Feedback — Quiz 3

You submitted this quiz on **Wed 17 Apr 2013 11:09 AM PDT**. You got a score of **13.00** out of **13.00**.

Question 1

Please select all of the options that accurately describe the Fourier Transform.

Your Answer		Score	Explanation
☑ An expression of a signal as a weighted sum of periodic functions of various frequencies.	✔	0.25	This option is correct!
☑ A transformation of a signal from the time (or space) domain to a frequency domain.	✔	0.25	This option is correct!
☐ An expression of a signal as a weighted sum of linear functions of various intercepts.	✔	0.25	This option is not correct.
☐ A transformation of a signal from the frequency domain to a time (or space) domain.	✔	0.25	This option is not correct. This describes an Inverse Fourier Transform.
Total		1.00 / 1.00	

Question 2

Recall the Fourier transform images from lecture, like the one on the right hand side here:

Please identify the dimensions of this image.

Your Answer		Score	Explanation
○ The x and y directions identify the horizontal and vertical amplitude, the intensity of each pixel is the frequency at that amplitude.			
◉ The x and y directions identify the horizontal and vertical frequency, the intensity of each pixel is the amplitude of that frequency.	✔	1.00	Correct!
○ The x and y directions identify the horizontal and vertical amplitude, the intensity of each pixel is the number of cycles of that amplitude.			
○ The x and y directions identify the horizontal and vertical frequency, the intensity of each pixel is the number of cycles of that frequency.			
Total		1.00 / 1.00	

