Aliasing is an effect that causes different signals to become indistinguishable when sampled.

B-spline curve came to resolve the disadvantages having by Bezier curve. B-Spline is a basis function that contains a set of control points. The B-Spline curves are specified by Bernstein basis function that has limited flexibility.

camera noise, the term noise refers to a certain type of visual distortion.

Canny edge detection is a technique to extract useful structural information from different vision objects and dramatically reduce the amount of data to be processed.

In the spatial domain, Convolution is the process of changing the value of one pixel to the weighted average of all the pixels in its neighbourhood.

Convolution in time domain results in multiplication in the frequency domain. You find the Fourier transform of the signals and multiply them, then find the inverse Fourier transform of the result.

Decimation and interpolation are the two basic building blocks in the multirate digital signal processing systems. The decimator is utilized to decrease the sampling rate and interpolator to increase the sampling rate.

Down sampling is the reduction in spatial resolution while keeping the same two-dimensional (2D) representation. It is typically used to reduce the storage and/or transmission requirements of images.

Edge detection is a technique of image processing used to identify points in a digital image with discontinuities, simply to say, sharp changes in the image brightness.

Fourier transform is an important image processing tool which is used to decompose an image into the frequency domain.

Fourier -> converts Spatial to frequency domain

Inverse fourier-> converts Freq to spatial

an Image is a two-dimensional signal, made up of rows and columns of pixels.

Image interpolation occurs when you resize or distort your image from one pixel grid to another. Image resizing is necessary when you need to increase or decrease the total number of pixels, whereas remapping can occur when you are correcting for lens distortion or rotating an image.

The Image of a Function is simply the set of all possible values the function can take.

Decimation and Interpolation are the two basic building blocks in the multirate digital signal processing systems. The decimator is utilized to decrease the sampling rate and interpolator to increase the sampling rate.

Lambert's cosine law says that the radiant intensity or luminous intensity observed from an ideal diffusely reflecting surface or ideal diffuse radiator is directly proportional to the cosine of the angle θ between the direction of the incident light and the surface normal; I = I0cos(θ)

A Machine Vision system uses a camera to view an image, computer vision algorithms then process and interpret the image

Different Types of Noise · Gaussian Noise · Salt and Pepper Noise · Speckle Noise · Poison Noise.

Impulse noises are short duration noises which degrade an image. They may occur during image acquisition, due to switching, sensor temperature.

Gaussian Noise is a statistical noise having a probability density function equal to normal distribution

the Nyquist rate, specifies a sampling rate. It is the minimum rate at which a finite bandwidth signal needs to be sampled to retain all of the information.

OpenCV, one can process images and videos to identify objects, faces, or even handwriting of a human. When it integrated with various libraries, such as NumPy, python is capable of processing the OpenCV array structure for analysis. To Identify image pattern and its various features we use vector space and perform mathematical operations on these features.

padding is added to the outer frame of the image to allow for more space for the filter to cover in the image. Adding padding to an image processed by a CNN allows for a more accurate analysis of images.

In Specular Reflection, the incident light is reflected into a single outgoing direction.

Subsampling is a method that reduces data size by selecting a subset of the original data. The subset is specified by choosing a parameter n, specifying that every nth data point is to be extracted.

Template Matching is a technique in digital image processing for finding small parts of an image which match a template image. It can be used in manufacturing as a part of quality control, a way to navigate a mobile robot, or as a way to detect edges in images.

Upsampling is the increasing of the spatial resolution while keeping the 2D representation of an image.