APPLICATIONS OF DIGITAL IMAGE PROCESSING TO CONSUMER ELECTRONICS

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OVERVIEW

- Image Processing
- Consumer Electronics
- Applications

IMAGE PROCESSING

- Subcategory of Signal processing
- Analog and Digital Image Processing
- Motivation : Modify Images/Frames for visual enhancement and data extraction for human interpretation

CONSUMER ELECTRONICS

- Electronic devices for everyday use
- Entertainment, Communications, Productivity
- Examples: Smartphones, Tv's, Video Games, Laptops, cameras, printers
- Many Image processing techniques are used to enhance the experience of consumer electronics

IMAGE STABILIZATION

- HTTPS://WWW.YOUTUBE.COM/WATCH?V=XHDW4X5VSFY (GOOGLE PIXEL 2)

- OPTICAL IMAGE STABILIZATION (OIS) – LENS ADJUSTMENT AND GYRO SENSOR

- ELECTRONICS IMAGE STABILIZATION (EIS) – PROCESSED THROUGH SOFTWARE
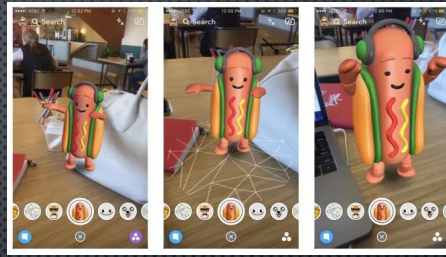

IDENTITY RECOGNITION

- QUICKLY UNLOCK LAPTOP OR SMARTPHONE

- FACE/IRIS RECOGNITION

- UNIQUE PATTERNS IN FACE AND EYES

- SAMSUNG S8, WINDOWS 10

AUGMENTED REALITY

- Superimpose computer-generated images onto real-world images taken by a camera
- Popular apps (snapchat, Pokémon go)
- HoloLens

VIRTUAL REALITY

- HTC Vive and Oculus Rift
- Computer generated scene mimicking reality
- Used for gamers and designers

SCREEN ENHANCEMENT

- Many Monitors and TVs have various options for display output, based on the users needs
- Eco and gaming Mode (power vs performance)
- F.lux (picture warmer)
- G-SYNC and FreeSync (screen tearing)
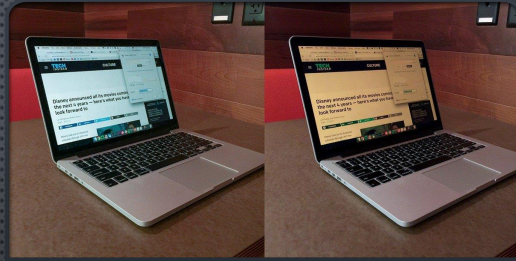
STREAMING

- Media (video) that is continuously transmitted and received in real-time
- YouTube, Twitch, Google cast
- Must be encoded to provide efficient streaming of high-quality content
- Example - H.264/MPEG-4 encoding

CONCLUSION

- Consumer electronics are integral to everyday life in the 21st century

- Image processing has enhanced the use of consumer electronics in many everyday devices