Question 3

Please choose all of the options that accurately describe a Gaussian Pyramid.
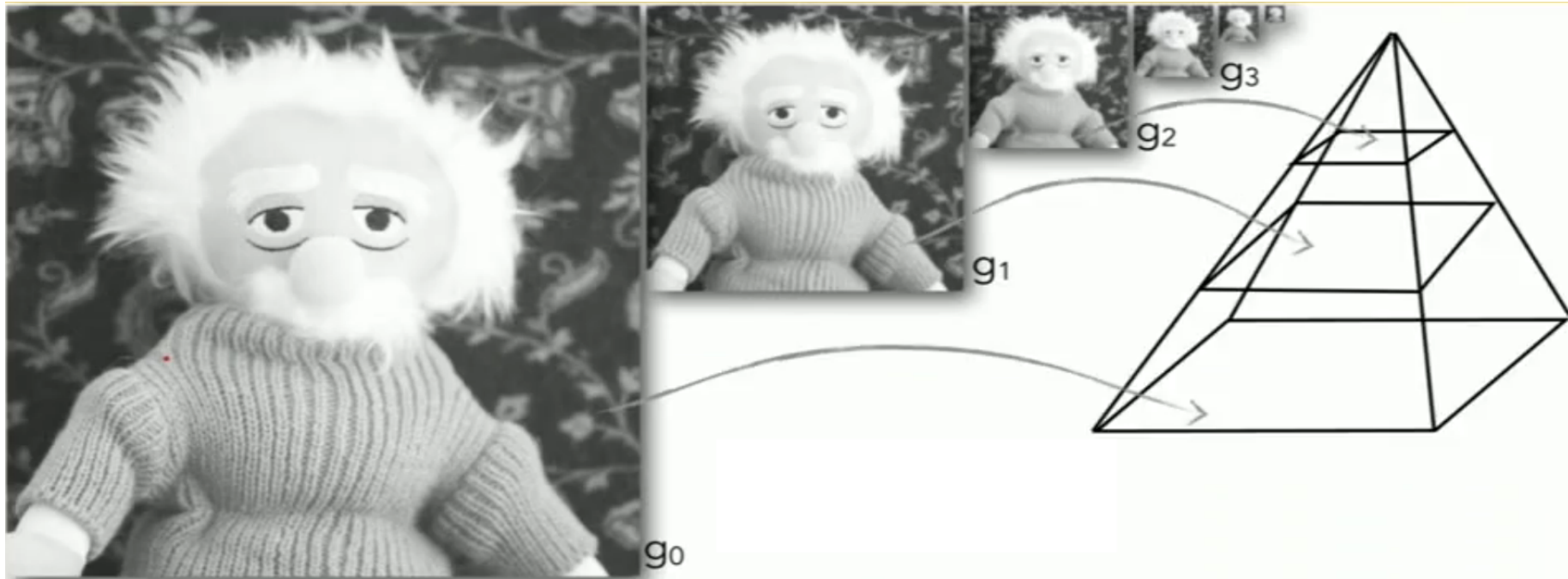
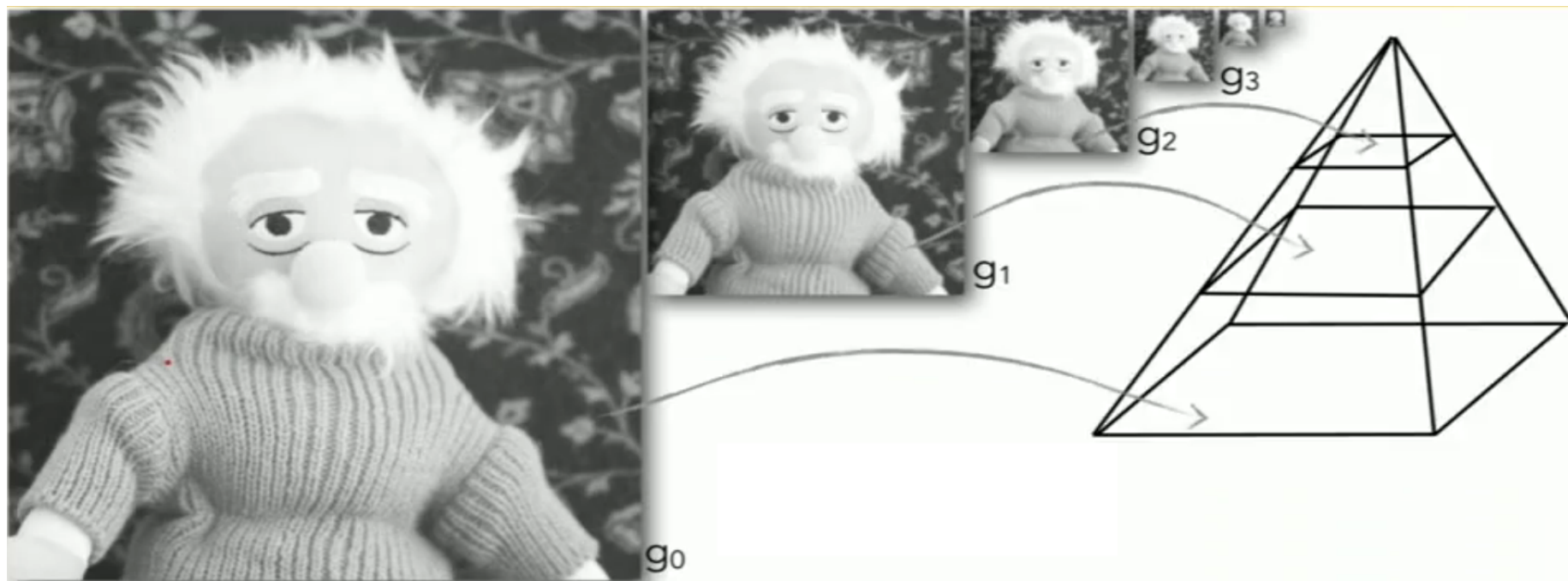| Your Answer	Score	Explanation
☐ A representation of an image at multiple angles.	✔ 0.25	This option is not correct.
☐ Each layer is constructed by running an EXPAND operation on the preceding, lower resolution, layer.	✔ 0.25	This option is not correct.
☑ A representation of an image at multiple scales.	✔ 0.25	This option is correct.
☑ Each layer is constructed by running a REDUCE operation on the preceding, higher	✔ 0.25	This option is correct.

resolution, layer.

