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NAME: Abdishakur Suleiman Mohamed | ROLL NO: 12101230

ASSIGNMENT

APPLICATIONS OF DIGITAL IMAGE PROCESSING IN REAL LIFE.

DIGITAL IMAGE processing refers to the use of computer algorithms to perform image processing on digital images. It allows for a range of operations including image enhancement, restoration compression and segmentation. This techniques are pivotal in converting raw image data into more usable form

Real Life Applications of DIP:

1. MEDICAL IMAGING:

- It is one of the most crucial Applications of image processing.
- It used in Technologies such as:-
  - → MRI
  - → CT scans
  - → X-rays

They rely heavily on image processing techniques to improve image clarity

→ detect abnormalities and assist in diagnostics

- image processing algorithms help in enhancing the contrast of image, reducing noise and segmenting different tissues wich are vital for accurate diagnosis & Treatment planning.

2. REMOTE SENSING :-

→ in remote sensing satellites capture images of earth's surface wich are then processed to monitor enviroment al changes, Track Natural disasters, and manage Natural resources.

Image processing techniques enable the analysis of satelite imagery for applications like deforestation, monitoring, urbanplanning & climate change studies.

3. SECURITY AND SURVEillance

- Image processing plays a crucial role in Security and Surveillance systems. particularly in FACIAL Recognition, motion Detection & anomaly detection.

These systems rely on advanced image processing techniques to analyse footage

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from cameras and identify potential threats in real-time.
For example:- Facial recognition technology uses algorithm to match captured images with a database of known faces. wich is enhancing security in public & private spaces.

4. ENTERTAINMENT AND MEDIA
- In Entairment and media industry, image processing is widely used in Animation, special effects, and video editing.
Techniques such as:- Image morphing, filtering and motion Tracking are employed to create visual effects in movies, video games and virtual reality experiences.
Image processing has also revolutionized photography and video production allowing for real-Time enhancements and creative effects that were once impossible

5. ROBOTICS And AI
In Robotics and AI image processing is used for tasks such as:- object recognition, Navigation and autonomous decision making.

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in industrial robotics image processing is used for quality control, sorting objects and guiding robotic arms.
in Autonomous vehicles, cameras combined with image processing algorithms allow the vehicle to detect and respond to Road signs, pedestrians & other vehicles. wich is ensuring safe & efficient Navigation.