmail.com Question 1. Visual Illusions.

Visual illusions teach us about the assumptions that the brain makes when interpreting images. These assumptions are often correct but occasionally wrong, as shown by the illusions. Write a few (two or three) sentences explaining each of the illusions below. Which ones of them involve low-, mid-, or high-level vision? Note that all these illusions are discussed in the Early Vision chapter by Yuille and Kersten.

http://www.michaelbach.de/ot/mot-ske/index.html http://www.michaelbach.de/ot/mot-motionBinding/index.html http://www.michaelbach.de/ot/lum-adelsonCheckShadow/index.html http://www.michaelbach.de/ot/mot-biomot/index.html http://www.michaelbach.de/ot/col-neon/index.html http://www.michaelbach.de/ot/sze-AmesBallerina/index.html http://www.michaelbach.de/ot/fcs_hollow-face/index.html http://www.michaelbach.de/ot/cog-kanizsa/index.html http://www.michaelbach.de/ot/cog-kanizsa/index.html http://www.michaelbach.de/ot/cog-kanizsa/index.html http://youtu.be/hdFCJepvJXU

Question 2. Linear Filtering

This question is to probe receptive field models of neurons, such as Gabor functions and Laplacian of a Gaussian, using sinusoid input. Full description is given at the webpage:

http://nbviewer.ipython.org/github/qiuwch/Stat271HWFall15/blob/master/ HW1Intro.ipynb