Total	1.00 / 1.00

Question 4

Consider the following Gaussian Pyramid:

Please choose the one option that accurately describes how you would construct the first layer of the Laplacian pyramid for this image, L0

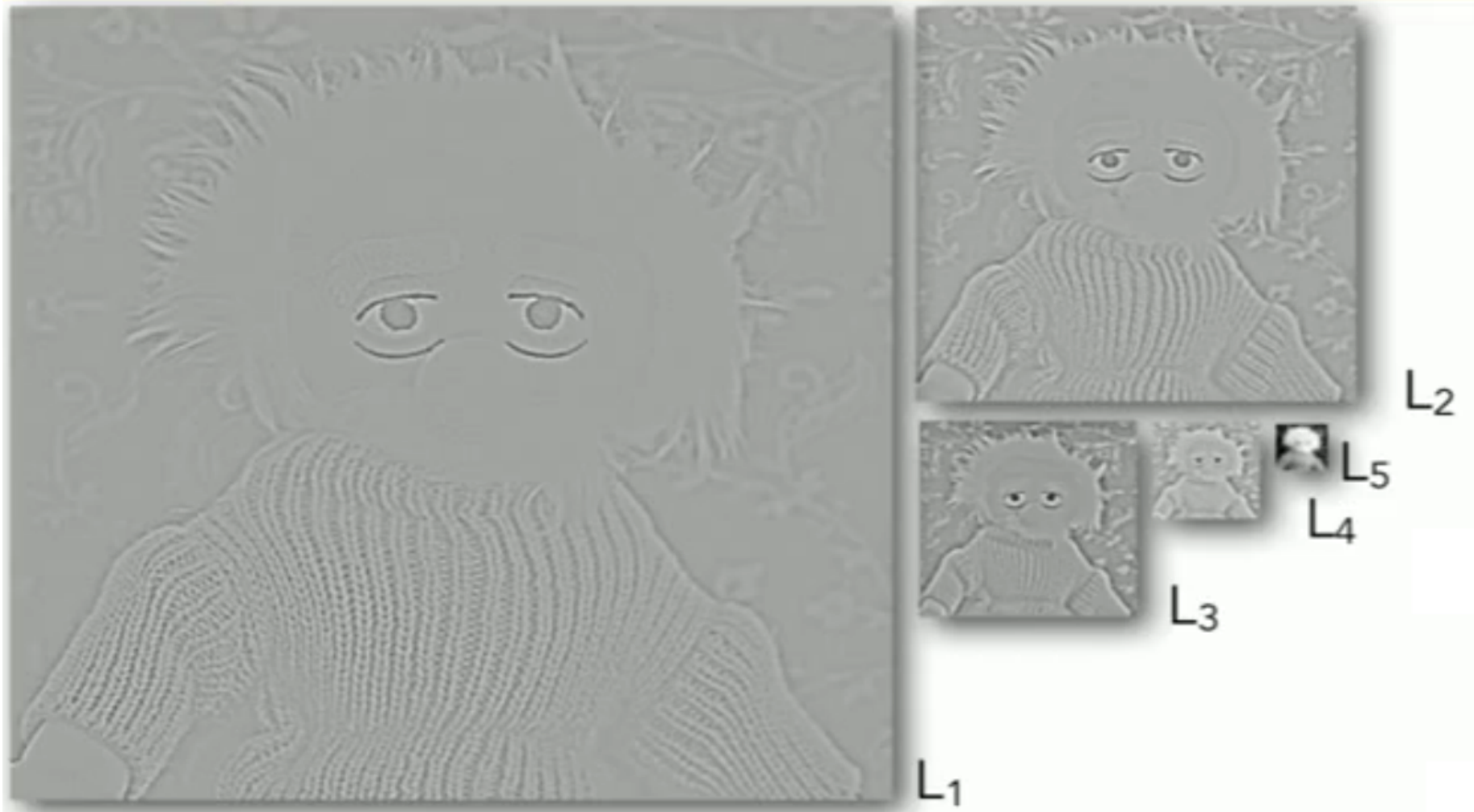| Your Answer	Score	Explanation
○ L0 = g1 + REDUCE(g0)		
◉ L0 = g0 - EXPAND(g1)	✔	1.00	Correct!

