IMAGE OR VIDEO RECOGNATIONS SYSTEMS IN MEDICINE

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ABSTRACT: *Medical imaging is the process of producing visible images of inner structures of the body for scientific and medicinal study and treatment as well as a visible view of the function of interior tissues. This process pursues the disorder identification and management. This process creates data bank of regular structure and function of the organs to make it easy to recognize the anomalies. This process includes both organic and radiological imaging which used electromagnetic energies (X-rays and gamma), sonography, magnetic, scopes, and thermal and isotope imaging.*

Key words: *Image recognation, 2D and 3D images, neural signals, Pathology, Deep learning, Computer vision, Computed radiography, Image Enhancement*

INTRODUCTION

An image processing technique is the usage of computer to manipulate the digital image. This technique has many benefits such as elasticity, adaptability, data storing, and communication. With the growth of different image resizing techniques, the images can be kept efficiently. This technique has many sets of rules to perform into the images synchronously. The 2D and 3D images can be processed in multiple dimensions. The image processing techniques were founded in the 1960s. Those techniques were used for different fields such as Space, clinical purposes, arts, and TV image improvement.

LITERATURE REVIEW

Oufqir et al. discussed ARKit and ArCore, the two open-source libraries that show virtually created models in reality. Muñoz-Saavedra et al. proposed work-focused healthcare, which is the most notorious field of application of AR and VR. Yung and Khoo-Lattimore discussed the role of AR in tourism. Regardless of the developing interest and conversations on AR and VR in the tourism business. Aggarwal and Singhal talked about AR, which is a mix of objects and a computer-created or virtual world. Huang et al. developed a sign-perusing assistant which recognizes digital word text and converts it to highly computed AR lettering.

DISCUSSION

Image and video recognition systems play a significant role in various medical applications. Here are some examples of image and video recognition systems used in medicine:

1. Radiology Imaging: In radiology, systems like computer-aided detection (CAD) and computer-aided diagnosis (CADx) use image recognition algorithms to assist radiologists in detecting abnormalities.
2. Pathology: Digital pathology involves scanning and analyzing tissue samples to aid in diagnosis. Image recognition algorithms can automatically analyze digital pathology images to identify and classify cancer cells.

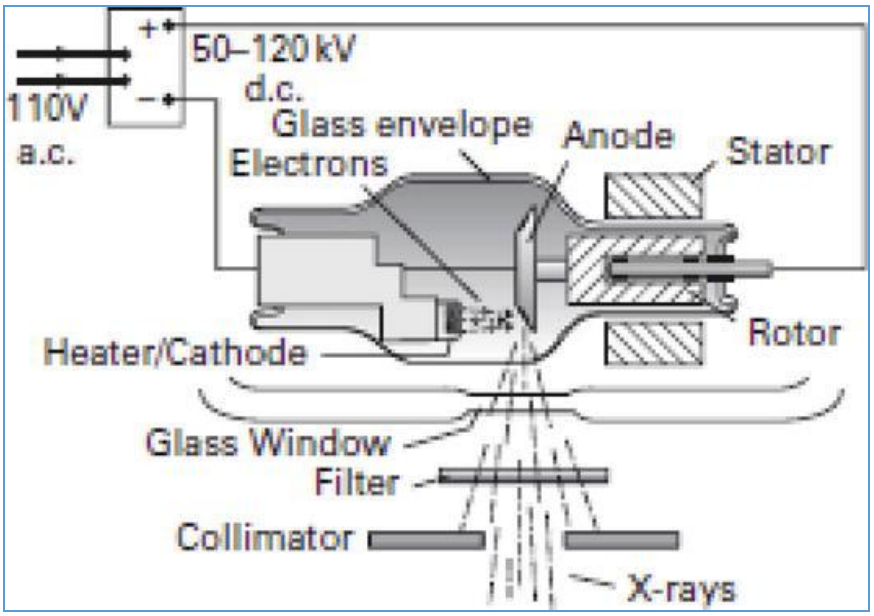
3. Dermatology: Dermatology applications use image recognition to analyze skin lesions and help in the detection of skin cancer. Dermatologists can capture images of skin lesions, and machine learning algorithms can compare these images.

