**TASK # 01**

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**APPLICATION OF LINEAR ALGEBRA IN COMPUTER VISION**

The linear algebra is the tool utilized today to carry out important mathematical calculation used to implement data science algorithms that makes and looks everything happens true. The math behind the algorithms give new approach and mindset and hence open new logic and opportunities and applications to go through. Linear algebra is the base of many data science algorithms. The one important application of linear algebra is in computer vision which is the field of data science. Computer vision is the field of data science that helps computer to get engage and understand visual world objects such as video, images and models. Using this such models are made that enables to accurately define and identify objects so that u can differentiate between visual world objects. In computer vision linear algebra is used in computer convolution which involves linear algebra and vectors to produce and display image. Convolution means to blurred, soothing or sharpening image. Convolution is the core in computer vision and in image processing. Convolution requires matrices multiplication and sum. For image processing two dimensional array is required. Because it contains rows and column and to process and image and to represent pixels and to interpret with it, these rows and columns are required. Image convolution image is considered similar to a big size matric and kernel as a small matric used for blurring sharpening or any other image processing function. While the kernel matric moves from left to right and top to bottom it applies some mathematical function at each coordinate of image to produce a complex and elaborated image. Different kernel performs different function to produce complex image and to perform image processing. Kernel are usually squared matric it can be reshaped according to image dimensions. To perform image processing and image convolution in python, data scientists use OpenCV Library.

Reference Link:

<https://towardsdatascience.com/5-applications-of-linear-algebra-in-data-science-81dfc5eb9d4>