○ L0 = g0 + REDUCE(g1)

○ L0 = g1 - EXPAND(g0)

Total	1.00 / 1.00

Question 5

Please choose all of the options that accurately describe a Laplacian Pyramid.

Your Answer	Score	Explanation
☐ Each layer captures information of different orientations in the image.	✔ 0.25	This option is not correct.
☑ Is used in image blending because it allows us to blend features from images at the appropriate scale.	✔ 0.25	This option is correct!
☐ Is used in image blending because it allows us to blend images faster than with alpha-blending.	✔ 0.25	This option is not correct.

☑ Each layer captures information of different frequency from the image.	✔ 0.25	This option is correct!

Total	1.00 / 1.00	

Question 6

Please choose all of the answers that describe properties that are desirable when finding features in an image.

Your Answer	Score	Explanation
☐ Repeatability / Precision - The feature should appear multiple times within the same image, and all of the appearances should be nearly identical.	✔ 0.12	This option is not correct.
☑ Locality - A feature should occupy a small area so that it is robust to clutter and occlusion.	✔ 0.12	This option is correct!
☑ Repeatibility / Precision - We should be able to find the same feature in several images despite changes in location, perspective and illumination.	✔ 0.12	This option is correct!
☐ Compactness and Efficiency - Features should be close to each other.	✔ 0.12	This option is not correct.
☐ Locality - Features should be concentrated in only one part of the image.	✔ 0.12	This option is not correct.
☐ Saliency / Matchability - Each feature occupies a large area within the image.	✔ 0.12	This option is not correct.
☑ Saliency / Matchability - Each feature has a distinctive description.	✔ 0.12	This option is correct!
☑ Compactness and Efficiency - There should be much fewer features than pixels in the image, so that matching features is more tractable computationally.	✔ 0.12	This option is correct!

Total	1.00 / 1.00	

Question 7

Please choose the one option that accurately describes a corner.

Your Answer		Score	Explanation
○ In the region around the corner, the image gradient has no dominant direction.			
○ In the region around the corner, there are lots of pixels of different intensities.			
● In the region around a corner, the image gradient has two or more dominant directions.	✔	1.00	Correct!
○ In the region around a corner, the image gradient has one dominant direction.			
Total		1.00 / 1.00	

Question 8

Please explain the one option that describes the process by which we align images for a panorama.

Your Answer		Score	Explanation
○ We find an affine transform that allows us to line up the key points of the photos.			
○ We compute a rotation transform that allows us to line up the photos.			
○ We translate the photos so they line up as well as possible.			

⦿ We find a homography to project the rays captured in each photo onto a common plane.	✔	1.00	Correct!
Total		1.00 / 1.00	

Question 9

Please select all of the options that accurately describe the RANSAC algorithm.

Your Answer		Score	Explanation
☐ It relies on the fact that the number of outliers will be pretty small.	✔	0.12	This option is not correct!
☐ The algorithm accepts the homography that matches all of the points the closest.	✔	0.12	This option is not correct.
☐ The algorithm operates by finding a homography that minimizes the error across all points.	✔	0.12	This option is not correct.
☑ It relies on the fact that homographies generated from outliers will be inconsistent with each other.	✔	0.12	This option is correct!
☑ RANSAC stands for RANdom SAmple Concensus.	✔	0.12	This option is correct!
☑ The algorithm operates by sampling four points at random and computing candidate homographies.	✔	0.12	This option is correct!
☑ The algorithm accepts the homography that has the largest number of inliers.	✔	0.12	This option is correct!
☐ RANSAC stands for Really Awesome New Sciency Algorithm Computation.	✔	0.12	This option is not correct. :)
Total		1.00 / 1.00	

Question 10

Please choose the one answer that accurately defines luminance.