RESULTS

Medical imaging systems use the signals received from the patient to produce images. Medical imaging systems use both ionizing and nonionizing sources.

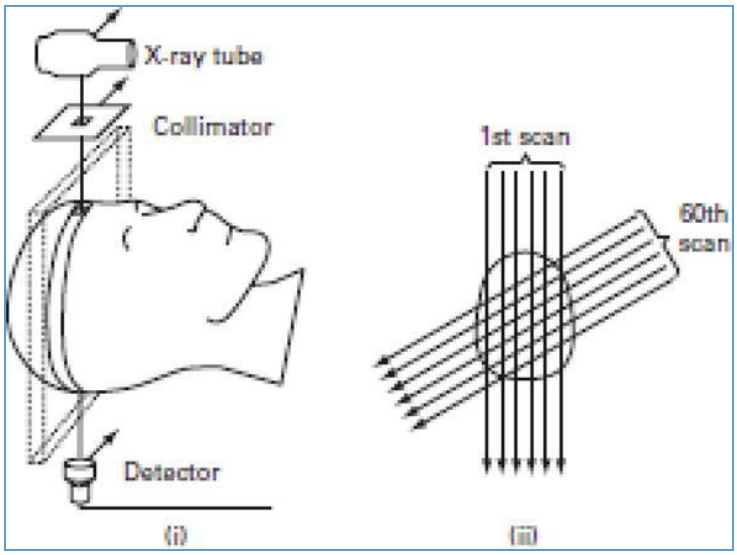
X-ray imaging systems

Since the discovery of X-rays by the German scientist Roentgen, X-rays have been used to image the body parts for diagnostic purposes. In X-ray tube, the electrons are produced in cathode through a thermal emission process and are accelerated through a potential difference of 50–150 KV. The electrons hit the anode to produce the X-rays. Only 1% of this energy is converted to X-rays, and the remaining amount is changed to heat.



Computed tomography (CT)

In this modality, the images are produced in multiple dimensions rather than the conventional radiography. CT scanner produces multiple slices of the body tissues in different directions. In CT scanner, the patient is placed inside its aperture and scanned by a rotating X-ray tube in all directions.

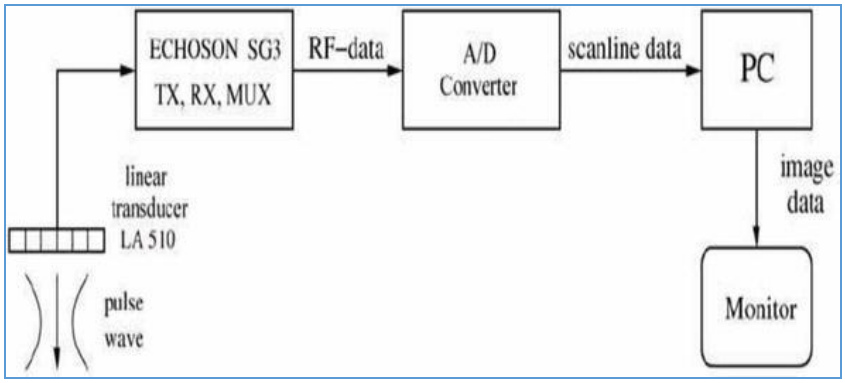


Nuclear medicine

This imaging modality uses the radioisotopes to produce images about the functions of the different structures such as the heart, kidney, and liver. The radioisotopes are labeled by pharmaceutical materials to be guided to the certain organs. The patient's emitted photons are received in the detectors and convert into signals. Those signals are converted to interpretable digital images.

Ultrasound

Ultrasound is a technique, which uses high-frequency sound waves to produce images of the internal structure of the body from the returned echoes. Ultrasound is similar to the location determination technique, which is used by some animals like bats and whales in the nature.



CONCLUSION

Research in medical imaging using image processing techniques is an active field with continuous advancements. Image processing techniques aim to improve the

quality, accuracy, and efficiency of medical image analysis, interpretation, and diagnosis. Here are some areas of research in medical imaging using image processing techniques:

Image Enhancement: Researchers develop algorithms to enhance the quality of medical images by reducing noise, improving contrast, and enhancing fine details. Techniques such as filtering, histogram equalization, and wavelet transform are employed to improve image quality and aid in accurate diagnosis.

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