Module 2 Assignment : 01

Task 1: Exploring Computer Vision Applications

Healthcare

Computer vision has found numerous application in healthcare industry, helping medical professionals diagnose, treat and monitor patients more efficiently.

Example:

Medical Image Analysis - Computer vision is used to analyse medical images like X-rays, MRIs, and CT Scans. Algorithms can automatically detect abnormalities, tumours or fractures aiding radiologists in their diagnoses and reducing the change of human error.

Impact:

Fast and more accurate diagnoses, early detection of diseases and improved patient outcomes.

Automotive

Computer Vision has revolutionised the automotive industry, enabling advanced driver assistance systems (ADAS) and autonomous vehicles.

Example:

Lang Departure Warning : cameras mounted on vehicles analyse road markings, and computer vision algorithms detect land departures, warning the driver to avoid potential accidents

Impact:

Improved road safety, reduced accidents and the foundation for future fully autonomous vehicles

Retail

Computer vision is transforming Retail Industry, enhancing customer experiences and optimising business operations.

Example:

Automated checkout, computer vision powered cameras identify products and track shoppers' activities in stores. Customers can grab items and leave the store without traditional as the system automatically charges the account

Impact:

Streamlined shopping experiences reduced queues and increased efficiency for retailers

Task 2: OpenCV Installation and Image Display

pip install opencv-python

Import cv2 # to import computer vision library

print(cv2.__version__) # to show the installed version of open cv

[25]:
```
import cv2
import matplotlib.pyplot as plt
```

[2]:
```
print(cv2.__version__)
```
```
4.8.0
```

[29]:
```
image_path = './cat.jpg' # 1st image
image_path_2 = './cat2.jpg' # 2nd image
```

[30]:
```
img = cv2.imread(image_path)
img_2 = cv2.imread(image_path_2)
```

[ ]:
```
```

[31]:
```
# Window name in which image is displayed
window_name = 'image'

# Using cv2.imshow() method
# Displaying the image
cv2.imshow(window_name, img)

cv2.imshow(window_name, img_2)

# waits for user to press any key
# (this is necessary to avoid Python kernel form crashing)
cv2.waitKey(0)

# closing all open windows

cv2.destroyAllWindows()

cv2.waitKey(1)
```

[31]:
```
-1
```

[22]:
```
img.shape
```

[22]:
```
(463, 703, 3)
```

[27]:
```
plt.imshow(cv2.cvtColor(img, cv2.COLOR_BGR2RGB))
```

[34]:
```
plt.subplot(1,2,1)
plt.imshow(cv2.cvtColor(img, cv2.COLOR_BGR2RGB))

plt.subplot(1,2,2)
plt.imshow(cv2.cvtColor(img_2, cv2.COLOR_BGR2RGB))
```

[34]:
```
<matplotlib.image.AxesImage at 0x132aa2260>
```