Your Answer		Score	Explanation
◯ A measure of how reflective a material is.			
◉ Luminous intensity per unit area traveling in a given direction.	✔	1.00	Correct!
◯ Intensity of light multiplied by the angle of incidence on a given surface.			
◯ Number of photons per unit volume in space.			
Total		1.00 / 1.00	

Question 11

Please choose the one option that describes why we might want to do high-dynamic-range imaging.

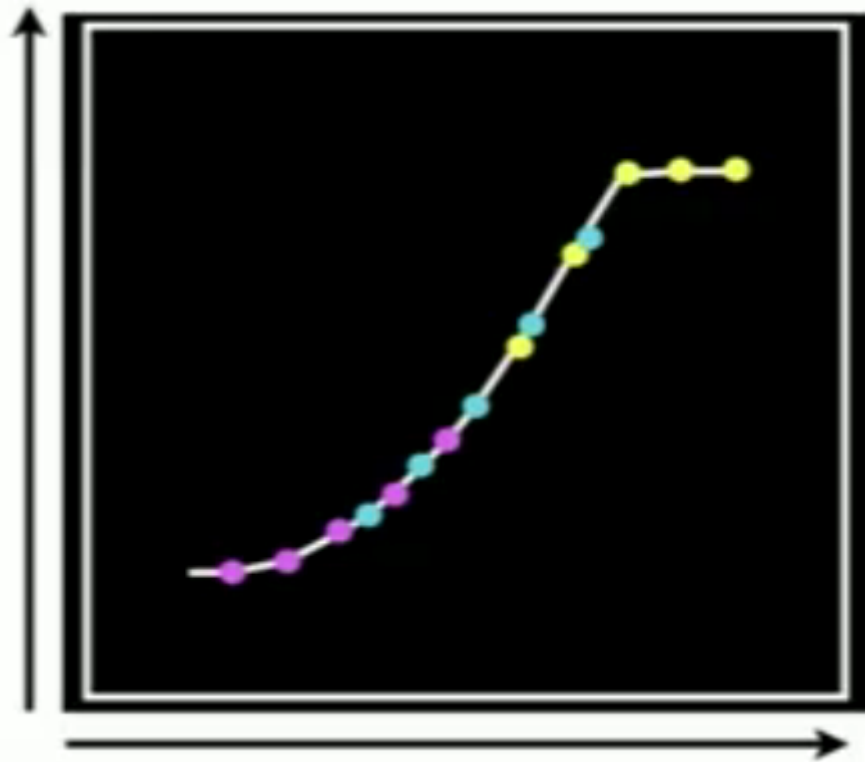| Your Answer		Score	Explanation
◉ The human eye can perceive a wider range of intensities of light than is captured in conventional digital images. HDR is a technique for artificially increasing the range of light that can be captured by a digital camera.	✔	1.00	Correct.
◯ Sometimes we want to use different part of multiple images of the same scene. HDR is a			

technique for combining regions of images together.

○ Images captured by cameras often have unsatisfying contrast. HDR is a technique for increasing contrast in images.

○ Cameras can record a wider range of light intensities than the human eye. HDR is a technique for compressing that information into a visible spectrum.

Total   1.00 / 1.00

Question 12

Recall the following curve from lecture:

Choose the one option that assigns appropriate labels to each axis.

Your Answer	Score	Explanation
○ x = log(Exposure) y = Exposure		
◉ x = log(Exposure) y = Pixel Value	✔ 1.00	Correct. The response curves maps from exposure to pixel intensity.
○ x = log(Pixel Value) y = Pixel Value		
○ x = log(Pixel Value) y = Exposure		

Total	1.00 / 1.00

Question 13

Please choose the one option that describes the idea behind tone mapping.

Your Answer		Score	Explanation
○ Tone mapping is a technique for shuffling colors in an image.			
○ Tone mapping is used to map a low dynamic range to a higher one while interpolating color information for a full range image.			
○ Tone mapping is a technique for increasing contrast in an image.			
◉ Tone mapping is used to map a high dynamic range to a lower range while preserving image details and color appearance of the full range image.	✔	1.00	Correct!
Total		1.00 / 1.00	