

## Article Referencing *The use of 3D Holographic imaging in Veterinary Medicine*

Dr. Scott Pless, DVM - September 2023.

In the context of veterinary medicine, the discussion of Holographic imaging can seem ‘futuristic’, but the implementation of this technology has been utilized for over 70 years. 3D Holographic imaging refers to the process of converting images into a 3D plane. Holographic images are recorded by illuminating an object with a laser and recording it through a medium that clarifies the 3D image/video. The light is reflected off an object, thus creating the 3D image/video termed “hologram”.<sup>1</sup> In veterinary medicine, this advancement can give way to a new view on radiology, imaging, and as a diagnostic tool. Holographic imaging can aid in the advancement of surgical planning and execution, while shining light on advanced information about multiple organs, tissues, and other structures through the viewpoint of various, three-dimensional angles.

Veterinary professionals have also been able to study, in detail, the cornea, tooth mobility, specific joint, parts of the skull and other bones of the body.<sup>2</sup> Infection and cancer identification, screening and monitoring has also been advanced through the use of Holography by decreasing the time it took to identify cancer and/or infection within the body.

The veterinary industry expects the utilization of Holographic imaging to increase within the next few years. In 2017 alone, the holographic imaging market exceeded 331 million USD and was expected to grow at a compound annual growth rate of over 34 percent during the years of 2018 to 2024.<sup>3</sup> Multiple Schools of Veterinary medicine, such as the university of Pennsylvania, have adopted the use of 3D imaging in order to help students visualize realistic and textured 3D holographic models within their clinical labs.<sup>4</sup> A high resolution 3D visualization of the patients body is advantageous in comparison to 2D medical imaging. This can also help students better understand the spatial relationship between different anatomical structures. Not only is this a less invasive option, it is also less resource intensive. This novel visualization method has been subbed for traditional dissections, necropsies, radiology, and exploratory surgeries. In the future, Holography will provide what has been termed ‘Holodoctors’, within the veterinary industry. This means that a doctor within a remote location could view the holographic image and provide diagnostics and treatment. This would considerably save time, expenses, and maximize profitability.

3D holographic imaging has the ability to store and read data such as digital 3D images and videos of the patient, or specific hard or soft structures. It can also manage records and help track the progression of different diseases and disorders.<sup>5</sup> Digital 3D imaging such as this is utilized to perform effective diagnosis, with a decreased margin of error, which will cultivate better client satisfaction.

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<sup>1</sup> Haleem A, Javaid M, Khan IH. *Holography applications toward medical field: An overview*. Indian J Radiol Imaging. 2020.

<sup>2</sup> Ibid.

<sup>3</sup> Faizullabhoy, Mariam. Wani, Gauri. *Holographic imaging Market*. Global Market Insights. January 2019.

<sup>4</sup> Rashid, Omer. *The Use of 3D Holographic Imaging in Veterinary Medicine*. Innovative Veterinary Journal. October 24 2022.

<sup>5</sup> Ibid.