Define or otherwise identify the following:

a.            Average gradient

b.            Optical density

c.             Foreshortening

d.            Focal-spot blur

e.            Opaque, radiopaque

f.             Densitometer

g.            Motion blur

h.            Spatial distortion

i.              Quantum mottle

j.             Latitude

Average gradient

The gradient of the straight line that passes through any two points on a curve is the average gradient between any two points. This is the curve's average gradient between points A and C.

The vertical difference in height divided by the horizontal distance is what is referred to as a gradient.

Therefore, two facts must be understood in order to compute the average gradient along the stream from the red dot at B to the red dot at A (or vice versa): The elevational difference between B and A the distance from B to A along the stream.

Optical density

A transparent substance's optical density is a characteristic that gauges how quickly light moves through the substance. The optical density is the degree to which any optically dense medium bends transmitted light rays toward or away from the normal. The density that has no units is called optical density (OD).

The slower the wave moves through the material, the higher the optical density. The material's optical density can be determined by looking at its refractive index. The dimensionless refractive index value represents how much slower a light wave would move through the medium relative to how fast it would go through vacuum.

Foreshortening

The most defining characteristics of linear perspective are foreshortening, which is when an object's dimensions along the line of sight appear shorter than its dimensions across the line of sight, and the fact that objects get smaller the more away they are from the observer.

Foreshortening is the process of representing an item or human body in a photograph to create the appearance of extension or projection in space.

Focal-spot blur

When an item is farther distant from the detector, the edges of the image get blurry due to the focal spot's limited size (Penumbra). The final image's overall blur (degradation) is a result of both detector and focus spot blurring.

Insofar as it directly influences penumbra size, the focus spot size has an impact on the radiographic sharpness of an image. The ratio of the penumbra and radiographic picture sizes affects the blurring caused by this component.

Opaque, radiopaque

Anything that is opaque prevents light from passing through it and cannot be seen through.

Common materials that are neither transparent nor metallic (strong reflections) are referred to as opaque materials (refractive). Opaque materials are the most prevalent and include materials like plastic, wood, stone, and ceramic.

Radiopaque: Translucent to some types of radiation, including X-rays. Rather than allowing radiation to pass through, radiopaque objects prevent it. Because metal is radiopaque, for example, any metal objects that a patient may have eaten may show up on X-rays.

Densitometer

Using a photometric recording, a densitometer measures the density, or the degree of darkening, of a photographic film or plate (fraction of incident light transmitted). Two beams of equal intensity are utilised in visual approaches.

A densitometer is a tool used to gauge how dark a reflective surface, semitransparent substance, or photographic material is. Essentially, a light source directed at a photoelectric cell constitutes a densitometer.

Motion blur

When moving objects appear to be streaking in a snapshot or a series of frames, such as in a movie or animation, this is called motion blur. It happens when there is quick movement or a long exposure and the image being recorded shifts throughout the recording of a single exposure.

One of the most crucial effects to include in games, especially racing games, is motion blur since it heightens the impression of speed and realism. In games that render at 30 frames per second or less, motion blur also aids in smoothing out the visuals.

  Spatial distortion

Since all sound exists in some sort of space and therefore carries with it three-dimensional features, spatial distortion is a concept that must be taken into account in the context of accurate sound reproduction and recording. While some sound professionals appear to be aware of the problem, most are not.

When an organism's regular spatial perception is harmed, spatial distortion happens. Experimental production of this is possible in a number of sensory modalities.

   Quantum mottle

The amount of x-ray photons leaving the patient and producing the radiography image is directly proportional to a sort of radiographic noise called quantum mottle. Images with a grainy or sand-like appearance will come from an unfavourable fluctuation in picture densities brought on by fewer photons reaching the image receptor.

Radiologic imaging is inevitably going to produce quantum mottling. It is brought on by restrictions on how many x-rays at a given strength can pass through tissues with various densities before impacting the film or display screen, which is always moving.

  Latitude

Latitude is used to calculate how far north or south of the Equator you are. It is calculated using 180 fictitious lines that are drawn in circles east-west of the equator. Parallels are the names for these lines. An imaginary ring connecting all places that share a parallel is known as a circle of latitude.