Linear algebra is pivotal in the realm of machine learning and extends its significance to other areas like computer vision. It lays the groundwork for diverse image processing and computer vision techniques, proving invaluable for the analysis and manipulation of visual data. Through linear algebra, images are represented as matrices or vectors, facilitating the application of various mathematical operations. Such representations allow us to execute operations like scaling, rotation, translation, and even intricate transformations. These operations are instrumental in tasks such as edge detection, image segmentation, and recognition.

Linear algebra is necessary for solving systems of linear equations, which is a key thing someone must know for the numerous computer vision algorithms. For example, image vision, which is a process involving the alignment of multiple images. Linear algebra helps solve the system of equations that aid in the transformation between these images.

Going past just a simple understanding of linear algebra is crucial when delving into object detection models available from TensorFlow's open-source libraries. At the heart of Tensor mathematics lie multilinear relationships among sets of algebraic objects connected to a shared vector space (Panagakis et al., 2021). A person should have an immense grasp of Tensors demands a which would need a solid foundation in essential linear algebraic concepts.

References:

Panagakis, Y., Kossaifi, J., Chrysos, G., Oldfield, J., Nicolaou, M. A., Anandkumar, A., & Zafeiriou, S. (2021). Tensor methods in computer vision and deep learning. *Proceedings of the IEEE*, *109*(5), 863–890. https://doi.org/10.1109/jproc.2021.3074329